



ALEXANDER & BALDWIN  
PARTNERS FOR HAWAII

P.O. Box 3440, Honolulu, Hawaii 96801

FILE COPY

SEP 23 2019

**EAST MAUI IRRIGATION COMPANY, LIMITED**

P.O. BOX 791628, PAIA, MAUI, HAWAII 96779-1628

September 9, 2019

Scott J. Glenn  
Director  
Office of Environmental Quality Control  
Department of Health, State of Hawai'i  
235 South Beretania Street, Room 702  
Honolulu, Hawai'i 96813

Suzanne Case  
Chairperson  
Department of Land and Natural Resources  
State of Hawai'i  
1151 Punchbowl Street  
Honolulu, Hawai'i 96813

Dear Mr. Glenn and Ms. Case:

With this letter Alexander & Baldwin Inc. (A&B) and East Maui Irrigation Company, Limited (EMI) hereby transmits this Draft Environmental Impact Statement (DEIS) for the *Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas*, situated at TMK Nos. (2) 1-2-004:005, 007 (por.), 1-1-002:002, 1-1-001:044, 1-1-001:050, 2-9-014:001, 005, 011, 012, 017 in the Makawao and Hāna Districts, on the island of Maui. The DEIS has been prepared pursuant to the Board of Land and Natural Resources' 2016 order to A&B and EMI to proceed with the preparation of an environmental impact statement.

Enclosed are a completed Applicant Publication Form, a searchable PDF of the DEIS (Volumes I, II, and III), and a searchable PDF of the distribution list (with a copy of the same sent via electronic mail to [oeqc@doh.hawaii.gov](mailto:oeqc@doh.hawaii.gov)).

Pursuant to the requirements of Sections 11-200-3 and 11-200-15, Hawai'i Administrative Rules, we request that you publish notice of the DEIS in the next available periodic bulletin (The Environmental Notice), which we believe to be the September 23, 2019 issue. This will enable the public to submit comments to A&B's consultant, with copies to the DNLR, during the forty-five day public comment period.

If there are any questions, please contact our consultant, Mr. Earl Matsukawa at (808) 946-2277.

Sincerely,

Alexander & Baldwin, Inc.

East Maui Irrigation Co., Ltd.

cc: WOC

Encls.: (1) Completed OEQC Applicant Publication Form  
(2) Searchable PDF of the DEIS and distribution list

20 - 064

**EXHIBIT J-20**

000001



## APPLICANT PUBLICATION FORM

|   |   |
|---|---|
| Project Name:                           | Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas   |
| Project Short Name:                     | DEIS East Maui Water Lease  |
| HRS §343-5 Trigger(s):                  | Use of State land   |
| Island(s):                              | Maui  |
| Judicial District(s):                   | Makawao and Hāna  |
| TMK(s):                                 | 1-2-004:005, 007; 1-1-002:002; 1-1-001:44, 050; and, 2-9-014:001, 005, 011, 012, 017  |
| Permit(s)/Approval(s):                  | Application for a long-term lease of State land in the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas   |
| Approving Agency:                       | Board of Land and Natural Resources   |
| Contact Name, Email, Telephone, Address | Mr. Ian Hirokawa, <a href="mailto:ian.c.hirokawa@hawaii.gov">ian.c.hirokawa@hawaii.gov</a> , (808) 587-0400, 1151 Punchbowl St. Honolulu, HI 96813                                      |
| Applicant:                              | Alexander & Baldwin Inc. (A&B)/East Maui Irrigation Company, Limited (EMI), collectively referred to as "A&B"   |
| Contact Name, Email, Telephone, Address | A&B / EMI, <a href="mailto:waterleaseeis@wilsonokamoto.com">waterleaseeis@wilsonokamoto.com</a>   |
| Consultant:                             | Wilson Okamoto Corporation  |
| Contact Name, Email, Telephone, Address | Mr. Earl Matsukawa AICP, <a href="mailto:waterleaseeis@wilsonokamoto.com">waterleaseeis@wilsonokamoto.com</a> , (808) 946-2277, 1907, S. Beretania Street, Suite 400 Honolulu, HI 96826 |

**Status (select one)**☐ DEA-AFNSI**Submittal Requirements**

Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.

☐ FEA-FONSI

Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.

☐ FEA-EISPN

Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.

☐ Act 172-12 EISPN  
("Direct to EIS")

Submit 1) the approving agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.

☒ X DEIS

Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.

☐ FEIS

Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.

☐ FEIS Acceptance  
Determination

The approving agency simultaneously transmits to both the OEQC and the applicant a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.

☐ FEIS Statutory  
Acceptance

The approving agency simultaneously transmits to both the OEQC and the applicant a notice that it did not make a timely determination on the acceptance or nonacceptance of the applicant's FEIS under Section 343-5(c), HRS, and therefore the applicant's FEIS is deemed accepted as a matter of law.

☐ Supplemental EIS  
Determination

The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that

a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice.

- ☐ Withdrawal Identify the specific document(s) to withdraw and explain in the project summary section.
- ☐ Other Contact the OEQC if your action is not one of the above items.

**Project Summary**

Provide a description of the proposed action and purpose and need in 200 words or less.

The Proposed Action constitutes the issuance of a long-term (30-year) Water Lease from the BLNR that grants the lessee the *"right, privilege, and authority to enter and go upon"* the License Area for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease, which will be awarded by public auction, will enable the lessee to enter upon lands owned by the State of Hawai'i in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System, and will allow for the continued operation of the EMI Aqueduct System to deliver water to the MDWS for domestic and agricultural water needs in Upcountry Maui, including the agricultural users at the KAP and the planned 262-acre KAP expansion, as well as for the Nāhiku community, which, through the MDWS, draws up 20,000 to 45,000 gallons per day (gpd), dependent on weather, directly from the EMI Aqueduct System. It will also allow the continued provision of water to approximately 30,000 acres of agricultural lands (formerly in sugarcane) in Central Maui.



Proposed Lease (Water Lease) for the Nāhiku, Ke'anae,  
Honomanū, and Huelo License Areas

# **Draft Environmental Impact Statement**



**September 2019**

**Prepared For**



Alexander & Baldwin, Inc.  
East Maui Irrigation Company, Ltd.

**Prepared By**



Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826





# **Proposed Lease (Water Lease) for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas**

## **Draft Environmental Impact Statement**

**September 2019**

**Prepared For**  
**Alexander & Baldwin, Inc.**  
**East Maui Irrigation Company, Ltd.**

**Prepared By**  
**Wilson Okamoto Corporation**  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

This Draft Environmental Impact Statement and all ancillary documents were prepared under my direction or supervision, and the information submitted, to the best of my knowledge, fully addresses document content requirements set forth in Hawai'i Revised Statutes, Chapter 343 and Hawai'i Administrative Rules, § 11-200-17, as applicable.

  
\_\_\_\_\_  
Earl Matsukawa, AICP  
Vice President, Director-Planning  
Wilson Okamoto Corporation

September 11, 2019  
\_\_\_\_\_  
Date

(This page intentionally left blank)



## **Content Checklist**

| Draft EIS Compliance                    | HAR 11-200-17 Draft EIS Content Requirements |  |  |
|---|--|--|--|
|   | A  | The Draft EIS shall contain at a minimum the information contained in this section (11-200-17) |  |
| Executive Summary                       | B  | Summary Sheet with the following   |  |
| Executive Summary                       | 1  | Brief description of the Proposed Action   |  |
| Executive Summary                       | 2  | Significant beneficial/adverse/cumulative/secondary impacts                                    |  |
| Executive Summary                       | 3  | Proposed mitigation measures   |  |
| Executive Summary                       | 4  | Alternatives considered  |  |
| Executive Summary                       | 5  | Unresolved issues  |  |
| Executive Summary                       | 6  | Compatibility with land use plans/policies; listing of permits/approvals                       |  |
| Table of Contents                       | C  | Table of Contents  |  |
| Section 1.1                             | D  | Statement of Purpose/Need for the Proposed Action  |  |
| Chapter 2                               | E  | Project Description with enough detail to evaluate environmental impacts                       |  |
| Chapter 2, Figs.4-2 to 4, 4-21 to 26    | 1  | Detailed map (USGS topo, Firm, or floodway boundary)   |  |
| Section 1.2                             | 2  | Statement of objectives  |  |
| Chapter 2                               | 3  | General description of action's characteristics:   |  |
| Chapter 2                               | a  | Technical  |  |
| Section 4.7                             | b  | Social   |  |
| Chapter 4                               | c  | Environmental  |  |
| Section 2.1                             | 4  | Use of public funds or lands for the action  |  |
| Section 2.1.5                           | 5  | Phasing and timing of the action   |  |
| Chapter 4, Figs. 4-1 to 31              | 6  | Summary technical data, diagrams etc. for evaluation of potential impacts                      |  |
| Section 1.3                             | 7  | Historic perspective   |  |
| Chapter 3                               | F  | Rigorous exploration and objective evaluation of alternatives                                  |  |
| Section 3.3                             | 1  | No action  |  |
| Section 3.2                             | 2  | Different nature with similar benefits and different environmental impacts                     |  |
| Section 3.2                             | 3  | Alternate designs or details   |  |
|   | 4  | Postponing the action  |  |
| Section 3.1                             | 5  | Alternative locations  |  |
| Section 3.4                             | 6  | Comparative evaluation of benefits, costs, risks of reasonable alternatives                    |  |
| Chapter 4                               | G  | Existing environmental setting   |  |
| Chapter 4                               | 1  | Local  |  |
| Section 4.2.1 Streams & 4.4 Flora/Fauna | 3  | Rare or unique environmental resources   |  |
| Section 4.18.4                          | 4  | Related projects in area contributing to possible cumulative effect                            |  |

|                                  |   |   |   |
|----------------------------------|---|---|---|
| Section 2.1.3.1<br>Section 4.7.2 |   | 5 | Area's population/growth characteristics & assumptions used to justify the action                               |
| Section 4.17 (none)              |   | 6 | Secondary population/growth characteristics   |
| Chapter 5                        | H |   | Relationship of Proposed Action to land use plans, policies and controls  |
| Chapter 5                        |   | 1 | For conflicts, extent to which conflict has been reconciled and reasons for proceeding                          |
| Section 5.8                      |   | 2 | List of necessary approvals and status of each  |
| Chapter 4                        | I |   | Statement of probable impacts   |
| Chapter 4                        |   | 1 | Consideration of all phases   |
| Section 4.17                     |   | 2 | Direct/indirect   |
| Section 4.18                     |   | 3 | Interrelationships and cumulative impacts of Action and other related projects                                  |
| Section 4.17                     |   | 4 | Secondary impacts   |
| Section 4.7.2                    |   | 5 | Estimated population impacts  |
| Section 4.7.2                    |   | 6 | Effects of population change  |
| Section 6.3                      |   | 7 | Direct or indirect sources of pollution   |
| Chapter 7                        | J |   | Relationship between local short-term uses of environment and maintenance/enhancement of long-term productivity |
| Chapter 7.1                      |   | 1 | Trade-offs/short-term & long-term gains/losses  |
| Chapter 7.2                      |   | 2 | Extent to which Proposed Action forecloses future options   |
| Chapter 7.3                      |   | 3 | Narrows range of beneficial uses  |
| Chapter 7.5                      |   | 4 | Poses long-term risks to health and safety  |
| Chapter 7.4                      |   | 5 | Environmentally significant consequences  |
| Chapter 6                        | K |   | Irreversible/irretrievable commitments of resources   |
| Section 6.4                      |   | 1 | Unavoidable impacts   |
| Section 6.1                      |   | 2 | Use of non-renewable resources  |
| Section 6.2                      |   | 3 | Curtails range of beneficial uses   |
| Section 6.3                      |   | 4 | Possibility of environmental accidents resulting from any phase of Proposed Action                              |
| Sec.4.2.1,4.4,4.5,4.6            |   | 5 | Loss/destruction of natural/cultural resources  |
| Section 6.4                      | L |   | All probable adverse environmental effects that cannot be avoided   |
| Chapter 1                        |   | 1 | Rationale for proceeding with Action, notwithstanding, adverse effects  |
| Sections 1.3.4, 2.1.3            |   | 2 | Other governmental policies that offset adverse environmental effects   |
| Chapter 3                        |   | 3 | Ability of reasonable alternatives to achieve countervailing benefits to avoid adverse effects                  |
| Chapter 4                        | M |   | Mitigation measures   |
| Chapter 4                        |   | 1 | Basis for determining mitigations reduce impacts to insignificant levels  |
| Chapter 4                        |   | 2 | Timing of mitigations/commitments to assuring mitigation  |

|            |   |   |  |
|------------|---|---|--|
| Chapter 8  | N | 1 | Summarize unresolved issues  |
| Chapter 8  |   | 2 | How they will be resolved prior to implementing action or overriding reasons for proceeding without resolution |
| Chapter 9  | 0 | 1 | Consulted parties  |
| Chapter 10 |   | 2 | Disclosure of preparers  |
| Appendix M | P | 1 | Reproduction of all substantive comments and responses   |
| Chapter 9  |   | 2 | List of parties consulted who had no comments  |



(This page intentionally left blank)

## **TABLE OF CONTENTS**

### **Page**

|  |            |
|--|------------|
| <b>SUMMARY .....</b>   | <b>i</b>   |
| <b>EXECUTIVE SUMMARY .....</b>   | <b>iii</b> |
| <b>1. STATEMENT OF PURPOSE AND NEED OF THE PROPOSED ACTION .....</b>             | <b>1-1</b> |
| 1.1 Purpose of the Proposed Action .....   | 1-1        |
| 1.2 Objectives of the Proposed Action .....                                      | 1-1        |
| 1.3 Background – Historical Perspective .....                                    | 1-2        |
| 1.3.1 The EMI Aqueduct System .....  | 1-2        |
| 1.3.2 History of Stream Diversion on East Maui .....                             | 1-4        |
| 1.3.3 Chronology of Water Lease and the Interim Instream Flow<br>Standards ..... | 1-6        |
| 1.3.4 Interim Instream Flow Standard Decision and Order .....                    | 1-11       |
| 1.3.4.1 CWRM IIFS D&O Stream Identification .....                                | 1-13       |
| 1.3.4.2 CWRM IIFS D&O Table .....  | 1-16       |
| 1.4 Chapter 343, Hawai'i Revised Statutes (Hawai'i EIS Law) .....                | 1-20       |
| <b>2. PROPOSED ACTION .....</b>  | <b>2-1</b> |
| 2.1 Proposed Action .....  | 2-1        |
| 2.1.1 Department of Hawaiian Homelands Water Reservation .....                   | 2-2        |
| 2.1.2 East Maui/License Area .....   | 2-4        |
| 2.1.3 MDWS Water Service Sourced from the EMI Aqueduct System .....              | 2-8        |
| 2.1.3.1 Upcountry Maui Water System .....  | 2-10       |
| 2.1.3.2 The MDWS Kula Agricultural Park .....                                    | 2-14       |
| 2.1.3.3 The MDWS Nāhiku .....  | 2-15       |
| 2.1.4 Central Maui Field System .....  | 2-15       |
| 2.1.5 Phasing and Timing of the Proposed Action .....                            | 2-19       |
| <b>3. ALTERNATIVES .....</b>   | <b>3-1</b> |
| 3.1 Alternatives Considered But Dismissed .....                                  | 3-1        |
| 3.1.1 Water Sources Alternatives .....   | 3-1        |
| 3.1.1.1 Groundwater Alternative .....  | 3-2        |
| 3.1.1.2 Reclaimed Water .....  | 3-3        |
| 3.1.1.3 Added Storage Alternative .....  | 3-3        |
| 3.1.2 Aqueduct Ownership .....   | 3-4        |
| 3.2 Alternative Analysis .....   | 3-5        |
| 3.2.1 Reduced Water Volume Alternative .....                                     | 3-5        |
| 3.2.2 Water Lease With Different Terms .....                                     | 3-5        |
| 3.2.2.1 Alternative Lease Duration .....   | 3-5        |
| 3.2.2.2 Modified Lease Area .....  | 3-6        |
| 3.3 No Action .....  | 3-6        |
| 3.4 Comparative Evaluation of Reasonable Alternatives .....                      | 3-7        |
| 3.4.1 Topography .....   | 3-7        |
| 3.4.2 Soils .....  | 3-7        |
| 3.4.3 Surface Waters and Aquatic Environment .....                               | 3-8        |
| 3.4.4 Groundwater .....  | 3-9        |
| 3.4.5 Coastal Waters .....   | 3-9        |
| 3.4.6 Drainage .....   | 3-10       |

|           |  |            |
|-----------|--|------------|
| 3.4.7     | Natural Hazards .....  | 3-10       |
| 3.4.8     | Flora, Fauna, and Invertebrates .....  | 3-12       |
| 3.4.9     | Historic Resources .....   | 3-13       |
| 3.4.10    | Cultural Resources and Practices .....   | 3-14       |
| 3.4.11    | Social Characteristics .....   | 3-15       |
| 3.4.12    | Economic and Fiscal Resources .....  | 3-16       |
| 3.4.13    | Agricultural and Related Economic Resources .....  | 3-19       |
| 3.4.14    | Recreational Resources .....   | 3-23       |
| 3.4.15    | Visual Resources .....   | 3-23       |
| 3.4.16    | Air Quality .....  | 3-24       |
| 3.4.17    | Noise .....  | 3-24       |
| 3.4.18    | Hazardous Materials .....  | 3-25       |
| 3.4.19    | Traffic .....  | 3-25       |
| 3.4.20    | Public Water Systems .....   | 3-26       |
| 3.4.21    | Public Services and Facilities .....   | 3-26       |
| <b>4.</b> | <b>EXISTING ENVIRONMENT, IMPACTS, AND MITIGATION MEASURES .....</b>                          | <b>4-1</b> |
| 4.1       | Physiography .....   | 4-1        |
| 4.1.1     | Geology and Topography .....   | 4-1        |
| 4.1.2     | Soils .....  | 4-6        |
| 4.2       | Hydrology .....  | 4-54       |
| 4.2.1     | Surface Waters .....   | 4-54       |
| 4.2.2     | Groundwater .....  | 4-59       |
| 4.2.3     | Coastal Waters .....   | 4-65       |
| 4.2.4     | Drainage .....   | 4-69       |
| 4.3       | Natural Hazards .....  | 4-70       |
| 4.3.1     | Climate and Climate Change .....   | 4-71       |
| 4.3.2     | Sea Level Rise .....   | 4-75       |
| 4.3.3     | Flood and Tsunami Hazard .....   | 4-82       |
| 4.3.4     | Hurricanes and Wind Hazard .....   | 4-91       |
| 4.3.5     | Seismic Hazard .....   | 4-92       |
| 4.4       | Natural Environment .....  | 4-93       |
| 4.4.1     | Flora .....  | 4-93       |
| 4.4.2     | Fauna and Invertebrates .....  | 4-98       |
| 4.5       | Historic and Archaeological Resources .....  | 4-107      |
| 4.6       | Cultural Resources and Practices .....   | 4-116      |
| 4.7       | Socio-Economic Characteristics .....   | 4-130      |
| 4.7.1     | Population / Demographics .....  | 4-130      |
| 4.7.2     | Social Characteristics .....   | 4-132      |
| 4.7.3     | Economic and Fiscal .....  | 4-146      |
|           | 4.7.3.1 EMI Operations – Economic and Fiscal Impacts:<br>Baselines and Proposed Action ..... | 4-147      |
|           | 4.7.3.2 East Maui – Economic and Fiscal Impacts:<br>Baselines and Proposed Action .....      | 4-151      |
|           | 4.7.3.1 Upcountry Maui – Economic and Fiscal Impacts:<br>Baselines and Proposed Action ..... | 4-152      |
|           | 4.7.3.1 Central Maui – Economic and Fiscal Impacts:<br>Baseline and Proposed Action .....    | 4-156      |



|           |  |            |
|-----------|--|------------|
| 4.7.4     | Agricultural Economy.....  | 4-160      |
| 4.8       | Recreational Uses and Park Facilities.....                           | 4-169      |
| 4.9       | Visual Resources .....   | 4-175      |
| 4.10      | Air Quality.....   | 4-176      |
| 4.11      | Noise .....  | 4-178      |
| 4.12      | Hazardous Materials .....  | 4-179      |
| 4.13      | Traffic .....  | 4-181      |
| 4.14      | Public Services and Facilities.....                                  | 4-183      |
| 4.14.1    | Police, Fire, and Medical Services.....                              | 4-183      |
| 4.14.2    | Education.....   | 4-185      |
| 4.14.3    | Solid Waste Collection and Disposal.....                             | 4-187      |
| 4.15      | Infrastructure and Utilities.....                                    | 4-188      |
| 4.15.1    | Water System .....   | 4-188      |
| 4.15.2    | Wastewater System.....   | 4-189      |
| 4.15.3    | Electrical System .....  | 4-190      |
| 4.16      | Secondary and Cumulative Impacts.....                                | 4-191      |
| 4.17      | Secondary Impacts.....   | 4-192      |
| 4.18      | Cumulative Impacts.....  | 4-192      |
| 4.18.1    | Cumulative History.....  | 4-192      |
| 4.18.2    | CWRM D&O .....   | 4-193      |
| 4.18.3    | Objectives of the Proposed Action.....                               | 4-194      |
| 4.18.4    | Other Cumulative Impacts .....                                       | 4-194      |
| 4.19      | Summary of Direct, Secondary, and Cumulative Impacts.....            | 4-194      |
| <b>5.</b> | <b>RELATIONSHIP TO PLANS, POLICIES, AND CONTROLS.....</b>            | <b>5-1</b> |
| 5.1       | State Land Use Plans and Policies .....                              | 5-1        |
| 5.1.1     | Hawai'i State Plan.....  | 5-1        |
| 5.1.2     | State Functional Plans.....  | 5-30       |
| 5.1.3     | State Land Use District.....   | 5-33       |
| 5.1.4     | Important Agricultural Lands.....                                    | 5-34       |
| 5.1.5     | Hawai'i Forest Reserves.....   | 5-39       |
| 5.1.6     | Hawai'i Natural Area Reserves.....                                   | 5-41       |
| 5.1.7     | Hawai'i Coastal Zone Management Program .....                        | 5-43       |
| 5.2       | Governor Ige's Sustainability Initiative.....                        | 5-53       |
| 5.3       | Hawai'i Environmental Policy Act .....                               | 5-53       |
| 5.4       | Maui County Land Use Plans and Policies.....                         | 5-57       |
| 5.4.1     | Countywide Policy Plan .....   | 5-57       |
| 5.4.2     | Maui Island Plan .....   | 5-82       |
| 5.5       | State of Hawai'i Water Plan.....                                     | 5-117      |
| 5.5.1     | Agricultural Water Use and Development Plan .....                    | 5-118      |
| 5.5.2     | Draft Maui Island Water Use & Development Plan.....                  | 5-118      |
| 5.6       | Maui County Zoning .....   | 5-122      |
| 5.7       | Maui Island Community Plans.....                                     | 5-123      |
| 5.2.1     | Hāna Community Plan.....   | 5-123      |
| 5.2.2     | Pā'ia-Ha'ikū Community Plan .....                                    | 5-132      |
| 5.2.3     | Makawao-Pukalani-Kula Community Plan.....                            | 5-144      |
| 5.2.4     | Wailuku-Kahului Community Plan .....                                 | 5-159      |
| 5.8       | Permits and Approvals .....  | 5-177      |
| <b>6.</b> | <b>IRRETRIEVABLE AND IRREVERSIBLE COMMITMENTS OF RESOURCES .....</b> | <b>6-1</b> |
| 6.1       | Use of Non-Renewable Resources .....                                 | 6-1        |

|            |   |             |
|------------|---|-------------|
| 6.2        | Irreversible Curtailment of the Range of Beneficial Uses .....  | 6-2         |
| 6.3        | Potential for Environmental Accidents.....  | 6-3         |
| 6.4        | Unavoidable Impacts .....   | 6-3         |
| <b>7.</b>  | <b>Relationship Between Local and Short-Term Uses of Humanity’s Environment and the Maintenance and Enhancement of Long-Term Productivity .....</b> | <b>7-1</b>  |
| 7.1        | Tradeoffs Among Short- and Long-Term Gains and Losses.....  | 7-1         |
| 7.2        | Extent to which the Proposed Action Forecloses Future Options .....   | 7-1         |
| 7.3        | Narrows the Range of Beneficial Uses.....   | 7-2         |
| 7.4        | Environmentally Significant Consequences .....  | 7-2         |
| 7.5        | Long-term Risks to Health and Safety.....   | 7-4         |
| <b>8.</b>  | <b>UNRESOLVED ISSUES .....</b>  | <b>8-1</b>  |
| <b>9.</b>  | <b>CONSULTATION.....</b>  | <b>9-1</b>  |
| 9.1        | Early Consultation.....   | 9-1         |
| 9.2        | Summary of Applicant’s Community Outreach and Consultation Efforts During the EISPN Comment Period.....   | 9-3         |
| 9.3        | Draft EIS Consultation .....  | 9-13        |
| <b>10.</b> | <b>LIST OF PREPARERS .....</b>  | <b>10-1</b> |
| <b>11.</b> | <b>REFERENCES.....</b>  | <b>11-1</b> |

### **LIST OF FIGURES**

|             | <u><b>Page</b></u>   |
|-------------|--|
| Figure 1-1  | EMI Aqueduct System Collection Area..... 1-3                         |
| Figure 1-2  | Tax Map Keys of License Area..... 1-8                                |
| Figure 1-3  | CWRM IIFS Decision & Order Map ..... 1-21                            |
| Figure 2-1  | EMI Aqueduct – East Maui ..... 2-6                                   |
| Figure 2-2  | EMI Aqueduct System ..... 2-7  |
| Figure 2-3  | Upcountry Maui Water System Service Area ..... 2-9                   |
| Figure 2-4  | Upcountry Maui Water System..... 2-11                                |
| Figure 2-5  | Central Infrastructure Map..... 2-16                                 |
| Figure 2-6  | Mahi Pono Farm Plan..... 2-20  |
| Figure 4-1  | Central Maui Land Cover Map ..... 4-2                                |
| Figure 4-2  | USGS East Maui Topography Map ..... 4-4                              |
| Figure 4-3  | USGS Upcountry Maui Topography Map ..... 4-5                         |
| Figure 4-4  | USGS Central Maui Topography Map..... 4-7                            |
| Figure 4-5  | Soil Survey of the State of Hawai’i: Huelo License Area ..... 4-9    |
| Figure 4-6  | Soil Survey of the State of Hawai’i: Honomanū License Area..... 4-12 |
| Figure 4-7  | Soil Survey of the State of Hawai’i: Ke’anae License Area ..... 4-13 |
| Figure 4-8  | Soil Survey of the State of Hawai’i: Nāhiku License Area ..... 4-16  |
| Figure 4-9  | East Maui LSB Map..... 4-18  |
| Figure 4-10 | East Maui ALISH Map ..... 4-20                                       |
| Figure 4-11 | Upcountry Maui Soil Map ..... 4-21                                   |
| Figure 4-12 | Upcountry Maui LSB Map..... 4-37                                     |
| Figure 4-13 | Upcountry Maui ALISH Map ..... 4-38                                  |

|             |  |       |
|-------------|--|-------|
| Figure 4-14 | Central Maui Soil Map .....  | 4-40  |
| Figure 4-15 | Central Maui LSB Map .....   | 4-52  |
| Figure 4-16 | Central Maui ALISH Map.....  | 4-53  |
| Figure 4-17 | East Maui Aquifer Sector Map.....  | 4-60  |
| Figure 4-18 | Central Maui Aquifer Sector Map .....  | 4-62  |
| Figure 4-19 | East Maui Water Quality Classification Map.....  | 4-62  |
| Figure 4-20 | Central Maui Water Quality Classification Map .....                                      | 4-68  |
| Figure 4-21 | PacIOOS 3.2ft Sea Level Rise Projection – ‘O‘opuola Stream .....                         | 4-77  |
| Figure 4-22 | PacIOOS 3.2ft Sea Level Rise Projection – Honomanū Stream .....                          | 4-78  |
| Figure 4-23 | PacIOOS 3.2ft Sea Level Rise Projection – East and West Wailua<br>Iki Stream .....       | 4-78  |
| Figure 4-24 | PacIOOS 3.2ft Sea Level Rise Projection – Kopili‘ula Stream .....                        | 4-79  |
| Figure 4-25 | PacIOOS 3.2ft Sea Level Rise Projection – Waia‘aka Stream.....                           | 4-79  |
| Figure 4-26 | PacIOOS 3.2ft Sea Level Rise Projection – Hanawī Stream .....                            | 4-80  |
| Figure 4-27 | Central Maui 3.2 Feet of Sea Level Rise Map.....   | 4-83  |
| Figure 4-28 | East Maui Flood Insurance Rate Map .....   | 4-84  |
| Figure 4-29 | East Maui Tsunami Evacuation Map.....  | 4-85  |
| Figure 4-30 | Upcountry Flood Insurance Rate Map.....  | 4-87  |
| Figure 4-31 | Upcountry Maui Tsunami Evacuation Map.....   | 4-88  |
| Figure 4-32 | Central Maui Flood Insurance Rate Map.....   | 4-89  |
| Figure 4-33 | Central Maui Tsunami Evacuation Map.....   | 4-90  |
| Figure 4-34 | Critical Habitat Map .....   | 4-95  |
| Figure 4-35 | Traditional Moku Map.....  | 4-110 |
| Figure 4-36 | Walker Heiau Sites.....  | 4-112 |
| Figure 4-37 | Recreational Map .....   | 4-171 |
| Figure 4-38 | Ko‘olau Forest Reserve Hunting Unit Map .....  | 4-173 |
| Figure 5-1  | East Maui State Land Use District Map.....   | 5-35  |
| Figure 5-2  | Central Maui State Land Use District Map .....   | 5-36  |
| Figure 5-3  | Upcountry Maui State Land Use District Map.....  | 5-37  |
| Figure 5-4  | Important Agricultural Lands Map .....   | 5-44  |
| Figure 5-5  | East Maui Special Management Area Map .....  | 5-45  |
| Figure 5-6  | Central Maui Special Management Area Map.....  | 5-46  |
| Figure 9-1  | Affidavit of Publication of Scoping Meeting Notice .....                                 | 9-13  |
| Figure 9-2  | February 22, 2017 Scoping Meeting Sign-in Sheet and Oral<br>Comments Sign-up Sheet ..... | 9-15  |
| Figure 9-3  | February 23, 2017 Scoping Meeting Sign-in Sheet and Oral<br>Comments Sign-up Sheet ..... | 9-29  |

### **LIST OF TABLES**

|           | <b><u>Page</u></b>  |
|-----------|---|
| Table 1-1 | License Area TMKs .....   |
| Table 1-2 | License Area Streams as presented in Table 1-2 in the<br>EISPN (February, 2017) Reconciled with Stream Names Used in the<br>CWRM D&O (June 20, 2018)..... |
|           | 1-7   |
| Table 1-3 | Streams in License Area as Presented in CWRM D&O .....  |
| Table 2-1 | Mahi Pono Farm Plan.....  |
| Table 3-1 | Mahi Pono No Action/No Lease Farm Plan.....   |
| Table 3-2 | Summary – Comparative Evaluation of Reasonable Alternatives .....   |
| Table 4-1 | Sustainable Yields for Ko‘olau Aquifer System Areas .....   |
| Table 4-2 | Pumpage by Well Type for Ko‘olau Aquifer System Areas .....   |
|           | 1-14  |
|           | 1-16  |
|           | 2-18  |
|           | 3-21  |
|           | 3-25  |
|           | 4-59  |
|           | 4-61  |

|            |  |       |
|------------|--|-------|
| Table 4-3  | Sustainable Yields for Central Aquifer System Areas .....  | 4-61  |
| Table 4-4  | Pumpage by Well Type for Central Aquifer System Areas .....  | 4-63  |
| Table 4-5  | East Maui Special Status Species .....   | 4-99  |
| Table 4-6  | Central Maui Special Status Species .....  | 4-106 |
| Table 4-7  | Demographic Characteristics .....  | 4-130 |
| Table 4-8  | Usable Acreage in East Maui for Taro Lo'i .....  | 4-160 |
| Table 4-9  | Central Maui Traffic .....   | 4-182 |
| Table 5-1  | Hawai'i State Plan Part 1 .....  | 5-1   |
| Table 5-2  | Hawai'i State Plan Part 3 .....  | 5-22  |
| Table 5-3  | State Functional Plans .....   | 5-30  |
| Table 5-4  | Important Agricultural Plans .....   | 5-38  |
| Table 5-5  | Hawai'i Forest Reserves .....  | 5-40  |
| Table 5-6  | Hawai'i Natural Area Reserves .....  | 5-42  |
| Table 5-7  | Hawai'i Coastal Zone Management Act .....  | 5-47  |
| Table 5-8  | Hawai'i Environmental Policy Act .....   | 5-53  |
| Table 5-9  | Countywide Policy Plan .....   | 5-57  |
| Table 5-10 | Maui Island Plan .....   | 5-82  |
| Table 5-11 | Ko'olau Aquifer Sector Area Strategies .....   | 5-119 |
| Table 5-12 | Central Aquifer Sector Area Strategies .....   | 5-120 |
| Table 5-13 | Hāna Community Plan .....  | 5-123 |
| Table 5-14 | Pā'ia-Ha'ikū Community Plan .....  | 5-132 |
| Table 5-15 | Makawao-Pukalani-Kula Community Plan .....   | 5-144 |
| Table 5-16 | Wailuku-Kahului Community Plan .....   | 5-159 |
| Table 9-1  | Early Consultation Participants .....  | 9-1   |
| Table 9-2  | List of Agencies, Organizations, and Individuals Consulted During<br>the 30-Day EISPN Comment Period ..... | 9-5   |

### **LIST OF APPENDICES**

|            |   |
|------------|---|
| Appendix A | Assessment of Impacts of Stream Diversions Using the Hawaiian Stream Habitat<br>Evaluation Procedure (HSHEP Model)  |
| Appendix B | East Maui Irrigation Assessment of Streams and the Ocean  |
| Appendix C | Terrestrial Flora and Fauna Technical Report  |
| Appendix D | Historical Structure Assessment   |
| Appendix E | Archaeological Literature Review and Field Inspection   |
| Appendix F | Cultural Impact Assessment  |
| Appendix G | Social Impact Assessment  |
| Appendix H | Economic and Fiscal Impact Study  |
| Appendix I | Agricultural and Related Economic Impacts   |
| Appendix J | Pre-Assessment Consultation Correspondence  |
| Appendix K | Scoping Meeting For the Water Lease for the Nāhiku, Ke'anae, Honomanū, and<br>Huelo License Areas EISPN Transcript of Proceedings Wednesday, February 22,<br>2017 |
| Appendix L | Scoping Meeting For the Water Lease for the Nāhiku, Ke'anae, Honomanū, and<br>Huelo License Areas EISPN Transcript of Proceedings Thursday, February 23,<br>2017  |
| Appendix M | Scoping Meeting and EISPN Comments and Responses  |

## **LIST OF ACRONYMS USED**

The following is a list of acronyms and abbreviations used in this Environmental Impact Statement (EIS).

|                   |  |
|-------------------|--|
| A&B               | Alexander and Baldwin, Inc.  |
| AIS               | Archeological Inventory Survey   |
| ALISH             | Agricultural Land of Importance to the State of Hawai'i  |
| ASCE              | American Society of Civil Engineers  |
| BFQ <sub>50</sub> | A stream's median base flow  |
| BLNR              | Board of Land and Natural Resources  |
| BMP               | Best management practice   |
| CDP               | Census-Designated Place  |
| cfs               | Cubic feet per second  |
| CIA               | Cultural Impact Assessment   |
| COL               | Conclusions of Law from the CWRM D&O   |
| CSH               | Cultural Surveys Hawai'i, Inc.   |
| CWRM              | Commission on Water Resources Management   |
| CWRM D&O          | The Commission on Water Resources Management Findings of Fact, Conclusion of Law, and Decision and Order in Case CCH-MA13-01, dated June 20,2018 |
| CZM               | Coastal Zone Management  |
| CZMP              | Coastal Zone Management Program  |
| DAR               | Division of Aquatic Resources  |
| DBEDT             | Department of Business, Economic Development and Tourism   |
| DEIS              | Draft Environmental Impact Statement   |
| DHHL              | Department of Hawaiian Home Lands  |
| DLNR              | State of Hawai'i Department of Land and Natural Resources  |
| DOE               | State of Hawai'i Department of Education   |
| DOH               | State of Hawai'i Department of Health  |
| EIS               | Environmental Impact Statement   |
| EISPN             | Environmental Impact Statement Preparation Notice  |
| EMI               | East Maui Irrigation Company, LLC  |
| EMWP              | East Maui Watershed Partnership  |
| EPA               | Environmental Protection Agency  |
| F                 | Fahrenheit   |
| FEIS              | Final Environmental Impact Statement   |
| FEMA              | Federal Emergency Management Agency  |
| FIRM              | Flood Insurance Rate Maps  |
| FOF               | Findings of Fact from the CWRM D&O   |
| GET               | General Excise Tax   |
| GHG               | Greenhouse Gas Emissions   |
| GIS               | Geographic Information System  |
| gpd               | Gallons per day  |
| H <sub>90</sub>   | 64% of the median base flow, which generally represents the flow necessary to restore 90% of the habitat in a stream                             |
| HAER              | Historic American Engineering Survey   |
| HAR               | Hawai'i Administrative Rules   |
| HC&S              | Hawaiian Commercial & Sugar Company  |
| HDA               | Hawai'i Department of Agriculture  |
| HKLD              | Hana very stony silty clay loam  |

|                 |   |
|-----------------|---|
| HRS             | Hawai'i Revised Statutes                        |
| HSA             | Historic Structure Assessment                   |
| HSHEP           | Hawaiian Stream Habitat Evaluation Procedure    |
| HU              | Habitat Units                                   |
| HwC             | Honolua silty clay                              |
| IAL             | Important Agricultural Lands                    |
| IFS             | Instream Flow Standard                          |
| IFSAR           | Instream Flow Standard Assessment Reports       |
| IIFS            | Interim Instream Flow Standards                 |
| IPCC            | Intergovernmental Panel on Climate Change       |
| KAP             | Kula Agricultural Park                          |
| kgal            | Thousand gallons                                |
| LCA             | Land Commission Award                           |
| LRFI            | Literature Review and Field Inspection          |
| LSB             | Hawai'i Land Study Bureau                       |
| LUC             | State of Hawai'i Land Use Commission            |
| m               | Meter   |
| MBTA            | Migratory Bird Treaty Act                       |
| MCC             | Maui Country Code                               |
| MDWS            | County of Maui Department of Water Supply       |
| MECO            | Maui Electric Company                           |
| mgd             | Million gallons per day                         |
| MIP             | Maui Island Plan                                |
| mm              | Millimeter                                      |
| MMMC            | Maui Memorial Medical Center                    |
| MRC             | Marine Research Consultants, Inc.               |
| MTF             | Maui Tomorrow Foundation                        |
| mW              | Megawatts                                       |
| NAAQS           | National Ambient Air Quality Standards          |
| NAR             | Natural Area Reserve                            |
| NHLC            | Native Hawaiian Legal Corporation               |
| NHO             | Native Hawaiian Organizations                   |
| NOAA            | National Oceanic and Atmospheric Administration |
| NRCS            | Natural Resources Conservation Service          |
| NRHP            | National Register of Historic Places            |
| NSI             | No Significant Impacts                          |
| OEQC            | Office of Environmental Quality Control         |
| OHA             | Office of Hawaiian Affairs                      |
| PA              | Proposed Action                                 |
| PacIOOS         | Pacific Islands Ocean Observing System          |
| PASH            | Public Access Shoreline Hawai'i                 |
| PUC             | Public Utilities Commission                     |
| Q <sub>90</sub> | Low flow/drought conditions                     |
| RGB             | Rural Growth Boundary                           |
| RSLC            | Rate of sea-level change                        |
| rSM             | Stony alluvial land                             |
| SA              | Significantly Adverse                           |
| SB              | Significant Beneficial Impact                   |
| SBR             | Service Business/Single Family Residential      |
| SE              | Sea Engineering, Inc.                           |
| SIA             | Social Impact Assessment                        |



|        |   |
|--------|---|
| SHPD   | State Historic Preservation Division              |
| SLC    | Sea-level change                                  |
| SSURGO | Soil Survey Geographic Database                   |
| STB    | Small Town Boundary under the Maui Island Plan    |
| STEM   | Science, Technology, Engineering, and Mathematics |
| SWCA   | SWCA Environmental Consultants                    |
| SWPP   | State Water Projects Plan                         |
| SY     | Sustainable Yield                                 |
| TMK    | Tax Map Key                                       |
| UBC    | Uniform Building Code                             |
| UGB    | Urban Growth Boundary under the Maui Island Plan  |
| UHMC   | University of Hawai'i Maui College                |
| USDA   | U.S. Department of Agriculture                    |
| USFWS  | U.S. Fish and Wildlife Service                    |
| USGS   | United States Geological Survey                   |
| WOC    | Wilson Okamoto Corporation                        |
| WTP    | Water Treatment Plant                             |
| WWRF   | Wastewater Reclamation Facility                   |

## **SUMMARY**

|                                 |   |
|---------------------------------|---|
| <b>Project Name:</b>            | Proposed Lease (Water Lease) for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas   |
| <b>Proposing Entity:</b>        | Alexander & Baldwin Inc. (A&B) / East Maui Irrigation Company, Limited (EMI), collectively referred to as “A&B”   |
| <b>Approving Agency:</b>        | Department of Land and Natural Resources<br>1151 Punchbowl St., Honolulu, HI 96813<br>Contact: Mr. Ian Hirokawa   |
| <b>Location:</b>                | East Maui   |
| <b>Tax Map Keys:</b>            | (2) 1-2-004:005, 007 (por.)<br>(2) 1-1-002:002<br>(2) 1-1-001:044<br>(2) 1-1-001:050;<br>(2) 2-9-014:001, 005, 011, 012, 017  |
| <b>Land Area:</b>               | 33,000 acres (approximate)  |
| <b>Recorded Fee Owner:</b>      | State of Hawai‘i,<br>Department of Land and Natural Resources   |
| <b>Existing Use:</b>            | Native forest, existing EMI Aqueduct System and Infrastructure, otherwise generally undeveloped   |
| <b>State Land Use District:</b> | Conservation  |
| <b>Special Management Area:</b> | License Area is outside of SMA  |
| <b>County of Maui Zoning:</b>   | Interim, License Area is completely within the State Conservation District.   |
| <b>Maui Island Plan:</b>        | The Maui Island Plan Directed Growth Maps show that there are no Urban, Small Town or Rural Growth areas located within the License Area.   |
| <b>Flood Zone Designation:</b>  | Zones X and A   |
| <b>Proposed Action:</b>         | Issuance of one long-term lease of State land from the Board of Land and Natural Resources pursuant to Hawai‘i Revised Statutes (HRS) Section 171-58(c) for the “right, privilege, and authority to enter and go upon” the State-owned Nāhiku, Ke‘anae, Honomanū, and Huelo license areas “for the purpose of developing, diverting, transporting, and using government-owned waters” including the right to go upon those State lands to maintain and repair existing access roads and trails used in connection with the privately owned water aqueduct system. |

|   |  |
|---|--|
| <b>Impacts:</b>                               | <p>Analysis of the following environmental resource criteria have been addressed in the Draft EIS:</p> <p>Physiography<br/>Hydrology<br/>Natural Hazards<br/>Natural Environment<br/>Historic and Archaeological Resources<br/>Cultural Resources and Practices<br/>Socio Economic Characteristics<br/>Recreational Uses and Park Facilities<br/>Visual Resources<br/>Air Quality<br/>Noise<br/>Hazardous Materials<br/>Traffic<br/>Public Services and Facilities<br/>Infrastructure and Utilities<br/>Secondary and Cumulative Impacts</p> |
| <b>Determination:</b>                         | <p>By order dated July 8, 2016, the BLNR instructed that "A&amp;B and EMI should proceed with the preparation of an environmental impact statement (EIS) in an expeditious manner as possible."</p> <p>The potential for significant environmental impacts requires the preparation of an EIS.</p>   |
| <b>Agencies Consulted<br/>in EIS Process:</b> | <p>See Chapter 9</p>   |
| <b>Planning Consultant:</b>                   | <p>Mr. Earl Matsukawa, AICP<br/>Wilson Okamoto Corporation<br/>Honolulu, Hawai'i 96826<br/>Telephone: (808) 946-2277<br/>Fax: (808) 946-2253</p>   |

(This page intentionally left blank)

## EXECUTIVE SUMMARY

### Brief Description of the Proposed Action

The Proposed Action constitutes the issuance of one long-term (30-year) Water Lease from the Board of Land and Natural Resources (BLNR) that authorizes the lessee the *"right, privilege, and authority to enter and go upon"* the License Area for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation (EMI) Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease, which will be awarded by public auction, will enable the lessee to enter upon lands owned by the State of Hawai'i in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System, and will allow for the continued operation of the EMI Aqueduct System to deliver water to the County of Maui Department of Water Supply (MDWS) for domestic and agricultural water needs in Upcountry Maui, including the agricultural users at the Kula Agricultural Park (KAP) and the planned 262-acre KAP expansion, as well as for the Nāhiku community, which, through the MDWS, draws between 20,000 to 45,000 gallons per day (gpd), depending on weather, directly from the EMI Aqueduct System. It will also allow the continued provision of water to approximately 30,000 acres of agricultural lands (formerly in sugarcane) in Central Maui where it will be used to support diversified agriculture.

No construction activity will be required to implement the Proposed Action in East Maui or to the MDWS systems delivering water from the EMI Aqueduct System. In the agricultural fields of Central Maui, Mahi Pono will prepare fields and conduct farming operations for diversified agricultural crops. Current plans include new accessory structures to support agricultural operations such as washing and packing areas, storage, etc. However, Mahi Pono's farm plan as described in this Draft Environmental Impact Statement (DEIS) is, like any responsible farming plan, a fluid and responsive plan that responds to the ever-changing agricultural market demands and the type of agricultural activity to be pursued (i.e. orchard crops, tropical fruits, row and annual crops, energy crops, pasturage etc.), as well as responding to other variables such as the availability and cost of water for crop irrigation, and the need to be sensitive to the existing local farming community. Mahi Pono's goals for its diversified farm plan in Central Maui will be guided by its core principles of using reasonable and environmentally responsible "best management practices" (BMP), planting non-GMO crops, and growing food for local consumption. For the purpose of this DEIS, Mahi Pono's Farm Plan projects use of the total amount of water available after compliance with the IIFS requirements of the CWRM D&O, although it is understood that the Department of Hawaiian Home Lands (DHHL) will eventually convert its water reservation to active use.

Independent of the Proposed Action, on June 20, 2018, the Commission on Water Resources Management (CWRM) issued a decision on Petitions that had been filed in 2001 to establish Interim Instream Flow Standards (IIFS). The CWRM Findings of Fact, Conclusion of Law, and Decision and Order (CWRM D&O) in Docket No. CCH MA 13-01 established IIFS for numerous streams and tributaries of streams in the License Area, which includes water originating and flowing from both State and privately owned lands within East Maui.<sup>1</sup> The CWRM D&O

---

<sup>1</sup> CWRM found that there are 24, not 27, streams that were subject to the IIFS contested case because: (1) Waikani is not a stream but a waterfall of Wailuānui Stream; (2) Alo is a tributary of Waikamoi Stream; and (3) Pua'aka'a is a tributary of Kopili'ula Stream.

establishes a quantity of water that must remain in each stream at specified locations. The CWRM D&O ordered full stream restoration for 10 streams and partial flow restoration on 12 additional streams (Please refer to Section 1.3.4). The maximum amount of water that can be awarded through the Water Lease is what is available for diversion after implementation of the CWRM D&O.

The amount of water awarded by the Water Lease is also subject to all applicable requirements under Hawai'i Revised Statutes (HRS) § 171-58, which articulates terms for the disposition of a water lease. HRS § 171-58(e) requires that any new lease of water rights "shall contain a covenant that requires the lessee and the department of land and natural resources to jointly develop and implement a watershed management plan. The board shall not approve any new lease of water rights without the foregoing covenant or a watershed management plan." The content and parameters of a watershed management plan related to the proposed Water Lease are unresolved at this time, but will be resolved before BLNR can issue the Water Lease.

The Water Lease is also subject to the rights of the DHHL to reserve water sufficient to support current and future homestead needs as provided by Section 221 of the Hawaiian Homes Commission Act. Until that reservation is physically claimed, however, the water will remain available for use by the lessee under the Water Lease.

### **Alternatives Considered**

Various alternatives that could potentially achieve the objectives of the Proposed Action were evaluated, regardless of their cost and with particular attention to those that could enhance the environment or minimize adverse environmental effects. Some of these alternatives were considered but dismissed as they were not feasible or would intensify adverse environmental effects. Those alternatives that were considered feasible were comparably evaluated with the Proposed Action.

Alternatives considered but dismissed included certain water source alternatives, including use of groundwater and use of reclaimed water, as well as additional water storage. A change of ownership of the EMI Aqueduct System was similarly considered but dismissed from further study. The reasonable alternatives that were comparatively analyzed with the Proposed Action were the: (1) Reduced Water Volume Alternative, where the Water Lease would be issued allowing the lessee to use less water than is permitted under the CWRM D&O; (2), Water Lease with Different Terms, which consists of two scenarios, (a) an Alternative Lease Duration scenario, where the Water Lease would be issued for a term of years other than the 30 years contemplated under the Proposed Action; and (b) the Modified Lease Area scenario, where the Water Lease would allow the use of the same amount of water as under the Proposed Action, but the geographic boundaries of the Lease Area would be reduced in size sufficient only to maintain the public safety and integrity of the EMI Aqueduct System. The No Action aka No Water Lease alternative, where the EMI Aqueduct System would only divert approximately 30% of the water available from the Collection Area<sup>2</sup>, plus the water presently diverted from streams on private lands beyond the License Area, was also analyzed.

---

<sup>2</sup> The Collection Area refers to the approximately 50,000 acres of land from which the surface water is collected. Of those 50,000 acres, approximately 33,000 acres are owned by the State of Hawai'i, and the remaining approximately 17,000 acres are privately owned.



### **Significant Beneficial and Adverse Impacts (Including Cumulative and Secondary Impacts)**

The Water Lease would allow the use of government-owned waters from the License Area through the EMI Aqueduct System. Use of that surface water would allow the continued provision of water to enable approximately 30,000 acres of farmland in Central Maui to remain in agriculture. The Water Lease would also allow the continuation of a supply of water to the MDWS, which in turn provides water for domestic and agricultural water needs in Upcountry Maui, including agricultural users at KAP and the planned 262-acre KAP expansion, as well as for the Nāhiku community, which draws 20,000 to 45,000 gallons per day, depending on weather, directly from the EMI Aqueduct System.

The MDWS's Upcountry Maui Water System is the second largest in the County. It services the communities of Kula, Pukalani, Makawao, Ha'ikū, Hali'imaile, Waiakoa, Kēōkea, Waiohuli, 'Ulupalakua, Kanaio, Olinda, 'Ōma'opio, Kula Kai, and Pūlehu. The Upcountry Maui Water System is estimated to serve over 35,000 people, and the service area includes several businesses, churches, Kamehameha Schools, Hawaiian Homelands and government facilities. The County anticipates that the population served by the Upcountry Maui Water system will grow to approximately 43,675 by 2030. Continued water service to the MDWS through the EMI Aqueduct System as anticipated under the Proposed Action provides a significant cost avoidance benefit to the County of Maui because the costs of developing new wells is significant. There are also beneficial agricultural and fiscal impacts related to the continued water service to the Upcountry Maui Water System. It is estimated that under the Proposed Action approximately 1,510 acres of land in Upcountry Maui would be farmed by 2030, generating crops sales and new jobs.

Moreover, the proposed Water Lease will ensure that the EMI Aqueduct System, which enabled the cultivation of naturally non-arable lands in Central Maui, will be maintained to continue to serve the community, continue Maui's rich agricultural heritage, and to enhance the sustainability and diversity of Maui's economy. Mahi Pono's objective is to transition as much of the former sugarcane land as possible to diversified agriculture. Under the Proposed Action, the utilization of waters delivered from the EMI Aqueduct System will be an essential element to the success of any such diversified agricultural pursuits. Several benefits arise from proposed diversified agriculture in Central Maui. At full implementation and operation, the Mahi Pono farm plan is projected to generate more than 338 pounds per year of crops, generating \$155.9 million per year in annual food sales and \$329.5 million per year in combined direct and indirect sales. Pastures will support some 7,300 cow-and-calf animal units, producing over 4,300 calves per year and together with crop sales will result in total farm sales of about \$160.7 million per year. The Mahi Pono farm plan is also anticipated to create some 790 jobs on-site and another 350 indirect jobs for a total payroll of \$45.3 million per year. This is projected to support 2,550 Maui residents and generate \$4.5 million per year in State revenues through taxes. Diversified agriculture will increase the amount of local food production and enhance Hawai'i's food security. The Mahi Pono farm plan also includes a utility scale renewable energy component that will further Hawai'i's goals of having 100% renewable energy by 2045. Diversified agriculture in the 30,000 acres in Central Maui will also keep the fields open and green, which is something many view as beneficial, and is consistent with State and County planning and zoning.

The amount of water available through the Water Lease will be limited by the IIFS established under the CWRM D&O. Therefore, the cumulative effect of the Water Lease includes the implemented CWRM D&O.

- The CWRM ordered that all diversions on the following streams cease to primarily allow for all water to flow to the taro growing areas or for community and non-municipal domestic uses: Honopou, Huelo (Puolua), Hanehoi, Pi'ina'au, Palauhulu, Waiokamilo, Wailuānui, Waiohue, West Wailuāiki,<sup>3</sup> and Makapipi. (CWRM D&O, at 268-269). All diversions for these streams are required to be modified so that no out of watershed transfers will occur from these streams, which will have uninterrupted free flowing water to the communities that depend upon them. It was not the CWRM's intent to regulate where and how much water will be used for traditional kalo agriculture or how the water will be apportioned amongst the kalo lo'i. The CWRM's approach does not automatically set precedents for other areas, but provides a model of water use that integrates traditional culture with modern natural resource management (CWRM D&O, Conclusions of Law (COL) 138-145).
- The CWRM ordered full and partial restoration of streams it concluded to have the potential to benefit greatly from the restoration of flow to 64% of the median base flow (BFQ<sub>50</sub>), which generally represents the flow necessary to restore 90% of the habitat in a stream (H<sub>90</sub>), based on the biological diversity and habitat that already exists. Restoration of these streams (Pi'ina'au, Wailuānui, Honomanū, Waikamoi, Nua'ailua, East Wailuāiki, Kopiliula, and Waiohue) was ordered to allow the stream species to flourish and reproduce, benefitting not only the natural environment but also allowing for better opportunity for the exercise of traditional and Hawaiian right (CWRM D&O, COL 131). -
- The CWRM concluded that West Wailuāiki (that was ordered for full restoration) presents a unique research opportunity to collect valuable information regarding the impact of full restoration of a stream versus habitat restoration (H<sub>90</sub>). East Wailuāiki (that was ordered for H<sub>90</sub> restoration) and West Wailuāiki lie in close proximity to each other and have similar biological values and similar habitat biota. Therefore, the CWRM intends for these two streams to be studied in the future in combination with one another to see the impact, if any, of full restoration versus habitat restoration (CWRM D&O, COL 135).
- Honomanū Stream, which was ordered for H<sub>90</sub> restoration above Hana Highway, is a gaining stream from above the Lower Kula Ditch to Spreckles Ditch. Below the Spreckles Ditch it becomes a losing stream most likely as a result of the diversion. Honomanū Stream, despite having several diversions on it, has a high biological rating with a potential for high natural habitat gains with the restoration of flow to the dry reaches. Thus, the CWRM concluded that Honomanū Stream should have full streamflow restoration below

---

<sup>3</sup> West Wailuāiki was ordered to be fully restored because it presented a unique research opportunity to collect information on full restoration vs partial (H<sub>90</sub>) restoration of nearby East Wailuāiki Stream which has similar biological values and similar habitat and biota.

the Lower Kula Ditch diversion, which provides water for the MDWS system that is used for domestic and agricultural uses. (CWRM D&O, COL 136).

- Various streams within the License Area have low biological ratings and or do not have the potential to improve drastically with increased flows. These streams were set at connectivity flow which is twenty percent (20%) of the instream flow (CWRM D&O, COL 30). Streams that are set at connectivity flow are: Kapā'ula, Pa'akea, Pua'aka'a, Puohokamoa, Ha'ipua'ena, Nua'ailua, and Hanawī. (CWRM D&O at 268-269). None of these streams have registered diversions for taro cultivation nor is there taro cultivation known to occur on these streams (CWRM D&O, COL 147).
- The CWRM acknowledged that in the context of a proceeding to set IIFS, it does not have the authority to determine how much water may be used for noninstream use for municipal and agricultural uses. That authority lies with the BLNR in issuing a water lease pursuant to HRS § 171-58, subject to the IIFS set by the CWRM. (CWRM D&O, COL 148). Recognizing that the noninstream uses, especially municipal use, are valued uses, the CWRM set the IIFS to allow the MDWS to continue to divert water through its Upper and Lower Kula Pipelines. (CWRM D&O, COL 149). In not requiring full restoration of all streams, the CWRM has allowed some streams to continue to be diverted so that the BLNR may continue to license the diversion of water not needed to meet the IIFS from those streams for noninstream use. The available water would also include freshets and stormwater which are not included in the calculation of the IIFS. (CWRM D&O, COL 150).
- The CWRM recognized that the EMI Aqueduct System remains a valuable asset that delivers noninstream public trust benefits, such as drinking water, as well as other reasonable and beneficial uses. The reduction in diversions does not, by itself, compromise the structural integrity of the EMI Aqueduct System so long as it continues to be maintained as a single coordinated system. The CWRM considered factors that contribute to the operational capacity of the existing EMI Aqueduct System by allowing some water diversions from streams in the higher elevation eastern portion of the watershed. (CWRM D&O, COL 151).

The diversion of surface waters from the License Area in East Maui to the agricultural fields in Central Maui under the Proposed Action, as well as delivery water to the MDWS to service Upcountry Maui and Nāhiku, would not involve the construction of any new facilities, hence, it is not anticipated that there would be any unavoidable impacts or probable adverse effects. Past access into the License Area to construct the EMI Aqueduct System may have resulted in the inadvertent introduction of invasive species. In the future, with continued access for maintenance of the EMI Aqueduct System, the possibility of inadvertently introducing additional invasive species remains.

In the Proposed Action, the amount of water that can be conveyed by the EMI Aqueduct System will be limited to the amount available after compliance with the CWRM D&O. The CWRM D&O limits the amount of water that can be diverted, particularly when streams in the License Area are

naturally running low during seasonally dry weather conditions. Hence, the amount of water that can be diverted during dry weather conditions would be substantially less than when sugar was being cultivated. As a result, dependence on groundwater resources during such conditions may increase and/or water conservation measures may be required. Future climate change could also exacerbate the frequency and length of periods of low rainfall.

The Water Lease will authorize the use of diverted surface water, resulting in certain streams having less flow than under natural conditions. However, the Water Lease will also be subject to the CWRM D&O, which identified the streams most important for biological habitat purposes and mandated certain minimum flows to support those streams. As such, the biological impacts of the Water Lease are far less than the impacts that were in place at least since the time of the completion of the EMI Aqueduct System (in 1923), if not even earlier, e.g. the completion of the first portion of the EMI Aqueduct System in 1878.

Additionally, Mahi Pono's proposed agricultural operations include a high-efficiency irrigation system to reduce water usage. Therefore it is anticipated to use less water than what was previously used during sugarcane operations, thereby leaving more water in the streams. However, by using less surface water to irrigate the Central Maui agricultural fields, it is expected that there will be a lower level of groundwater recharge to the region's groundwater aquifers as discussed in Section 4.2.2. Consequently, the lower level of groundwater recharge in combination with periods of lower rainfall, could result in lower levels of groundwater supply in the Central Maui aquifers. Beneficial impacts to the soils in Central Maui are expected as they are improved through the removal of volunteer (i.e., rogue) sugarcane and weeds, and related soil preparations for diversified agriculture. These preparations include the application of effective micronutrients, plastic removal, pH adjustments, and the application of organic matter as discussed in Section 4.1.2.

### **Mitigation Measures**

With regard to the maintenance of the EMI Aqueduct System, when maintenance activities are undertaken within the License Area in pristine areas, such as on cliffsides, near waterfalls, or in other native species dominated areas, the following avoidance and minimization measures will be employed:

- A qualified biological monitor should be on site to ensure that no listed or candidate species are impacted.
- The monitor should have familiarity with the plants of the area, including special-status species, familiarity with natural communities of the area, including special-status natural communities, experience conducting floristic field surveys, and experience with analyzing impacts of development on native plant species and natural communities
- To avoid the introduction or transport of new invasive plant species into more pristine portions of the License Area during EMI Aqueduct System maintenance activities, all equipment and vehicles arriving from outside the License Area should be washed and inspected prior to any maintenance activities on cliff sides, near waterfalls, and in other native species-dominated areas in the License Area. Such washing and inspecting should be done at a designated location.
- Construction materials arriving from outside Maui should also be washed and/or visually inspected (as appropriate) for excessive debris, plant materials, and invasive or harmful non-native species (plants, amphibians, reptiles, and insects). When possible, any raw

materials used in maintenance activities should be purchased from a local supplier on Maui to avoid introducing non-native species not present on the island. Inspection and cleaning activities should be conducted at a designated location. The inspector must be a qualified botanist/entomologist able to identify invasive species that are of concern relevant to the point of origin of the equipment, vehicle, or material.

Mahi Pono will clear the former sugarcane fields in Central Maui to transition to a diversified farm operation. Applicable BMP and erosion control measures will be implemented to ensure no adverse impact to the existing geology and topography. Once diversified farming commences, appropriate BMP will be used to comply with applicable State Water Quality Standards as specified in Hawai‘i Administrative Rules (HAR) , Chapter 11-54 and HAR, Chapter 11-55 Water Pollution Control, Department of Health. The proposed structures to support Mahi Pono’s agricultural operations will obtain all applicable permits and approvals for site preparation and building construction, including the National Pollutant Discharge Elimination System permit for the management of storm water during construction.

When water service is provided to the planned 262-acre expansion of the KAP, grading and grubbing work prior to cultivation will disturb soils but with intent of facilitating cultivation and to conserve soil and water. The County will be responsible for complying with all applicable permit requirements.

The Cultural Impact Assessment (CIA), prepared by Cultural Surveys Hawai‘i, Inc., suggests that cultural informants may have an unclear understanding of how the CWRM D&O and the awarding of the Water Lease may affect cultural resources and practices. However, it should be acknowledged that due to the reluctance of many to participate in the CIA consultation, much of the information relied upon in the CIA is documentation that was provided to the CWRM during the IIFS proceedings, and therefore is information that was given some years before the issuance of the CWRM D&O. Nevertheless, the CIA provides recommendations, some of which are addressed through the preparation of this DEIS

- A qualified professional should address questions or clarification on stream flow, water diversion, and climate statistics.
  - To the extent of analyzing the Proposed Action, the DEIS addresses these concerns in Chapters 2 (Section 2.1.2) and Chapter 4 (Section 4.3.1).
- A biologist or similar qualified professional should provide an assessment of the impacts of water diversion to indigenous freshwater species (*‘ōpae*, *‘o‘opu*, and *hīhīwai*) within the License Area.
  - The implementation of the IIFS under the CWRM D&O has the potential to reduce or eliminate this cultural impact. Furthermore, Trutta Environmental Solutions, LLC and SWCA Environmental Consultants, Inc. prepared reports assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. Moreover, the two reports are appended to the DEIS (See Appendix A and Appendix C).
- A botanist, ethnobotanist, or similar qualified professional should provide an assessment of the ideal conditions of water flow and water temperature needed for kalo growth in comparison to the current water flow and water temperature of impacted areas in order to understand and address the stated impact.



- The implementation of the IIFS under the CWRM D&O has the potential to reduce or eliminate this cultural impact
- Any personnel involved in access, maintenance, or any other related activities within the License Area should be informed of the possibility of inadvertent cultural finds, including human remains. In the event that any potential historic properties are inadvertently discovered within the License Area, these discoveries should be reported immediately to State Historic Preservation Division (SHPD). In the event that *iwi kūpuna* and/or cultural finds are encountered, consultation with lineal and cultural descendants of the area is also recommended.

The Social Impact Assessment (SIA), prepared by Earthplan, recommends measures intended to establish an ongoing working relationship between the community, Mahi Pono and EMI, and related public agencies, as well as work towards resolution with East Maui communities.

The SIA recommends that clearly defined interest groups, or stakeholder groups are established that include geographic communities, environmental, agriculture and business interests, and public agencies. Each group would be encouraged to reach consensus on their own needs, concerns, opportunities and possible solutions.

These groups should then be equitably represented in a “Core Working Group” that would serve as a forum for exchanging ideas and collaborative efforts, as well as to provide feedback and suggestions to Mahi Pono. Each member of the Core Working Group would be expected to reach out to their own networks to extend the discussion beyond the Core Working Group. While there would likely be strong differences in perspectives and opinions, the Core Working Group would need to find ways to establish core principles, common ground and manageable solutions.

The fundamental value that will help bring people to the same table is trust. Use of the water through the EMI Aqueduct System for sugarcane cultivation has elicited skepticism and distrust over many decades. Developing trust among the various groups is expected to be challenging, but being open about intent, plans, and activities can begin to establish credibility and open the door to dialogue.

Additionally, for the Ke‘anae – Wailuānui community to move past historical impacts, there needs to be established a point of departure. Mitigation needs to go beyond the physical restoration of streams and needs to address the social context and include apology and reconciliation. This needs to be done within a cultural foundation that binds the community together, and key players, including Mahi Pono, public agencies and elected officials. The manner and forum for this process should be defined by the cultural leaders integral with the process.

### **Compatibility with Land Use Plans and Policies**

The relationship of the Proposed Action to potentially applicable land use plans and policies was evaluated. It was determined that the Proposed Action is supportive or consistent with numerous applicable plans and policies. The following plans were evaluated:

- The Hawai‘i State Plan, Chapter 226, HRS
- State Functional Plans
  - Agricultural State Functional Plan
  - Conservation State Functional Plan
  - Education State Functional Plan
  - Employment State Functional Plan
  - Energy State Functional Plan



- Health State Functional Plan
- Higher Education Functional Plan
- Historic Preservation State Functional Plan
- Housing State Functional Plan
- Human Services State Functional Plan
- Recreation State Functional Plan
- Tourism State Functional Plan
- Transportation State Functional Plan
- The State Land Use Law, Chapter 205, HRS (including the provisions regarding Important Agricultural Lands)
- Forest Reserves, Chapter 183, HRS and related administrative rules
- Natural Area Reserves, Chapter 195, HRS and related administrative rules
- The Hawai'i Coastal Zone Management Program, Chapter 205A, HRS
- Governor Ige's Sustainability Initiative
- The Hawai'i Environmental Policy Act, Chapter 344, HRS
- The State Water Plan
  - Draft Maui Island Water Use and Development Plan (March 2019)
- The Maui Countywide Policy Plan
- The Maui Island Plan
- Maui County Zoning
- Maui Island Community Plans
  - Hāna Community Plan
  - Pā'ia-Ha'ikū Community Plan
  - Makawao-Pukalani-Kula Community Plan
  - Wailuku-Kahului Community Plan

### **Listing of Permits and Approvals**

The Proposed Action constitutes the issuance of a Water Lease after public auction by the DLNR/BLNR. Thus, the BLNR approval is necessary to implement the Proposed Action. While it is anticipated that the terms of the Water Lease would govern any modifications to the existing EMI Aqueduct System, there are no immediate plans for the construction of any additional facilities that would expand the EMI Aqueduct System within the License Area. Any work on the EMI Aqueduct System would be limited to repair and maintenance activities. Consequently, no additional permits and approvals are anticipated to be required to implement the Proposed Action.

Should the Water Lease be issued according to the Proposed Action, surface water will become available for the various domestic and agricultural uses. This would, in turn, will lead to construction activities such as for expanding the KAP and building facilities in support of diversified agriculture in Central Maui. Such construction would be subject to various permits and approvals, depending on its location, proposed use and type of construction activity involved.

### **Irretrievable and Irreversible Commitments of Resources**

The issuance of the Water Lease will not result in the irreversible use of the water resource because the Water Lease will be for a term, and not perpetual. Additionally, the Water Lease will be subject to the IIFS and the reservation in favor of the DHHL, meaning that the water resource will not be exclusively and permanently committed to the Water Lease. For the term of the Water Lease the water resource will be available to the identified uses, such as providing water to the agricultural fields in Central Maui and continuing to provide water to the MDWS for Upcountry Maui and Nāhiku. To the extent such uses are not made, the water will not be diverted and will remain in the streams.

The impacts of use of the surface water resources associated with the Proposed Action will be offset by the considerable economic, social, and environmental benefits to the residents of the region, the County of Maui and the State of Hawai‘i that would be supported by the issuance of the subject Water Lease, as discussed in Section 4.7.

The Water Lease does not involve new construction within the License Area. The operation of the EMI Aqueduct System does not require the use of nonrenewable resources because the transmission of water through the EMI Aqueduct System is conducted through gravity rather than through water pumping stations that require the use of nonrenewable energy sources for operations. The diversified agricultural operations planned for the Central Maui agricultural fields will involve the commitment of some resources for the modifications of the fields' irrigation system and the construction of fencing, agricultural operating facilities and potentially renewable energy facilities. Building materials (concrete, wood, metal, etc.) will be used along with energy resources related to the construction of those items. The use of such fuels and resources is not expected to be significant and the use of the Central Maui agricultural fields for diversified agriculture is considered to be beneficial because there would be considerably more green open space in Central Maui in the form of farms and irrigated pasture, a reduction in wildfires, and approximately three times as much food production, including greater food self-sufficiency and more exports, should the Water Lease be issued.

The implementation of the Proposed Action is consistent with existing and adjacent land uses, and would not prevent or curtail any uses allowable under applicable land use policies or controls. The amount of water allowed to be diverted by the Water Lease will be significantly less than the amount diverted for sugar cultivation. Mahi Pono's farm plan is based on the amount of water that will be available through the Water Lease. However, if more water were available, more crop options would also be available. The issuance of the Water Lease should not curtail the use and access to adjacent lands (e.g., for recreation, environmental research, etc.) as the EMI Aqueduct System has been in place for over 100 years.

The implementation of the Proposed Action is not associated with activities that could directly trigger potential environmental accidents, nor pose a significant risk for potentially triggering environmental accidents. Moreover, it is not anticipated that there would be any unavoidable impacts or probable adverse effects. The EMI Aqueduct System has been operating for over 100 years, and issuance of the Water Lease should ensure contained operations and maintenance of the EMI Aqueduct System.

### **Relationship Between Local Short-term Uses of Humanity's Environment and the Maintenance and Enhancement of Long-Term Productivity**

The Proposed Action is the issuance of a Water Lease for a 30-year commitment of government-owned water collected by the EMI Aqueduct System from the License Area for various uses, including domestic and agricultural uses served by the MDWS in Upcountry Maui, the KAP and the Nāhiku community in East Maui; diversified agricultural operations on approximately 30,000 acres in Central Maui; and, preservation of the EMI Aqueduct System. While the Water Lease would be a new commitment of government-owned water diverted through the EMI Aqueduct System, the Water Lease essentially continues an activity that has been in place for over a century. In this new commitment, however, the amount of government-owned water that may be diverted out of the License Area has been limited by the CWRM D&O.

Considering the Water Lease as a short-term use of humanity's environment, the beneficial gains over the term of the Water Lease include the benefits accrued to the various recipients of the water for domestic, commercial and agricultural uses. The Water Lease will maintain the lifestyle and livelihood of those who receive their water through the MDWS in Upcountry Maui and Nāhiku. In Central Maui the Water Lease will provide irrigation water for Mahi Pono to develop diversified agriculture on former sugar land, with associated economic gains from the sale of crops, job creation and increased local food sustainability.

As previously stated, the Water Lease will be limited by the requirements under the CWRM D&O. Through the CWRM D&O, CWRM ordered full restoration of ten streams for primarily taro growing areas for irrigation and for community and non-municipal domestic uses. Five "habitat streams" were ordered to have 64% of their BFQ<sub>50</sub> restored, which generally represents the H<sub>90</sub>, based on the biological diversity and habitat that already exists. Seven were ordered to have 20% of their BFQ<sub>50</sub> restored to provide connectivity for migrating stream fauna. While the Water Lease would have a term of 30 years, the IIFS requirements under the CWRM D&O and the associated benefits to the kalo growing areas, communities and environment, would not be affected by the Water Lease term and if not otherwise revised by the CWRM, the IIFS requirements will continue indefinitely.

Without the Water Lease, even if EMI could find it economically feasible to continue maintaining the EMI Aqueduct System to divert non-governmental water for diversified agriculture in Central Maui, there may not be enough water to allocate much or any to the MDWS. This lack of water would exacerbate the effects of drought when other surface water sources are unreliable for the KAP and the Nāhiku, this could eliminate their primary source of water. Insufficient water delivered to the County through the EMI Aqueduct System could have significant effects on health and safety of those who currently rely on that water delivery.

Without active, irrigated agriculture in the Central Maui fields, natural arid conditions would return, making the Central Maui fields susceptible to wind erosion and airborne dust, which could create a nuisance or potential health hazard under windy conditions. Dry windy conditions would also increase the potential for wildfires.

### **Unresolved Issues**

Unresolved issues for the Proposed Action have to do with the steps that must be completed before the BLNR can issue the Water Lease.

The Water Lease must accommodate a reservation in favor of the DHHL, but that amount has not yet been determined and approved by the CWRM, and the DHHL's timing for calling upon its reservation is not known. Similarly, the content and parameters of a watershed management plan are not known at this time. However, both the DHHL reservation and the watershed management plan will be addressed before the BLNR can issue the Water Lease.

Other unresolved issues include the requirement for the BLNR to set the upset rental through appraisal of fair market value, and the requirement for the Water Lease disposition to be by public auction. As such, at this point the amount of rental payment that will be required under the Water Lease, the identity of the awarded lessee, and the specific terms of the Water Lease are unknown, but these issues should be resolved prior to the issuance of the Water Lease.

## **Consultation**

Various agencies, organizations, and individuals were consulted in scoping the DEIS, including scoping that took place prior to the preparation of the EISPN, and during the 30 day public comment period on the EISPN in the form of formal written consultation pursuant to HRS Chapter 343 and HAR Title 11, Chapter 200. Consultation also included meetings with elected officials, agencies, and stakeholders including two public scoping meetings held on Maui during the 30 day EISPN public comment period. A list of those who participated in the consultation process is provided in Chapter 9 and the comments, including the transcripts of the public meetings, and responses are reproduced in Appendix J. Moreover, those who submitted public comments on the published EISPN, and the corresponding responses are reproduced in Appendix M.

---

# **Chapter 1:**

## Purpose and Need of the Proposed Action





## **1. STATEMENT OF PURPOSE AND NEED OF THE PROPOSED ACTION**

### **1.1 Purpose of the Proposed Action**

The purpose of the Proposed Action (the Water Lease) is to enable the Board of Land and Natural Resources (BLNR)-awarded lessee the right, privilege and authority to enter and go upon State-owned lands for the purposes of developing, diverting, transporting and using government-owned waters. The requested Water Lease would allow the use of government-owned waters from the License Area (approximately 33,000 acres which includes lands within Nāhiku, Ke‘anae, Honomanū, and Huelo) through the East Maui Irrigation Company, LLC (EMI) Aqueduct System. Use of that surface water would allow the continued provision of water to enable approximately 30,000 acres of farmland in Central Maui to remain in agriculture. The Water Lease would also allow the continuation of a supply of water to the County of Maui Department of Water Supply (MDWS), which in turn provides water for domestic and agricultural water needs in Upcountry Maui, including agricultural users at Kula Agriculture Park (KAP), and the planned 262-acre KAP expansion, as well as for the Nāhiku community, which draws up 20,000 to 45,000 gallons per day, dependent on weather, directly from the EMI Aqueduct System.

The MDWS’s Upcountry Maui Water System is the second largest in the County. It services the communities of Kula, Pukalani, Makawao Ha‘ikū, Hali‘imaile, Waiakoa, Kēōkea, Waiohuli, ‘Ulupalakua, Kanaio, Olinda, ‘Ōma‘opio, Kula Kai, and Pūlehu. The Upcountry Maui Water System is estimated to serve over 35,000 people, and the service area includes several businesses, churches, Kamehameha Schools, Hawaiian Homelands and government facilities. The County anticipates that the population served by the Upcountry Maui Water System will grow to approximately 43,675 by 2030.

The primary purpose of the Water Lease is to continue to provide water to service agricultural and domestic purposes. A need for the Water Lease is the lack of practicable alternative sources of water and the lack of alternative infrastructure to meet these demands (Draft Maui Island Water Use and Development Plan, March 2019).

Moreover, the proposed Water Lease will ensure that the EMI Aqueduct System, which enabled the cultivation of naturally non-arable lands in Central Maui, will be maintained to continue to serve the community, continue Maui’s rich agricultural heritage, and to enhance the sustainability and diversity of Maui’s economy. In December of 2018 Alexander & Baldwin (collectively EMI and Alexander and Baldwin will be referred to as “A&B”) sold the majority of its former sugarcane lands in Central Maui to Mahi Pono.<sup>1</sup> Mahi Pono’s objective is to transition as much of the former sugarcane land as possible to diversified agriculture. Under the Proposed Action, the utilization of waters delivered from the EMI Aqueduct System will be an essential element to the success of any such diversified agricultural pursuits in Central Maui.

### **1.2 Objectives of the Proposed Action**

In general, the objectives of the issuance of the Proposed Action (Water Lease) are:

- Preserve and maintain the EMI Aqueduct System, including its access roads
- Continue to meet domestic and agricultural water demands in Upcountry Maui

---

<sup>1</sup> MP Central A, LLC, MP Central B, LLC, MP CPR, LLC, MP East A, LLC, MP East B, LLC, MP West, LLC and MP EMI LLC and acquired former sugar cane and watershed lands, including the Central Maui agricultural fields, from A&B in December 2018. Agricultural operations are centralized under Mahi Pono, LLC. All such entities are hereinafter referred to, whether individually or collectively, as “Mahi Pono”.

- Continue to provide water for agricultural purposes in Central Maui (specifically, to transition fields previously used for sugar cane cultivation into new, diversified agricultural uses)
- Continue to serve community water demands in Nāhiku

### **1.3 Background - Historical Perspective**

#### **1.3.1 The EMI Aqueduct System**

For more than a century, the East Maui watershed forests have provided water for off-stream uses through a surface-water diversion system, known as the EMI Aqueduct System. The system has been used to collect and transport water to meet consumptive needs and enable economic opportunities. The EMI Aqueduct System is owned and operated by the EMI. EMI was previously a wholly owned subsidiary of A&B. In February, 2019, MP EMI, LLC, became a co-owner of EMI. In addition to becoming the co-owner of the EMI Aqueduct System, as noted above, Mahi Pono acquired former sugarcane and watershed lands, including the Central Maui agricultural fields, from A&B in December 2018. Agricultural operations are centralized under Mahi Pono, LLC.

The EMI Aqueduct System was constructed in phases, beginning in the 1870s and extending to its completion, as it currently stands, in 1923. It consists of approximately 388 separate intakes, 24 miles of ditches, and 50 miles of tunnels, as well as numerous small dams, intakes, pipes, 13 inverted siphons and flumes. The EMI Aqueduct System collects surface stream water from approximately 50,000 acres of land (Collection Area), of which approximately 33,000 acres are owned by the State of Hawai'i (which includes lands within Nāhiku, Ke'anae, Honomanū, and Huelo) (License Area), and the remaining approximately 17,000 acres which are privately owned (See Figure 1-1).

Figure 1-1 illustrates the EMI Aqueduct System overlaid on the Department of Land and Natural Resources (DLNR) Division of Aquatic Resources (DAR) geographic information system (GIS) data obtained from the State Office of Planning's GIS download portal. An electronic drawing of the EMI Aqueduct System was georeferenced by Akinaka & Associates, Ltd. (Akinaka) to depict major diversions on East Maui streams shown on a United States Geological Survey (USGS) base layer map obtained from ESRI.<sup>2</sup> Due to the complexity of the EMI Aqueduct System and the level of detail shown on the map, not all of the minor diversions could be associated with a stream or tributary. The stream names shown are from the DAR GIS database but a few of those stream names may differ from how some East Maui residents may refer to them. Moreover, certain streams that were identified during certain proceedings before the Commission on Water Resources Management (CWRM)<sup>3</sup> do not have associated GIS data and therefore could not be precisely located on the map.

---

<sup>2</sup> ESRI is an international supplier of geographic information system software, web GIS and geodatabase management application.

<sup>3</sup> Petitions to Amend Interim Instream Flow Standards (IIFS) for numerous East Maui streams were filed with CWRM in 2001, and concluded with CWRM's issuance of its Findings of Fact, Conclusions of Law and Decision and Order in CCH-MA 13-01, on June 20, 2018 (CWRM D&O), which established the Interim Instream Flow Standards for numerous streams.

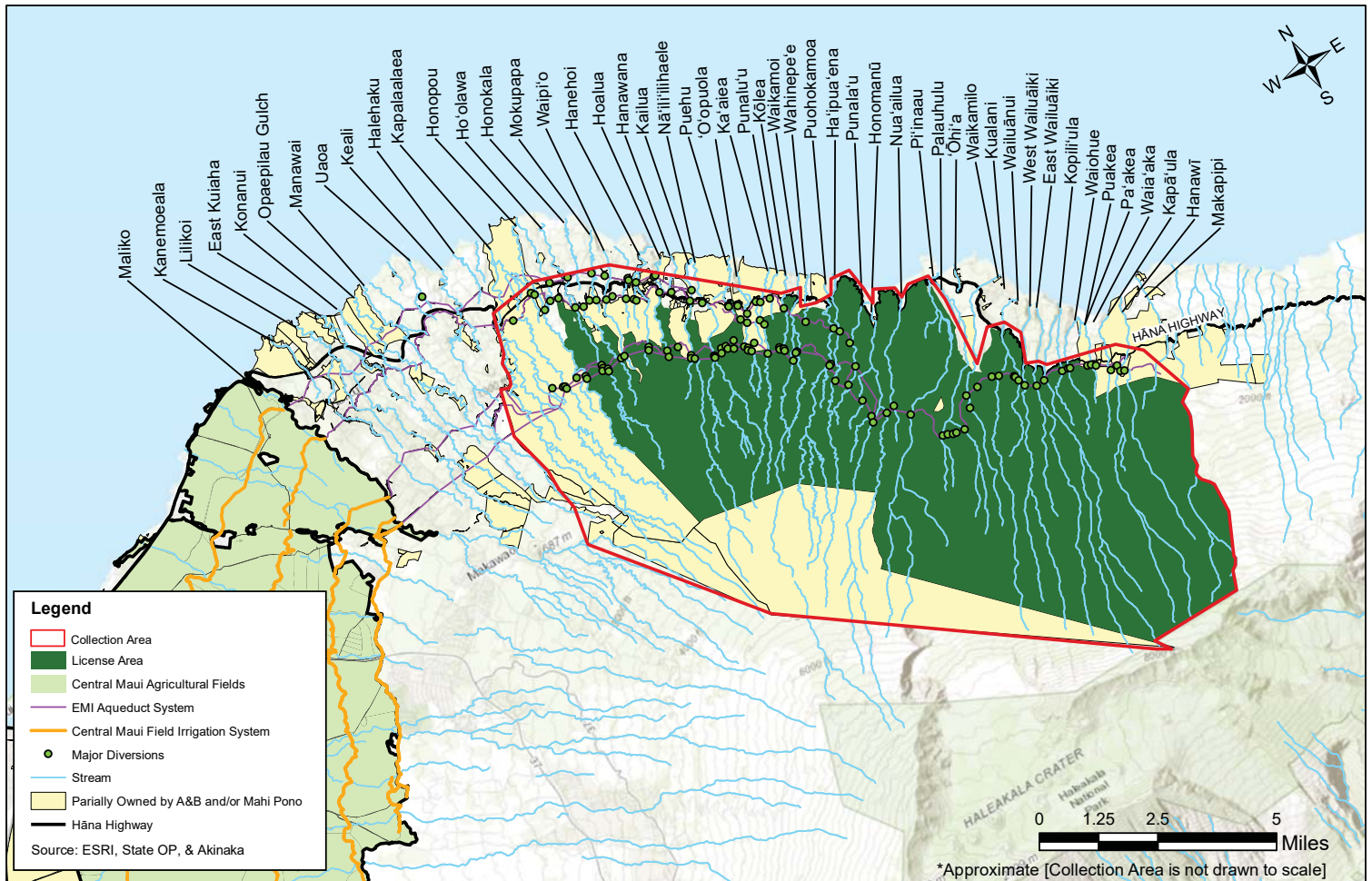


FIGURE 1-1

## EMI AQUEDUCT SYSTEM COLLECTION AREA

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



Kualani (aka Hāmau) and Waia'aka streams do not have associated GIS data, but were identified in the CWRM proceedings. Puakea stream, which was recognized in the Instream Flow Standard Assessment Report for Hydrologic Unit 6061, Pa'akea, December 2009, is within the License Area but was not identified in the CWRM Decision and Order (D&O) also does not have GIS data. Therefore, the approximate location of Kualani, Waia'aka, and Puakea streams, based on the geographically sequential listing of stream names by CWRM, is shown in Figure 1-1.<sup>4</sup> The depiction of the EMI Aqueduct System shows the general alignment of the various ditches comprising the EMI Aqueduct System and their major diversions, which were georeferenced by Akinaka to coincide with the streams shown on the USGS base layer map, where possible. In some cases, the diversions may be on smaller tributaries that do not appear in the DAR GIS data.

### **1.3.2 History of Stream Diversion in East Maui**

Built at a time when Hawai'i was still an independent kingdom, the EMI Aqueduct System was the first of its kind, both in the Pacific and on the West Coast of the United States. The initial construction of the first section of the EMI Aqueduct System by Samuel T. Alexander and Henry P. Baldwin under the name of the Hamakua Ditch Company began the 1870s, was named the Hamakua Ditch (considered Old Hamakua Ditch now). This began the engineering trend of catchment ditches that would later fuel the sugar industry on Kaua'i, O'ahu, Hawai'i, and Maui, making sugar the major economic sector of Hawai'i for over a century. Over the course of the ensuing decade, A&B's plantation was incorporated as the Pā'ia Plantation and included Hāli'imaile Plantation (also known as Grove Ranch), East Maui Plantation, and Seaside Farm. The first license granted by the Kingdom of Hawai'i to A&B and their partners in the Hamakua Ditch Company to divert water from East Maui lasted until September 30, 1898 – approximately 20 years following the completion date of the first ditch (Hamakua Ditch).

In 1876, Claus Spreckels, a sugar magnate and industrialist, closely followed the efforts of Samuel T. Alexander and Henry P. Baldwin. It was at this time that Spreckels conceived of an irrigation project inspired by Alexander and Baldwin's work on the Hamakua Ditch, one that would serve to irrigate and transform the dry and arid Central Maui Plains into thousands of acres of rich sugarcane. The second addition to the EMI Aqueduct System was the Spreckels Ditch, also known as the Haiku Ditch, constructed between 1879 and 1880. The lease granted to Spreckels by the Kingdom of Hawai'i gave him rights to all water not already in use by September 30, 1878, the same date as the deadline for the completion of the Hamakua Ditch. Taking advantage of his unrestricted access to all streams not currently under collection, the Haiku Ditch was twice as long, three times as large, carried 50 percent more water than the Hamakua Ditch, and stretched from Honomanū Stream to the Kīhei boundary (Wilcox 1996). The ditch was 30 miles long and could deliver up to 60 million gallons per day (mgd), costing nearly half a million dollars by the time it was completed (American Society of Civil Engineers (ASCE), 2001). The breadth and scale of this endeavor would redefine standards of water collection for the sugar industry in Hawai'i. The massive Haiku Ditch was the first developed by a foreign engineer named Herman Schussler, a trend that would continue for all future additions to the EMI Aqueduct System (Wilcox 1996). Schussler began construction on Center Ditch in 1898, Manuel Luis Ditch in 1900, and the Lowrie Ditch in 1899-1901 (ASCE 2001).

In 1898, Spreckels lost controlling interest of Hawaiian Commercial and Sugar Company (HC&S), to A&B. With the acquisition of HC&S, the two corporate partners gained control of the vast majority of the sugar lands on the island of Maui as well as the numerous irrigation systems

---

<sup>4</sup> It should be noted that Hanawana is referred to as Hanahana in the CWRM D&O.



that enabled their cultivation. Immediately upon acquiring HC&S, their partners started construction on the Lowrie Ditch, which started in the rainforests of Kailua in the Makawao District of Maui. The Lowrie Ditch had two sources, the first was a reservoir at Pāpa'a'ea that was fed by two five- to six-mile ditches, and the second was Kailua Stream where a diversion intercepted the source of the older Haiku Ditch and ran parallel to that ditch. The Lowrie Ditch was named after William J. Lowrie, manager of HC&S's plantation and mills at Spreckelsville. Work on the ditch system was primarily accomplished by a team of Japanese laborers, with contracting beginning in 1899 and construction concluding in late 1900. Upon completion, the Lowrie Ditch accounted for a 22-mile system, three quarters of which was open ditch, and had a total capacity of 60 mgd, and was capable of irrigating up to 6,000 acres. The Lowrie Ditch, by means of inverted siphons, ended at the 475-foot elevation, 257 feet above the Haiku Ditch.

The next undertaking for the Hamakua Ditch Company was the construction of the Koolau Ditch, which was built over a two year period from 1904-1905 by M. M. O'Shaughnessy. The Koolau Ditch extended the water collection system another 10 miles toward Hāna, around the Ko'olau Range to Makapipi. The Koolau Ditch accounted for 7.5 miles of tunnel and 2.5 miles of open ditch and flume. The thirty-eight tunnels that are part of the Koolau Ditch system were all dug out of solid rock by laborers employing hand-drills and were 8 feet wide and 7 feet high. In length, the tunnels averaged 1,000 feet; the shortest of which was 300 feet and the longest was 2,710 feet. A total of 4.5 miles of 6-inch-thick concrete lining was used in the tunnel. The Koolau Ditch was later turned over to EMI, a new business entity that succeeded the Hamakua Ditch Company. While the Koolau Ditch originally fed into the New Hamakua Ditch at Alo, it was connected to the Wailoa Ditch upon its completion in 1923. By the time the Wailoa Ditch was completed in 1923 it was the highest capacity channel in the entire network of the EMI Aqueduct System. The Koolau Ditch was connected to the new Wailoa section, being diverted away from the New Hamakua Ditch, and connected to a series of hydro-electric power plants on the north shore of Maui. The Wailoa Ditch ran parallel to, and above, the earlier New Hamakua and Kauhikoa Ditches (Wilcox 1996).

In 1938, the Territory of Hawai'i and A&B entered into an agreement intended to set the stage for competitive bidding when the existing water licenses expired. The 1938 agreement provides for the joint use of the EMI Aqueduct System, whereby both parties granted easements to each other for portions of the EMI Aqueduct System facilities that crossed their respective lands.

Another aspect of the agreement set forth the manner in which the Territory was to charge for water collected. The amount charged was to be in inverse relation to the distance between the source and the delivery point. In other words, the further the distance, the less the amount paid. The reasoning behind this approach was that the value of the water to the lessee declined as the cost of conveying the water rose. Thus, the government received less for Nāhiku water, which had to travel the greatest distance to Central Maui agricultural fields, than it did for water taken from the Huelo portion of the License Area, which was closer to the Central Maui agricultural fields.

The revolutionary changes that occurred in the second half of the 19th century – in East Maui as well as elsewhere in the Hawaiian islands – served as the backdrop for the rise in the commercial cultivation of sugar cane, and encapsulates the essence of the plantation-era culture of old Hawai'i which laid the foundation for the diverse socio-cultural environment that exists in the islands today.

The signing of the Reciprocity Treaty with the United States in 1875, which allowed Hawai'i to sell sugar to the United States on an unrestricted basis spurred Hawai'i based sugar planters to

increase production. This was accomplished by extending their plantings to lands far removed from natural water courses, and the import of migrant workers by the tens of thousands – workers who, at the end of their contracts, stayed on in the islands to grow rice, open shops, and fill other economic niches. Moreover, the challenge of moving water from the wet-side of an island to its dry-side became one of the dominant preoccupations of sugar industrialists of the Plantation Era, and was an effort unto itself that demanded the collaborative efforts of an increasingly diverse workforce. The industrialization of agriculture served as a catalyst for radical social, cultural, and economic change that the islands experienced over the course of the latter half of the 19th century, and much of the 20th century.

Over the course of the past several decades, the users of the EMI Aqueduct System have grown to include non-potable water service for agricultural uses at the KAP as well as potable water service through the MDWS to domestic and agricultural users in Upcountry Maui, as well to a portion of the Nāhiku community below Hāna Highway in East Maui.

### 1.3.3 Chronology of Water Lease and the Interim Instream Flow Standards

Since 1876, A&B, or its predecessors and affiliates, have been issued from the Kingdom, the Territory and then the State of Hawai‘i, various leases, agreements, licenses, and permits that authorized the development, diversion, transportation and use of government-owned water from streams in East Maui. The water leases were for the 33,000 acres owned by the Territory/State (License Area).

The original lease traces back to a September 13, 1876 license from the Kingdom of Hawai‘i. Subsequent leases have been governed by an agreement dated March 18, 1938 between the Territory of Hawai‘i and A&B. Over the course of the 20th Century, A&B retained the rights to the use of water from the License Area by being the successful bidder for water leases. The last long-term licenses were issued in the 1950s and 1960s, ultimately expiring in 1986. Since 1986, however, the BLNR has authorized holdover and/or annual revocable permits for the use of water, with the latest being approved on November 9, 2018.

On May 14, 2001, A&B requested that the State, pursuant to Hawai‘i Revised Statutes (HRS) Section 171-58, offer a long-term (30 year) lease at public auction for the right, privilege and authority to enter and go upon State-owned lands at Ko‘olau Forest Reserve and Hanawī Natural Area Reserve, Hāna and Makawao, Maui, for the purposes of developing, diverting, transporting and using government-owned waters. The requested lease would allow the use of government-owned waters from the License Area. The location of the approximately 33,000-acre License Area is on State-owned land identified by Tax Map Key (TMK) numbers in Table 1-1 and are illustrated in Figure 1-2.

Shortly after the request was made, the Coalition to Protect East Maui Water, Maui Tomorrow Foundation, and Nā Moku Aupuni O Ko‘olau Hui (Nā Moku) requested a contested case hearing on the lease matter, thereby delaying BLNR action. In recognition of the request for a contested case hearing, the BLNR deferred action on issuing a lease at public auction, and, in the interim, the BLNR approved a month-to-month holdover of the existing revocable permits.

| Table 1-1: License Area TMKs |             |      |
|------------------------------|-------------|------|
| Portion of                   | Tax Map Key | Area |

| License Area |  | (Approximate Acreage) |
|--------------|--|-----------------------|
| Nāhiku       | (2) 1-2-004:005,007 (por.)                         | 7,832                 |
| Ke‘anae      | (2)1-1-002:002                                     | 13,007                |
| Honomanū     | (2)1-1-001:044                                     | 3,381                 |
| Huelo        | (2)1-1-001:050, (2)2-9-014:001, 005, 011, 012, 017 | 8,753                 |

Separate and apart from the Water Lease process, the Native Hawaiian Legal Corporation (NHLC) on behalf of Nā Moku, Beatrice Kepani Kekahuna, Marjorie Wallet, and Elizabeth Lehua Lapenia<sup>5</sup> (hereafter collectively referred to as “Nā Moku”) filed with CWRM 27 Petitions to Amend IIFS for various East Maui streams located within the License Area.

The State Water Code (Code), Chapter 174C, HRS, provides that the CWRM may adopt IIFS on a stream-by-stream basis or a general Instream Flow Standard (IFS) applicable to all streams within a specified area to protect the public interest in the waters of the State. The CWRM initially set IIFS for all streams in Hawai‘i at their status quo condition as of June 15, 1988. In *In re Water Use Permit Applications*, 94 Hawai‘i 97, 148, 9 P.3d 409, 460 (2000), the Hawai‘i Supreme Court characterized that under the Code, “instream flow standards serve as the primary mechanism by which CWRM is to discharge its duty to protect and promote the entire range of public trust purposes dependent upon instream flows.” The Water Code defines an IFS as a “quantity or flow of water or depth of water which is required to be present at a specific location in a stream system at certain specified times of the year to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses.” (HRS § 171C-3).

At the time that NHLC filed the 27 Petitions, the IIFS for East Maui streams was as follows:

The Interim Instream Flow Standard for all streams on East Maui, as adopted by the commission on water resource management on June 15, 1988 shall be that amount of water flowing in each stream on the effective date of this standard, and as that flow may naturally vary throughout the year and from year to year without further amounts of water being diverted offstream through new or expanded diversions, and under the stream conditions existing on the effective date of the standard[.]

Hawai‘i Administrative Rule (HAR) § 13-169-44. This IIFS is often referred to as a “status quo IIFS.”

In considering a petition to amend an interim instream flow standard, the Code directs CWRM to “weigh the importance of the present or potential instream values with the importance of the present or potential uses of water for noninstream purposes, including the economic impact of restricting such uses.” HRS Section 171C-71(2)(D). The Code (HRS § 171C-3) defines “instream use” as:

---

<sup>5</sup> NHLC no longer represented Ms. Lapenia as of May 10, 2007



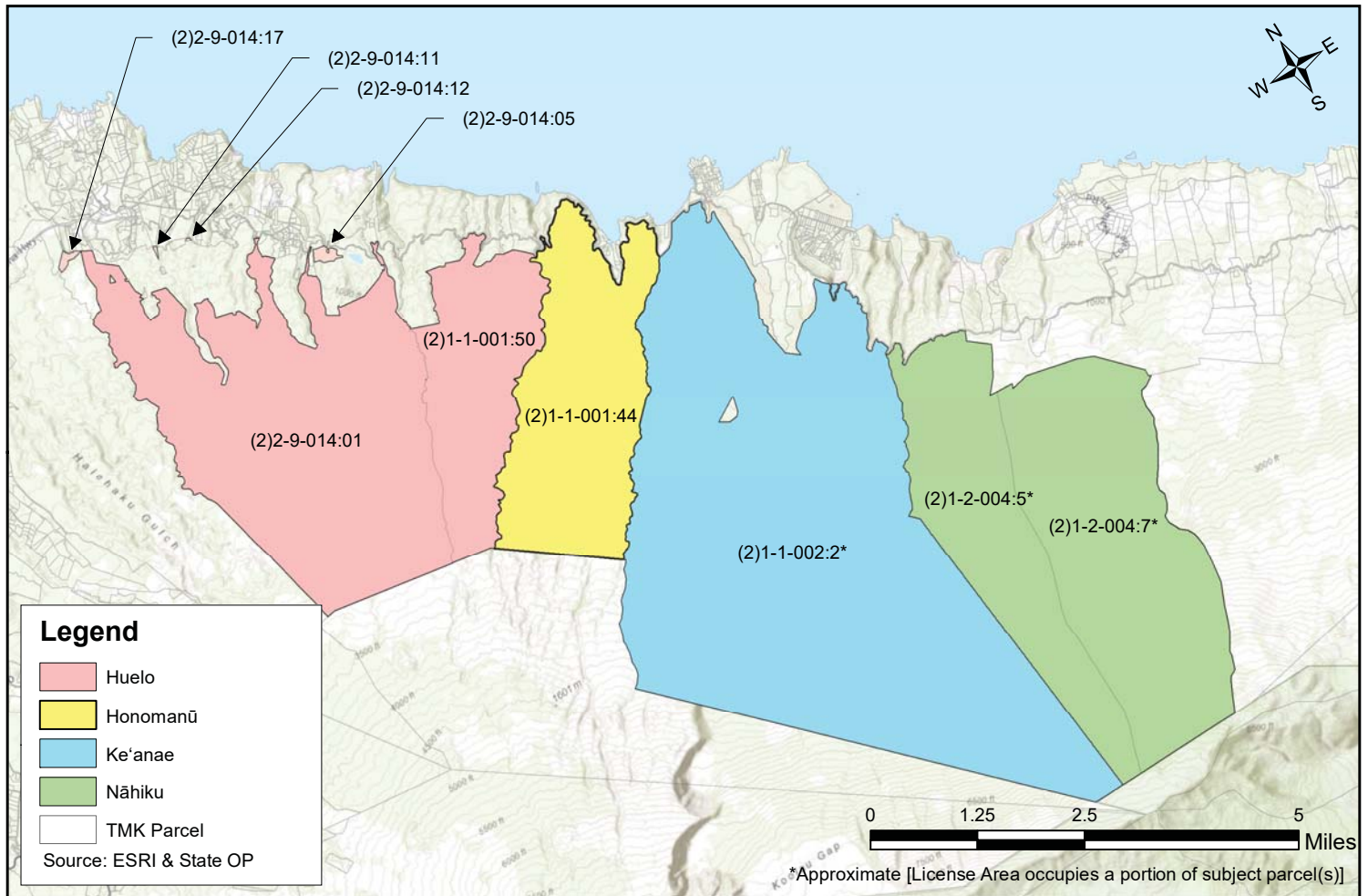


FIGURE 1-2

## TAX MAP KEYS OF LICENSE AREA

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



beneficial uses of stream water for significant purposes which are located in the stream and which are achieved by leaving the water in the stream. Instream uses include, but are not limited to:

- 1) Maintenance of fish and wildlife habitats;
- 2) Outdoor recreational activities;
- 3) Maintenance of ecosystems such as estuaries, wetlands, and stream vegetation;
- 4) Aesthetic values such as waterfalls and scenic waterways;
- 5) Navigation;
- 6) Instream hydropower generation;
- 7) Maintenance of water quality;
- 8) The conveyance of irrigation and domestic water supplies to downstream points of diversion; and,
- 9) The protection of traditional and customary Hawaiian rights.

If the IIFS for the 27 Petitioned streams were amended, the maximum amount of water that could potentially be diverted from these streams by the EMI Aqueduct System would change. On July 23, 2001, the CWRM agreed to focus its proceedings first on eight "Priority Streams" identified by NHLC, which were Honopou, Hanehoi, Waiokamilo, Kualani, Pi'ina'au, Palauhulu, and Wailuānui (consolidated with Waikani Waterfall, East and West Wailuānui Stream), and Puolua (Huelo) Stream, the tributary of Hanehoi Stream (Priority Streams) (CWRM D&O, Findings Of Fact (FOF) 2-3).

In cooperation with the CWRM, the USGS conducted a study (Gingerich, 2005) to assist in determining reasonable and beneficial noninstream and instream uses of surface water in Northeast Maui. These assessments were documented in various Instream Flow Standard Assessment Reports (IFSAR), which are compilations of the hydrology, instream uses, and noninstream uses related to a specific stream and its respective surface water hydrologic unit. The purpose of the IFSAR is to present the best available information for a given hydrologic unit. The IFSAR is also intended to act as a living document that should be updated and revised as necessary.

In 2007, A&B ceased diversions on Waiokamilo Stream, fully restoring flows to the stream, in response to an interim order by the BLNR. In September 2008, the CWRM acted to amend the IIFS for the eight Priority Streams recognized by NHLC in 2001 (the Priority Streams D&O).

On May 25, 2010, the CWRM acted to address the remaining 19 streams, amending the IIFS for 6 of those streams, through a seasonal approach to address habitat availability for native stream animals, with winter total restorative amounts of 9.45 mgd, and summer restoration reduced to 1.11 mgd.<sup>6</sup> At the end of this meeting, the petitioners requested a contested case.

On June 3, 2010, Nā Moku filed a Petition for a Contested Case with the CWRM for "Petitioners' right to sufficient stream flow to support the exercise of their traditional and customary Native Hawaiian rights to growing kalo and gathering in, among, and around East Maui streams and estuaries, and the exercise of other rights for religious, cultural, and subsistence purposes.

---

<sup>6</sup> The six streams that were amended during this stage were Hanawī, Makapipi, Waikamoi, West Wailuāiki, East Wailuāiki, and Waiohue.

Specifically, the rights of members to engage in such practices in, on, and near Waikamoi, Puohokamoa, Ha'ipua'ena, Punalau/Kōlea, Honomanū, West Wailuāiki, East Wailuāiki, Kopili'ula, and Pua'aka'a, Waiohue, Pa'akea, Kapā'ula, Hanawī streams from HRS § 1-1 and HRS § 7-1 and protected under HRS § 174-101." (CWRM D&O, FOF 13). The petitioners' request for a contested case identified 5 of the 6 streams that had their IIFS amended, and 8 of the 13 streams that had been left at status quo IIFS under the CWRM May 25, 2010 decision. The May 25, 2010 decision did not revisit the CWRM Priority Streams D&O.

Also on June 3, 2010, the MDWS filed a contested case petition to be a party in a contested case hearing before the CWRM citing the reasons that: 1) any decision will directly affect their ability to provide water for domestic and agricultural purposes; and 2) being the public water supplier for the County of Maui, they are in the best position to represent the public's interest in continued use of these resources for the Upcountry Maui public water supply. On October 18, 2010, the CWRM voted to deny the petitions filed by Nā Moku and MDWS.

On November 17, 2010, Nā Moku filed a notice of appeal, contending that the CWRM erred in: 1) concluding that Nā Moku had no right to a contested case hearing; and 2) reaching its underlying decision regarding IIFS amendment for the 19 streams at issue. The Intermediate Court of Appeals ordered the CWRM to proceed with a contested case hearing by decision issued November 30, 2012. (*In re Interim Instream Flow Standards for Waikamoi*, 128 Hawai'i 497, 291 P.3d 395 (Ct. App. 2012)).

On January 29, 2014, the CWRM appointed Dr. Lawrence Miike as Hearings Officer. He proposed that the contested case address all 27 streams in an integrative approach and not just the 13 streams named in the request for the contested case by the NHLC in 2010. On August 20, 2014, the CWRM voted to "*authorize, order, delegate, and direct*" the Hearings Officer to conduct a contested case hearing on the Petitions to Amend the IIFS for all 27 streams filed by the NHLC in 2001.

Between March 2, 2015 and April 2, 2015, 15 days of hearings were held, during which 36 witnesses testified and an additional 16 witness statements and approximately 550 exhibits were introduced into evidence from various parties, including the Hearings Officer. (CWRM D&O, FOF 27). On October 2, 2015, Nā Moku and Maui Tomorrow Foundation jointly, HC&S, and MDWS submitted their proposed Findings of Fact, Conclusions of Law, and Decision & Order to the Hearings Officer.

On January 6, 2016, A&B announced that HC&S was ceasing sugarcane cultivation in Central Maui and was transitioning to a diversified agriculture farming model. (CWRM D&O, FOF 29).

On January 15, 2016, the Hearings Officer submitted his Proposed D&O to the CWRM and the parties. Dr. Miike's proposed IIFS would have increased flows in 12 of the 22 streams diverted by the EMI Aqueduct System that were subject to the contested case, restoring approximately 18 mgd to the streams (CWRM D&O, FOF 46-47). Six of the 12 streams would have had their flows returned to their undiverted, natural flows.

On March 10, 2016, the CWRM directed the Hearings Officer to "reopen the hearing to address A&B's decision of January 6, 2016 to change HC&S's business operations from farming sugar to a diversified agricultural model." (CWRM D&O, FOF 31). This is due to the fact that

A&B's decision to change farming practices would have a different impact on surface waters and management strategies compared to the former sugar operations.

Shortly after the hearing reopened, on April 20, 2016, A&B announced it would voluntarily fully restore flow to the eight Priority Streams identified by the NHLC in its 2001 Petitions. These streams were Honopou, Hanehoi (including Puolua), Waiokamilo, Kualani, Pi'ina'au, Palauhulu, and East and West Wailuānui (CWRM D&O, FOF 33).

On July 28, 2017, the Hearings Officer submitted his Proposed D&O to the CWRM and the parties, and on August 2, 2017, he submitted his Amended D&O to the CWRM and the parties.

On June 20<sup>th</sup>, 2018, the CWRM issued its D&O for the 27 East Maui streams that had been subject to IIFS Petitions that evolved through several CWRM proceedings since May 2001. The 2018 CWRM D&O is described in more detail in Section 1.1.4.<sup>7</sup>

### **1.3.4 Interim Instream Flow Standard Decision and Order**

The June 20, 2018 CWRM D&O establishes a quantity of water that must remain in each stream at specified locations subject to the IIFS Petitions. The CWRM D&O does not specifically authorize or allocate amounts of water for offstream uses. The CWRM evaluated each of the streams under the IIFS Petitions individually, analyzing their flow characteristics, instream uses, offstream uses, habitat restoration potential for fish and other stream animals, recreational opportunities, and scenic values. Then the streams were looked at in an integrative approach with consideration for the overall ecological ramifications of the decision. The CWRM also considered the economic ramifications of its decision on offstream uses, with a specific focus on supporting public uses such as drinking water, as well as diversified agriculture.

Theoretical models of un-diverted total and base flows were used in the majority of the streams to set the IIFS. The IIFS is a numeric flow rate, measured in cubic feet per second (cfs) that must remain in the stream at a certain location. The CWRM used a median base flow (BFQ<sub>50</sub>) to make their decision, which is an amount of stream flow that can be expected to be found in the stream at least 50% of the time. Base flow is a smaller component of the stream's total flow. Total flow includes water input from normal rainfall and storm events. Depending on the location, the base flow standard can vary, therefore it is typically measured at a lower elevation downstream that is more accessible.

To set the IIFS, the CWRM grouped the streams into four broad categories with different objectives and management strategies: (i) conveyance of water to kalo growing areas for community use; (ii) water for streams with high biological value, (iii) water for streams that have barriers to biological or ecological improvements, and (iv) noninstream use of water for municipal and agricultural uses. (See Figure 1-3). The CWRM D&O significantly reduces the amount of water that can be diverted for offstream uses relative to the capacity and use of the EMI Aqueduct System when sugar was being cultivated. Ten streams were ordered to have no diversions at all (one of which, Waiokamilo, had stream flow fully restored in 2007) (referred to as "Fully Restored Streams" in Figure 1-3), 5 were required to return 64% of BFQ<sub>50</sub> in the

---

<sup>7</sup> The CWRM found that there were 24, not 27, streams that were the subject of the contested case. The difference being that (i) Waikani is not a stream but a waterfall of Wailuānui Stream; (ii) Alo is a tributary of Waikamoi Stream; (iii) Pua'aka'a is a tributary of Kopili'ula Stream; and (iv) Pi'ina'au and Palauhulu are separate streams that join together before reaching the ocean (CWRM D&O, FOF 56).

stream at all times (referred to as “Habitat Streams” in Figure 1-3), and 7 were required to have 20% of BFQ<sup>50</sup> in the stream at all times (referred to as “Connectivity Streams” in Figure 1-3).

### **Conveyance of Water to Kalo Growing Areas for Community Use**

The CWRM ordered that all diversions on the following streams cease to allow for all water to flow to the taro growing areas or for community and non-municipal domestic uses: Honopou, Huelo/Puolua, Hanehoi, Pi'ina'au, Palauhulu, Waiokamilo, Wailuānui, 'Ōhi'a/Waianu, Kualani/Hāmau,<sup>8</sup> and Makapipi. (CWRM D&O, Conclusions of Law (COL) 138). All diversions for these streams are required to be modified so that no out-of-watershed transfers will occur from these streams, which will have uninterrupted free flowing water to the communities that depend upon them. It was not the CWRM's intent to regulate where and how much water will be used for traditional kalo agriculture or how the water will be apportioned amongst the kalo lo'i. The CWRM's approach does not automatically set precedents for other areas, but provides a model of water use that integrates traditional culture with modern natural resource management (CWRM D&O, COL 138-145).

### **Water for Streams With High Biological Value**

Some of the petitioned streams have the potential to benefit greatly from the restoration of flow to 64% of the median base flow (BFQ<sub>50</sub>), which generally represents the flow necessary to restore 90% of the habitat in a stream (H<sub>90</sub>), based on the biological diversity and habitat that already exists. These streams were ordered to be restored to allow the stream species to flourish and reproduce, benefitting not only the natural environment but also allowing for better opportunity for the exercise of traditional and Hawaiian right (CWRM D&O, COL 131). These streams are: Pi'ina'au, Wailuānui, Honomanū, Waikamoi, Nua'ailua, East Wailuāiki, Kopili'ula, and Waiohue.

Moreover, the CWRM determined that West Wailuāiki present a unique research opportunity to collect valuable information regarding the impact of full restoration of a stream versus habitat restoration (H<sub>90</sub>). East and West Wailuāiki lie in close proximity to each other with similar biological values and similar habitat biota. The CWRM intends for these two streams to be studied in the future in combination with one another to see the impact, if any, of full restoration versus habitat restoration (CWRM D&O, COL 135).

Honomanū Stream is a gaining stream from above the Lower Kula Ditch to Spreckles Ditch. Below the Spreckles Ditch it becomes a losing stream most likely as a result of the diversion. Honomanū Stream, despite having several diversions on it, has a high biological rating with a potential for high natural habitat gains with the restoration of flow to the dry reaches. Thus, the CWRM ordered that Honomanū Stream should have full streamflow restoration below the Lower Kula Ditch diversion, which provides water for the MDWS system that is used for domestic and agricultural uses. (CWRM D&O, COL 136).

### **Water for Streams That Have Barriers to Biological or Ecological Improvements**

Various streams within the License Area have low biological ratings and or do not have the potential to improve drastically with increased flows. These streams were set at connectivity flow which is twenty percent (20%) of the instream flow (CWRM D&O, COL 30). Streams that are set at connectivity flow are: Kapā'ula, Pa'akea, Pua'aka'a, Puohakamoa, Ha'ipua'ena, Nua'ailua, Waia'aka, and Hanawī. (CWRM D&O, COL 146). None of these streams have

---

<sup>8</sup> Although this stream continues to be referred to as “Kualani”, it is in fact the easternmost tributary of Waiokamilo Stream and now known as “East Waiokamilo Stream.” Kualani Stream is below the EMI Aqueduct System and has never been diverted (CWRM D&O, FOF 62,184,186).



registered diversions for taro cultivation nor is there taro cultivation known to occur on these streams (CWRM D&O, COL 147).

### **Noninstream Use of Water for Municipal and Agricultural Uses**

The CWRM acknowledged that in the context of a proceeding to set the IIFS, it does not have the authority to determine how much water may be used for noninstream use for municipal and agricultural uses. That authority lies with the BLNR in issuing a water lease pursuant to HRS § 171-58, which the lease would be subject to the IIFS set by the CWRM. (CWRM D&O, COL 148). Recognizing that the noninstream uses, especially municipal use, are valued uses, the CWRM set the IIFS to allow the MDWS to continue to divert water through its Upper and Lower Kula pipelines. (CWRM D&O, COL 149). In not requiring full restoration of all streams, the CWRM has allowed some streams to continue to be diverted so that the BLNR may continue to license the diversion of water not needed to meet the IIFS from those streams for noninstream uses. The available water would also include freshets and stormwater which are not included in the calculation of the IIFS. (CWRM D&O, COL 150).

The CWRM recognized that the EMI Aqueduct System remains a valuable asset that delivers noninstream public trust benefits, such as drinking water, as well as other reasonable and beneficial uses. The reduction in diversions does not, by itself, compromise the structural integrity of the EMI Aqueduct System so long as it continues to be maintained as a single coordinated system. CWRM considered factors that contribute to the operational capacity of the existing EMI Aqueduct System by allowing some water diversions from streams in the higher elevation eastern portion of the watershed. (CWRM D&O, COL 151).

The CWRM recognized that the stream water that may be leased/licensed by the BLNR from the petitioned East Maui streams may not be sufficient to satisfy the full implementation of a diversified agricultural plan for Central Maui. However, the CWRM expected that a sufficient amount of noninstream water would be available to provide the initial phase of allowing lands already designated as Important Agricultural Lands (IAL) under HRS Chapter 205 in Central Maui to be developed for diversified agriculture. (CWRM D&O, COL 152).

The CWRM D&O does not require the removal or modification of every diversion. The CWRM's intent is that diversion structures only need to be modified to the degree necessary to accomplish the IIFS, and not for the complete removal of diversions, unless necessary to achieve the IIFS. The CWRM's intent is to allow for the continued use and viability of the EMI Aqueduct System (CWRM D&O at p. 269).

Tables 1-2 and 1-3 below, show the streams that are within the License Area as presented in the Environmental Impact Statement Preparation Notice (EISPN) and the CWRM D&O and a discussion reconciling the difference between Tables 1-2 and 1-3. Table 1-3 includes the CWRM D&O regarding the 24 streams subject to the IIFS Petitions. Streams are listed from East to West, starting with those in the Nāhiku portion of the License Area.

#### **1.3.4.1 CWRM IIFS D&O Stream Identification**

Due to discrepancies in names used in reference to various streams, tributaries and a waterfall in the License Area, for this Draft Environmental Impact Statement (DEIS), the stream names used in the CWRM D&O are used in the text, tables, maps and the various appended studies, to the extent possible. The discrepancies in stream names between what was used in the CWRM D&O and what was contained in the EISPN, are reconciled in Table 1-2 below, which lists in the

left column the streams considered to be within the License Area as presented in Table 1-2 of the EISPN. Table 1-2 lists a total of 40 items, 39 of which are considered streams and one of which (Waikani) is a waterfall. In contrast, the CWRM D&O specified 36 streams in the License Area.<sup>9</sup>

In this DEIS, the CWRM D&O listing of streams and nomenclature will be used; however, diacritical markings, which are inconsistently used in the CWRM D&O, have been retained or added, as appropriate. The items highlighted are those that differ in some way from the CWRM D&O. The highlighted items are explained in the Notes column.

| <b>Table 1-2: License Area Streams as presented in Table 1-2 in the EISPN (February, 2017) Reconciled with Stream Names Used in the CWRM D&amp;O (June 20, 2018)</b> |     |                         |  |               |
|--|-----|-------------------------|--|---------------|
| License Area   | No. | Stream Name             | Notes: Reconciliation with CWRM D&O  | Revised Count |
| Nāhiku   | 1   | Makapipi                |  | 1             |
| Nāhiku   | 2   | Hanawī                  |  | 2             |
| Nāhiku   | 3   | Kapā'ula                |  | 3             |
| Ke'anae  | 4   | Wai'aka                 | Referenced "Waia'aka" per CWRM D&O   | 4             |
| Ke'anae  | 5   | Pa'akea                 |  | 5             |
| Ke'anae  | 6   | Puakea                  | Not identified in the License Area under CWRM D&O  | 6             |
| Ke'anae  | 7   | Waiohue                 |  | 7             |
| Ke'anae  | 8   | Puaka'a                 | Referenced as "Kopili'ula (Pua'aka'a tributary with a separate restoration status)" per CWRM D&O | N/A           |
| Ke'anae  | 9   | Kopili'ula              |  | 8             |
| Ke'anae  | 10  | East Wailuā-iki         |  | 9             |
| Ke'anae  | 11  | West Wailuā-iki         |  | 10            |
| Ke'anae  | 12  | East and West Wailuānui | Referenced "Wailuānui" per CWRM D&O  | 11            |
| Ke'anae  | 13  | Waikani                 | Due to Waikani being a waterfall it was combined with Wailuānui above                            | N/A           |
| Ke'anae  | 14  | Kualani                 | Referenced as "Kualani (or Hāmau)" per CWRM D&O  | 12            |

<sup>9</sup> This DEIS identifies 37 streams within the License Area. Puakea Stream was not identified by in the CWRM D&O as a stream within the License Area that is diverted by the EMI Aqueduct System.

| Table 1-2: License Area Streams as presented in Table 1-2 in the EISPN (February, 2017) Reconciled with Stream Names Used in the CWRM D&O (June 20, 2018) |    |                |   |    |
|---|----|----------------|---|----|
| Ke'anae   | 15 | Waiokamilo     |   | 13 |
| Ke'anae   | 16 | Palauhulu      | Transposed sequence with 'Ōhi'a (or Wainu) below  | 15 |
| Ke'anae   | 17 | Waianu/'Ōhi'a  | Referenced as "'Ōhi'a (or Waianu)" per CWRM D&O and, transposed sequence with Palauhulu above | 14 |
| Honomanū  | 18 | Pi'ina'au      | EISPN noted Pi'ina'au in the Honomanu License Area; CWRM D&O has it in Ke'anae License Area   | 16 |
| Honomanū  | 19 | Nua'ailua      |   | 17 |
| Honomanū  | 20 | Honomanū       |   | 18 |
| Honomanū  | 21 | Kōlea/Punala'u |   | 19 |
| Honomanū  | 22 | Ha'ipua'ena    |   | 20 |
| Huelo   | 23 | Puohokamoa     |   | 21 |
| Huelo   | 24 | Wahinepe'e     |   | 22 |
| Huelo   | 25 | Alo            | Combined with Waikamoi below as a tributary   |    |
| Huelo   | 26 | Waikamoi       | Referenced as "Waikamoi (Alo tributary)" per CWRM D&O   | 23 |
| Huelo   | 27 | Kōlea          |   | 24 |
| Huelo   | 28 | Punalu'u       |   | 25 |
| Huelo   | 29 | Ka'aiea        |   | 26 |
| Huelo   | 30 | 'O'opuola      | Referenced as "'O'opuola (Makanali tributary)" per CWRM D&O                                   | 27 |
| Huelo   | 31 | Puehu          |   | 28 |
| Huelo   | 32 | Nailiilihaele  | Nā'ili'ilihaele (diacritical markings added)  | 29 |
| Huelo   | 33 | Kailua/Ohanui  |   | 30 |
| Huelo   | 34 | Hanauana       | Referenced as "Hanahana (Ohanui tributary)" per CWRM D&O                                      | 31 |
| Huelo   | 35 | Hoalua         |   | 32 |



| Table 1-2: License Area Streams as presented in Table 1-2 in the EISPN (February, 2017) Reconciled with Stream Names Used in the CWRM D&O (June 20, 2018) |    |                              |  |    |
|---|----|------------------------------|--|----|
| Huelo   | 36 | Pualoa/Hanehoi               | Referenced as "Hanehoi (Huelo (also known as Puolua) with a separate restoration status) tributary" per CWRM D&O | 33 |
| Huelo   | 37 | Waipi'o                      |  | 34 |
| Huelo   | 38 | Mokupapa                     |  | 35 |
| Huelo   | 39 | Ho'olawa-Li'ili/Ho'olawa-Nui | Referenced as "Ho'olawa (Ho'olawa 'ili and Ho'olawa nui tributaries)" per CWRM D&O                               | 36 |
| Huelo   | 40 | Honopou                      | Referenced as "Honopou (Puniawa tributary)" per CWRM D&O   | 37 |

#### 1.3.4.2 IIFS D&O Table

Table 1-2 in the EISPN also indicated which of the listed streams were subject to the Petitions for IIFS. Table 1-3 below indicates which of the 37 streams are subject to the CWRM D&O and also shows what the required restoration status and location of the IIFS under the CWRM D&O. (See generally CWRM D&O, FOF 59, and CWRM D&O, Order at page 268-269).

| Table 1-3 Streams In The License Area as Presented in CWRM D&O |   |             |                 |                    |                                |                              |
|--|---|-------------|-----------------|--------------------|--------------------------------|------------------------------|
| Area   | # | Stream Name | Subject to IIFS | Restoration Status | Median Base Flow at IIFS (cfs) | IIFS Location                |
| Nāhiku   | 1 | Makapipi    | Yes             | Full               | 1.3                            | Above Hāna Highway           |
|  | 2 | Hanawī      | Yes             | Connectivity       | 4.6                            | Below Hāna Highway           |
|  | 3 | Kapā'ula    | Yes             | Connectivity       | 2.8                            | On Diversion at Koolau Ditch |
| Ke'anae  | 4 | Waia'aka    | Yes             | None               | 0.77                           | Above Hāna Highway           |
|  | 5 | Pa'akea     | Yes             | Connectivity       | 0.9                            | At Hāna Highway              |

**Table 1-3 Streams In The License Area as Presented in CWRM D&O**

| <b>Area</b> | <b>#</b> | <b>Stream Name</b>                              | <b>Subject to IIFS</b> | <b>Restoration Status</b> | <b>Median Base Flow at IIFS (cfs)</b>                       | <b>IIFS Location</b>            |
|-------------|----------|---|------------------------|---------------------------|---|---------------------------------|
|             | 6        | Puakea  | No                     | N/A                       | N/A   | N/A                             |
|             | 7        | Waiohue   | Yes                    | Full                      | 5   | At Hāna Highway                 |
|             | 8        | Kopili'ula                                      | Yes                    | Limited                   | H90 (64% of the Median Base Flow)(F or Habitat Restoration) | Below Hāna Highway              |
|             | 8A       | Pua'aka'a Tributary                             | Yes                    | Connectivity              | 1.1   | Above Hāna Highway              |
|             | 9        | East Wailuāiki                                  | Yes                    | Limited                   | H90 (64% of the Median Base Flow)(F or Habitat Restoration) | At Hāna Highway                 |
|             | 10       | West Wailuāiki                                  | Yes                    | Full                      | 6   | Above Hāna Highway              |
|             | 11       | Wailuānui (Waikani Waterfall)                   | Yes                    | Full                      | 6.1   | At Hāna Highway                 |
|             | 12       | Kualani (or Hāmau) (Below Ditch System)         | Yes                    | None (Never Diverted)     | N/A   | N/A                             |
|             | 13       | Waiokamilo                                      | Yes                    | Full                      | 3.9   | Below Diversion at Koolau Ditch |
|             | 14       | 'Ōhi'a (or Waianu) (Below Ditch System)         | Yes                    | None (Never Diverted)     | 4.7   | N/A                             |
|             | 15       | Palauhulu (Hau'oli Wahine and Kano Tributaries) | Yes                    | Full                      | 11  | Above Hāna Highway              |
|             | 16       | Pi'ina'au                                       | Yes                    | Full                      | 14  | Above Hāna                      |

| Table 1-3 Streams In The License Area as Presented in CWRM D&O |    |   |                 |                    |   |                    |
|--|----|---|-----------------|--------------------|---|--------------------|
| Area   | #  | Stream Name                             | Subject to IIFS | Restoration Status | Median Base Flow at IIFS (cfs)                              | IIFS Location      |
|  |    |   |                 |                    |   | Highway            |
| Honomanū   | 17 | Nua‘ailua                               | Yes             | Connectivity       | 0.28  | TBD                |
|  | 18 | Honomanū                                | Yes             | Limited            | H90 (64% of the Median Base Flow)(F or Habitat Restoration) | Above Hāna Highway |
|  | 19 | Punala‘u (Kōlea and Ulunui Tributaries) | Yes             | Limited            | H90 (64% of the Median Base Flow)(F or Habitat Restoration) | Above Hāna Highway |
|  | 20 | Ha‘ipua‘ena                             | Yes             | Connectivity       | 4.9   | Below Hāna Highway |
| Huelo  | 21 | Puohokamoa                              | Yes             | Connectivity       | 8.4   | Below Hāna Highway |
|  | 22 | Wahinepe‘e                              | Yes             | None               | 0.9   | Above Hāna Highway |
|  | 23 | Waikamoi (Alo Tributary)                | Yes             | Limited            | H90 (64% of the Median Base Flow)(F or Habitat Restoration) | Above Hāna Highway |
|  | 24 | Kōlea                                   | No              | None               | N/A   | N/A                |
|  | 25 | Punalu‘u                                | No              | None               | N/A   | N/A                |

| Table 1-3 Streams In The License Area as Presented in CWRM D&O |      |  |                 |                    |                                |                                    |
|--|------|--|-----------------|--------------------|--------------------------------|------------------------------------|
| Area   | #    | Stream Name  | Subject to IIFS | Restoration Status | Median Base Flow at IIFS (cfs) | IIFS Location                      |
|  | 26   | Ka'aiea  | No              | None               | N/A                            | N/A                                |
|  | 27   | 'O'opuola (Makanali Tributary)                                   | No              | None               | N/A                            | N/A                                |
|  | 28   | Puehu  | No              | None               | N/A                            | N/A                                |
|  | 29   | Nā'ili'ilihale   | No              | None               | N/A                            | N/A                                |
|  | 30   | Kailua   | No              | None               | N/A                            | N/A                                |
|  | 31   | Hanahana (Ohanui Tributary – also known as Hanawana and Hanauna) | No              | None               | N/A                            | N/A                                |
|  | 32   | Hoalua   | No              | None               | N/A                            | N/A                                |
|  | 33   | Hanehoi  | Yes             | Full               | 2.54                           | Upstream of Lowrie Ditch           |
|  | 33 A | Huelo (also known as Puolua) Tributary                           | Yes             | Full               | 1.47 at Huelo                  | Downstream of Haiku Ditch at Huelo |
|  | 34   | Waipi'o  | No              | None               | N/A                            | N/A                                |
|  | 35   | Mokupapa   | No              | None               | N/A                            | N/A                                |
|  | 36   | Ho'olawa (Ho'olawa ili and Ho'olawa nui Tributaries)             | No              | None               | N/A                            | N/A                                |
|  | 37   | Honopou (Puniawa Tributary)                                      | Yes             | Full               | 6.5                            | Below Hāna Highway                 |

\*Some of these streams may be identified by other names. The listed names are based on the June 20, 2018 CWRM D&O identified by the CWRM and the State Office of Planning's GIS data.

\*H<sub>90</sub> is 64% of the median base flow at that stream. These streams are for habitat restoration

\*cfs – Cubic Feet per Second, the IIFS numeric flow rate at the IIFS location.

\*Huelo is considered to be a tributary to Hanehoi Stream but is identified for "Full" restoration.

Figure 1-3 corresponds with the Table 1-3 above and depicts the CWRM D&O status of each stream as to whether streamflow has been or will be fully restored, partially restored for habitat restoration, and those that may be diverted for offstream uses ("Noninstream Use of Water for Municipal and Agricultural Uses"). As previously discussed, some of these streams may be identified by a different name. The names used in Figure 1-3, are those used in the CWRM D&O matched against the names used in the State Office of Planning's GIS data layer for streams. However, two streams identified in the CWRM D&O, Kualani and Waia'aka, do not

have associated GIS data and, therefore, could not be precisely located on the map. Puakea Stream, a stream within the License Area that was not identified in the CWRM D&O, does not have associated GIS data. For these streams, their approximate locations are shown, based on the geographically sequential listing of stream names in the CWRM D&O.

#### **1.4 Chapter 343, Hawai'i Revised Statutes (Hawai'i EIS Law)**

Compliance with the requirements of Chapter 343, HRS is necessary prior to the BLNR's issuance of a Water Lease. Under HRS Section 343-5(e), whenever an applicant proposes an action specified by HRS § 343-5(a) that requires approval of an agency, and that action is not declared exempt under HRS § 343-6, the applicant must engage in the environmental review process set forth under Chapter 343. Under HRS § 343-2, "approval" means a discretionary consent required from an agency prior to actual implementation of an action, and the term "discretionary consent" means a consent, sanction, or recommendation from an agency for which judgment and free will may be exercised by the issuing agency, as distinguished from a ministerial consent. The BLNR's decisions related to the requested issuance of a water lease at public auction in accordance with HRS Chapter 171, will be an exercise within the BLNR's discretion. The applicable "trigger" requiring compliance with Chapter 343, HRS, includes the proposed continuing use of State lands in the License Area, including water resources from those lands.

For the purposes of HRS Chapter 343, the applicant for the Water Lease is A&B, pursuant to orders of the BLNR in April and June of 2016, directing A&B to prepare an EIS. In accordance with HAR of the State of Hawai'i Department of Health (DOH), Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the proposed EIS because the DLNR is the agency initially receiving and agreeing to process the request for the issuance of a Water Lease at public auction.

In connection with its May 2001 submittal, A&B offered to perform the environmental review required under HRS Chapter 343. However, as part of its request for a contested case hearing on the lease matter, the NHLHC on behalf of Nā Moku objected to A&B undertaking the environmental review process, and asserted that the HRS Chapter 343 documents had to be prepared by the BLNR. NHLHC did not withdraw its objection regarding the preparation of the HRS Chapter 343 environmental documents until oral arguments before the BLNR in May 2015, which withdrawal was then documented in the April 14, 2016 order issued by the BLNR, directing A&B to commence the environmental review process and provide a scope of work for the preparation of an environmental review document pursuant to HRS Chapter 343. The BLNR instructed that the scope of work should distinguish between those matters that could be undertaken prior to issuance of the CWRM D&O, and those matters that required the final CWRM D&O.

On June 9, 2016, A&B submitted to the BLNR a Scope of Services for Preparation of a Chapter 343, HRS Environmental Impact Statement for Proposed Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. By order dated July 8, 2016, the BLNR acknowledged that the scope of work provided the information requested and instructed that "A&B and EMI should proceed with the preparation of an environmental impact statement (EIS) in as expeditious manner as possible." The EISPN was published on February 8, 2017. Public scoping meetings were held on Maui on February 22, 2017 in Kahului, and February 23, 2017 in Ha'ikū for the DEIS (See Chapter 9 and Appendices K, L, and M). The CWRM D&O setting forth its decisions on the IIFS Petitions was issued on June 20, 2018.

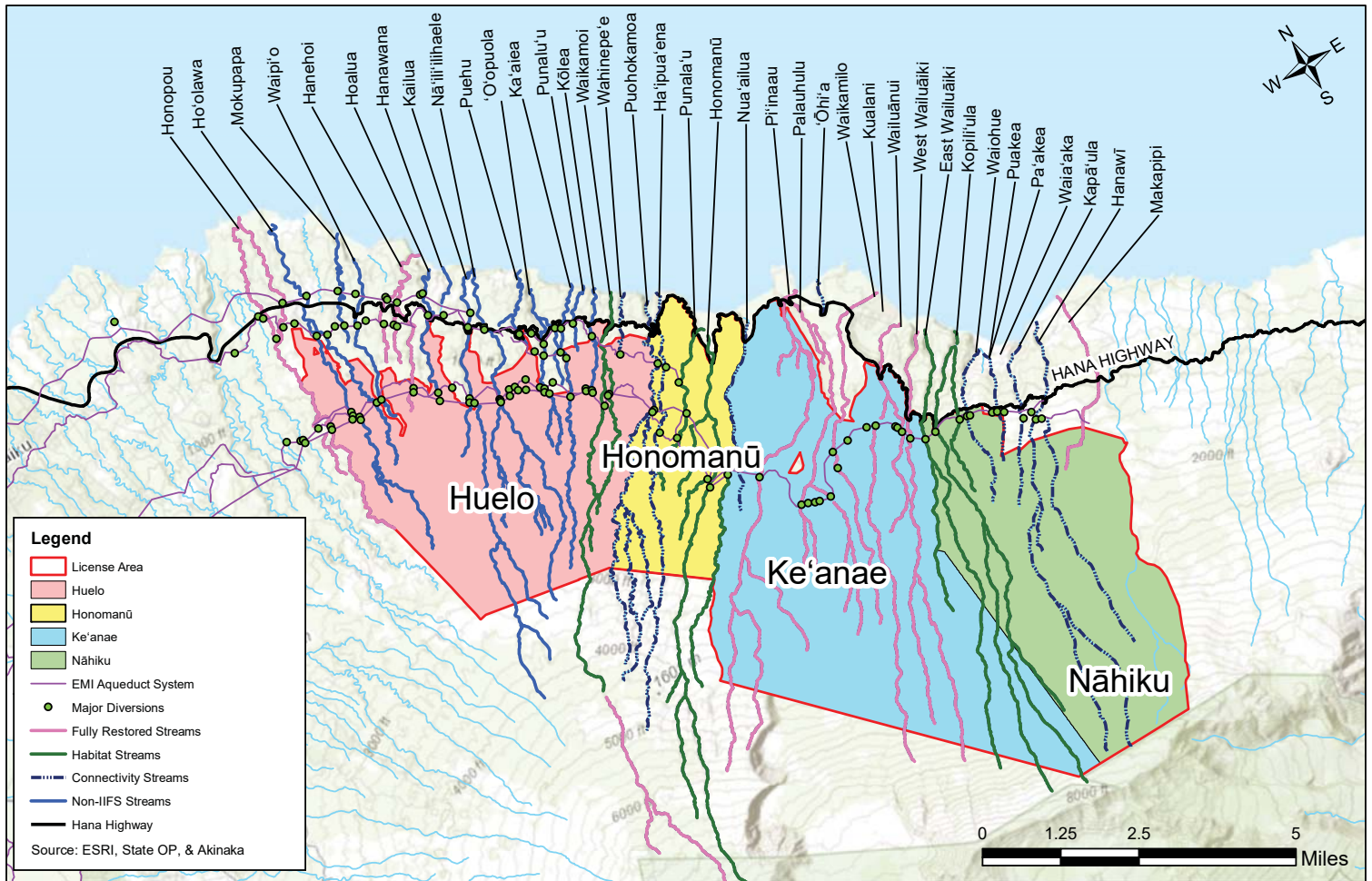


FIGURE 1-3

## CWRM IIFS DECISION & ORDER MAP

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



(This page intentionally left blank)

---

## **Chapter 2:**

Proposed Action





## 2. PROPOSED ACTION

### 2.1 Proposed Action

The Proposed Action constitutes the issuance of one long-term (30-year) Water Lease from the BLNR that grants the lessee the *"right, privilege, and authority to enter and go upon"* the License Area for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease, which will be awarded by public auction, will enable the lessee to enter upon lands owned by the State of Hawai'i in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System, and will allow for the continued operation of the EMI Aqueduct System to deliver water to the MDWS for domestic and agricultural water needs in Upcountry Maui, including the agricultural users at the KAP and the planned 262-acre KAP expansion, as well as for the Nāhiku community, which, through the MDWS, draws up 20,000 to 45,000 gallons per day (gpd), dependent on weather, directly from the EMI Aqueduct System. It will also allow the continued provision of water to approximately 30,000 acres of agricultural lands (formerly in sugarcane) in Central Maui. The Proposed Action will not require the use of public funds. A substantial amount of private funds will be used to maintain and operate the EMI Aqueduct System. Total operational costs for labor, fringe benefits, materials, professional services, taxes, maintenance, anticipated rental payments to the State for the Water Lease, and other expenses are projected to be approximately \$2.5 million per year (Munekiyo, 2019).

Independent of the Proposed Action, on June 20, 2018, the CWRM issued its D&O setting IIFS for numerous streams and tributaries of streams in the License Area, which includes water originating and flowing from both State and privately owned lands within East Maui.<sup>1</sup> The CWRM D&O establishes a quantity of water that must remain in each stream at specified locations. The CWRM D&O ordered full stream restoration for 10 streams and partial flow restoration on 12 additional streams (Please refer to Section 1.3.4). Therefore, the maximum amount of water that can be awarded through the Water Lease is what is available for diversion after the CWRM D&O is implemented. This is the premise of the Proposed Action.

The amount of water awarded by the Water Lease is subject to all applicable requirements under HRS § 171-58. HRS § 171-58(c), (d), and (e) articulate terms for the disposition of the Water Lease. HRS § 171-58(e) requires that any new lease of water rights "shall contain a covenant that requires the lessee and the department of land and natural resources to jointly develop and implement a watershed management plan. The board shall not approve any new lease of water rights without the foregoing covenant or a watershed management plan."

At the March 22, 2019 meeting of the BLNR, the DLNR staff proposed a watershed management cost share formula and contribution for leases of water rights pursuant to HRS § 171-58(e). The BLNR deferred decision-making on the staff's proposal, the

---

<sup>1</sup> The CWRM found that there are 24, not 27, streams that were subject to the IIFS contested case because:

- Waikani is not a stream but a waterfall of Wailuānui Stream
- Alo is a tributary of Waikamoi Stream
- Pua'aka'a is a tributary of Kopili'ula Stream

consensus was that compliance with the watershed management provision of HRS § 171-58(e) should be determined on a case-by-case basis for each individual water lease.

A&B was a founding member of the East Maui Watershed Partnership (EMWP), which was the first watershed partnership in the State of Hawai'i and which served as a model for other watershed partnerships throughout the State. Since the founding of the EMWP in 1991, A&B, on its own and through EMI, has actively participated in watershed partnership activities through monetary contributions and in-kind services. Under the Proposed Action, it is anticipated that EMI and/or Mahi Pono will continue to pursue watershed management activities.

### **2.1.1 Department of Hawaiian Homelands Water Reservation**

The Water Lease is also subject to the Department of Hawaiian Home Lands' (DHHL) rights to reserve water sufficient to support current and future homestead needs as provided by Section 221 of the Hawaiian Homes Commission Act. Until that reservation is physically claimed, however, it will be available for use by the lessee. For all proposed state water leases, HRS § 171-58(g) provides:

The department of land and natural resources shall notify the department of Hawaiian home lands of its intent to execute any new lease, or to renew any existing lease of water rights. After consultation with affected beneficiaries, these departments shall jointly develop a reservation of water rights sufficient to support current and future homestead needs. Any lease of water rights or renewal shall be subject to the rights of the department of Hawaiian home lands as provided by section 221 of the Hawaiian Homes Commission Act.

In order to help implement this provision, and in accordance with the DHHL policies, the DHHL held a Beneficiary Consultation on the proposed Water Lease and the DHHL's water reservation on January 14, 2019 at the Paukūkalo Community Center on Maui. Presentations were made by representatives of A&B and Mahi Pono, the DLNR's Land Division, and the DHHL staff and consultants, followed by a question and answer and discussion period. Approximately 40 individuals were in attendance, of whom 24 signed in and 11 voluntarily identified as beneficiaries.

The purpose of the Beneficiary Consultation was to: (1) share information on the request for the BLNR's issuance of a water lease; (2) explain the BLNR's water lease process; and (3) discuss the DHHL's water needs in the relevant area, including how the DHHL's water needs are identified, the identification of existing water reservations in favor of the DHHL, and other matters necessary to identifying a water reservation for purposes of the State's proposed East Maui Water Lease.

The DHHL has a two-fold interest in state water leases. First, state water leases shall contain reservations of water for the DHHL tracts of land, as described in HRS § 171-58(g) above. Second, thirty percent (30%) of the revenues derived from all water leases issued by the State are deposited into the Native Hawaiian Rehabilitation Fund pursuant to Hawai'i State Constitution Article XII, Section 1, and is used to fund programs as prioritized in the Native Hawaiian Development Program Plan adopted by the Hawaiian Homes Commission.

In regards to this Water Lease, the DHHL's lands in Ke'anae, Wailuānui, Kēōkea and Waiohuli, and Pulehunui all have, or have had, some relationship with the EMI Aqueduct System.

In identifying its water needs, the DHHL is guided by the DHHL's planning system, which is comprised of the following plans:

- DHHL General Plan
- DHHL Water Policy Plan
- DHHL Maui Island Plan
- DHHL Regional Plans
- DHHL Development Plans

Formulating a water reservation for this proposed Water Lease for purposes of HRS § 171-58(g) is also influenced by the State Water Projects Plan (SWPP) (part of the Hawai'i Water Plan approved by the CWRM), and groundwater reservations for the DHHL that have already been approved by the CWRM pursuant to the SWPP.

The DHHL's Maui Island Plan identifies land use designations for 31,000 acres on Maui and water demands for the different types of land uses (e.g., subsistence agriculture, residential). The SWPP (last adopted by CWRM in May 2017) calculates water demands based on the DHHL plans and relevant standards (e.g. Maui County Water System Standards). Both the Maui Island Plan and the State Water Projects Plan project water needs over 20-year time frames. The DHHL's water reservation, however, addresses the DHHL water needs in their entirety, beyond the 20-year time frame.

The DHHL has previously secured from the CWRM the following reservations of groundwater:

- 3,000 gpd for Ke'anae-Wailuānui
- 813,000 gpd for Kēōkea-Waiohuli
- 1,734,000 gpd for Pulehunui

Non-potable water needs for the DHHL's lands in Ke'anae-Wailuānui amount to 6,868,000 gpd. Although the DHHL holds a reservation for 3,000 gpd of potable water for this area for development over the next 20 years, another 7,000 gpd of potable water may be required for longer-term development. Thus, a potential reservation for this area amounts to 6,875,000 gpd. Ke'anae is fed by Pi'ina'au and Palauhulu Streams; Wailuānui is fed by Wailuānui and Waiokomilo Streams. These four streams are, or will soon be, fully restored. The proposed Water Lease, therefore, would not be affected by such reservations of water for the DHHL.

For its agricultural and residential lots in Kēōkea-Waiohuli, the DHHL has already secured a potable water reservation from the CWRM. Non-potable water demand amounts to 10,428,000 gpd for which a water reservation would have to be secured.

Until 2016, the DHHL's Pulehunui lands in Central Maui had been leased to HC&S, cultivated in sugar cane, and, thus served by the irrigation system situated in the Central Maui agricultural fields, which will herein be referred to as the Central Maui field irrigation system. The DHHL's current plans for these lands include agricultural, commercial, industrial and civic uses. A reservation of 1,734,000 gpd of ground water has already been

secured from the CWRM. A non-potable water demand of 1,027,510 gpd has been identified, and water delivered through the EMI Aqueduct System has been identified as a potential source of this water.

The DHHL staff has identified 11,455,510 gpd (10,428,000 gpd for Kēōkea-Waiohuli + 1,027,510 gpd for Pulehunui) of water as their recommendation for a reservation of water rights sufficient to support current and future homestead needs related to this proposed Water Lease.

The DHHL has indicated that reserved water may be available for other purposes until the DHHL has an actual need for the water. For its Kēōkea-Waiohuli and Pulehunui lands, the DHHL will be dependent on the EMI Aqueduct System collecting and transporting East Maui stream waters, in order to get waters to its lands. Until actual need materializes, the DHHL would receive payments related to lease rents paid by the lessee for those waters should EMI use a portion/all of the DHHL's Water Reservation, and the DHHL could receive other possible compensation or consideration.

Following the January 2019 Beneficiary Consultation, beneficiaries were given a month to provide additional written comments to the DHHL staff. Thereafter, the DHHL staff would formulate a recommended water reservation for approval by the Hawaiian Homes Commission before it is presented to the CWRM as a request for a water reservation for the East Maui Water Lease, pursuant to HRS § 171-58(g).

The Proposed Action also incorporates the proposed use of the water, as discussed previously, in Upcountry Maui and in Central Maui. The discussion below expands upon the Proposed Action spanning the three geographic areas of East Maui, Upcountry Maui, and Central Maui.

### **2.1.2 East Maui/License Area**

The Proposed Action would allow the lessee the *"right, privilege, and authority to enter and go upon"* the License Area for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease will enable the lessee to enter upon lands owned by the State of Hawai'i in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System, and will allow continued operation of the EMI Aqueduct System.

The EMI Aqueduct System spans the State-owned License Area which includes four areas in East Maui, known as the Nāhiku, Ke'ānae, Honomanū, and Huelo. The EMI Aqueduct System consists of approximately 388 separate intakes, 24 miles of ditches, and 50 miles of tunnels, as well as numerous small dams, intakes, pipes, 13 inverted siphons and flumes. The EMI Aqueduct System collects surface stream water from approximately 50,000 acres of land (Collection Area), of which approximately 33,000 acres are owned by the State of Hawai'i (License Area), and the remaining approximately 17,000 acres are privately owned by EMI and Mahi Pono.

The EMI Aqueduct System starts at Makapipi Stream, in the Nāhiku portion of the License Area, with the Koolau Ditch. The Koolau Ditch traverses westward across the Ke'ānae License Area and into the Honomanū License Area where it crosses paths with the Spreckles Ditch. This is where streams had multiple diversions at different levels to supply

water to the EMI Aqueduct System. Separating higher elevation ditches allows them to maintain the very slight slope necessary to convey flows by gravity over long distances to irrigate higher elevation fields. This avoids the cost of energy required to pump water up from ditches delivering water at lower elevations. As the system continues westward, the Koolau Ditch transitions at the boundary between the Honomanū and Huelo portions of the License Area to the Wailoa Ditch. Makai of the Koolau/Wailoa Ditch, are the Manuel Luis and the Center Ditch. At Waikamoi Stream, the New Hamakua Ditch begins, running parallel to the Wailoa Ditch, but at a lower elevation.

The Spreckles Ditch terminates its mauka segment at Waikamoi Stream, and begins its makai segment at Ka'aiea Stream, until it converges with the Lowrie Ditch at Nā'ili'ilihale Stream. Makai of Lowrie Ditch is the Haiku Ditch. At Honopou Stream, the water collected within the License Area by the EMI Aqueduct System exits the License Area. Crossing this western boundary of the License Area in descending elevation are the Wailoa Ditch, the New Hāmākua Ditch, the Lowrie Ditch, and the Haiku Ditch. West of Honopou Stream, the EMI Aqueduct System traverses land that was largely owned by A&B and is now largely owned by Mahi Pono. Additional flows from streams located on this land are diverted by the EMI Aqueduct System until it crosses Maliko Gulch beyond which there are no stream diversions. Crossing Maliko Gulch in descending elevation are the Wailoa Ditch, Kauhikoa Ditch, Lowrie Ditch, and the Haiku Ditch. Figure 2-1 depicts the EMI Aqueduct System in East Maui identifying the system's ditches, and major stream diversions within and outside the License Area. Figure 2-2 depicts the major ditches that transport water to the agricultural fields in Central Maui.

The EMI Aqueduct System was designed and is intended to be operated to capture and convey a major portion of the base flow from streams in the License Area to supply the former sugarcane operations in Central Maui. The EMI Aqueduct System is not designed to capture and convey short periods of high streamflow known as freshets that occur when it rains heavily in the upslope areas of the watershed. Such larger flows quickly overtop or bypass the diversions and remain in the streams. The system will only divert up to the capacity of the ditches to convey slow moving water along the very slight slopes of the ditches. Up until 1986, when the first return of water was made to the East Maui streams, the long-term average delivery by the EMI Aqueduct System was 165 mgd (CWRM D&O, FOF 519) before any use of the water by the MDWS or HC&S. In 2001, the CWRM began the process toward its D&O for several East Maui streams that further changed the amount of water available for delivery to Upcountry Maui and to the Central Maui agricultural fields. Based on these changes to the system, a more recent history of flow deliveries from the EMI Aqueduct System was computed from 1987 to 2006 (20 year time period). When analyzing the delivery data at Honopou Stream and Maliko Gulch, the median (Q50) flow at these areas for this time period was 135.58 mgd at Honopou Stream and 146.64 mgd at Maliko Gulch (Akinaka, 2019).

Compliance with the June 2018 CWRM D&O requires modifications to many of the stream diversion works that are part of the EMI Aqueduct System. Streams requiring partial restoration of flow have required adjustments to their diversions. Full stream flow



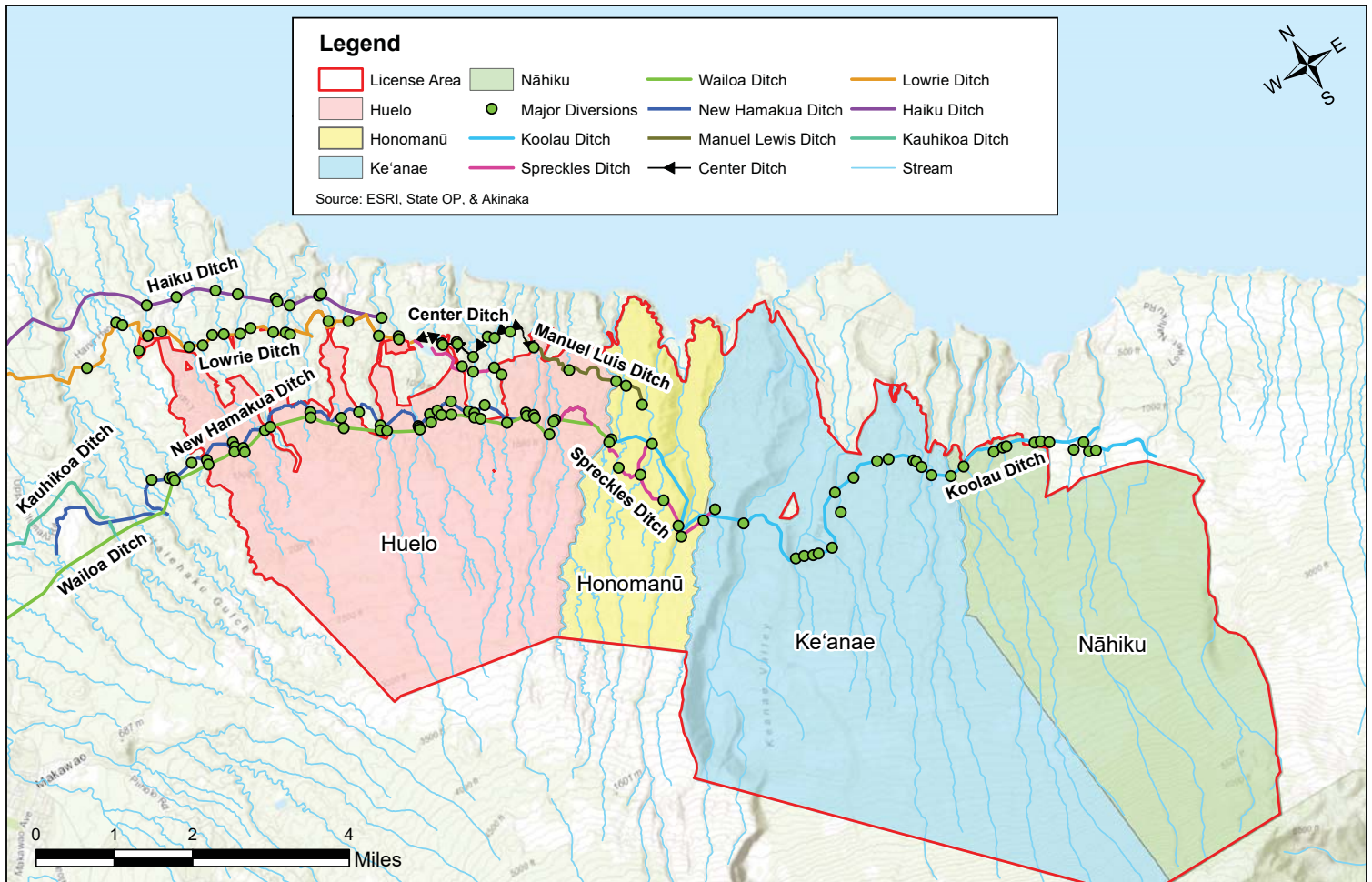


FIGURE 2-1

## EMI AQUEDUCT AQUEDUCT - EAST MAUI

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS





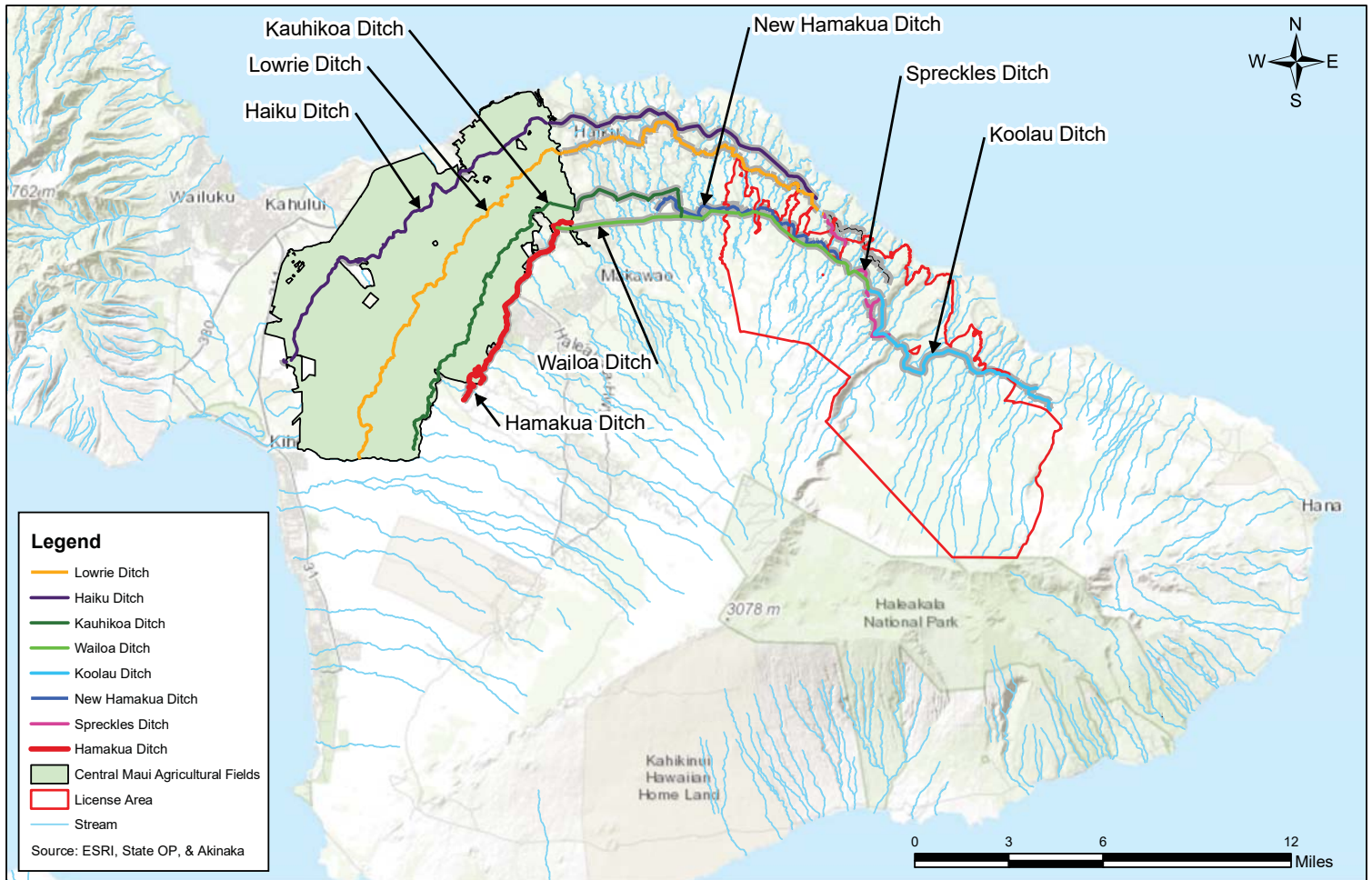


FIGURE 2-2

## EMI AQUEDUCT SYSTEM

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



restoration has required closure of the stream diversions. These compliance requirements must be met irrespective of whether the Water Lease is issued. East Maui, specifically the License Area, has already been affected by increased stream flows resulting from less offstream diversions due to the closure of sugar operations in December 2016. Currently, the EMI Aqueduct System is only diverting approximately 20 mgd. As a result, very little surface stream water is currently being diverted relative to what would be allowed should the Water Lease be awarded per the Proposed Action. However, the amount of water that may be diverted should the Water Lease be issued is substantially less than the amount that was diverted during normal sugar production. For example, in 2006 it is estimated that the EMI Aqueduct System delivered approximately 156.69 mgd at Maliko Gulch, whereas under the CWRM D&O, it is estimated that the delivery at Maliko Gulch will be approximately 92.32 mgd (Akinaka, 2019)).

The median flow required by the CWRM D&O provides an estimated available median flow at Honopou Stream of 87.95 mgd, where the EMI Aqueduct System leaves the License Area. Beyond the License Area, the diverted streams only provide supplemental ditch flow when License Area diversions are low. The amount that can be added is relatively low because when rainfall is high in East Maui, the ditches are fuller and there is little needed to supplement the flow. And, when rainfall is low in East Maui, the streams west of Honopou Stream have less flow in them as they are in an area that receives less rainfall than areas further east. During drier (low flow) periods, it is estimated that 4.37 mgd is available to supplement the EMI Aqueduct System between Honopou Stream and Maliko Gulch. With this added flow, the estimated median flow available beyond Maliko Gulch for use in Upcountry Maui and the Central Maui fields is estimated to be 92.32 mgd (Akinaka, 2019).

With the issuance of the Water Lease under the Proposed Action, the EMI Aqueduct System would divert only the maximum allowable amount under the CWRM D&O from streams within the License Area, which is estimated to be approximately 87.95 mgd. The EMI Aqueduct System is estimated to divert an additional 4.37 mgd from the point that it leaves the License Area at Honopou Stream and collects water from streams on privately owned land to its last diversion at Maliko Gulch. Thus, an estimated total of approximately 92.32 mgd would be conveyed to supply the MDWS for users in Upcountry Maui, Nāhiku, and the agricultural fields in Central Maui.

### **2.1.3 MDWS Water Service Sourced from the EMI Aqueduct System**

The MDWS is the main municipal water provider for the County of Maui. The MDWS operates and maintains five separate water systems on the island of Maui. The second largest of these systems is the “Upcountry Maui Water System” which services the communities of Kula, Pukalani, Makawao Ha’ikū, Hali’imaile, Waiakoa, Kēōkea, Waiohuli, ‘Ulupalakua, Kanaio, Olinda, ‘Ōma‘opio, Kula Kai, and Pūlehu (See Figure 2-3). In Upcountry Maui, the MDWS serves customers’ water needs (homes, schools, hospitals, churches, businesses and agriculture) for both domestic (approximately 60% of use) and agricultural (approximately 40% of use) purposes, including the agricultural users at the KAP. The MDWS also serves a portion of the Nāhiku community via the Ko’olau Water System, which is not located in Upcountry Maui. For the purposes of the Proposed Action, however, this service is included because the Nāhiku service area portion of the Ko’olau Water System is sourced by the EMI Aqueduct System. With the issuance of the Water Lease in the Proposed Action, the amount of water the MDWS would receive through the

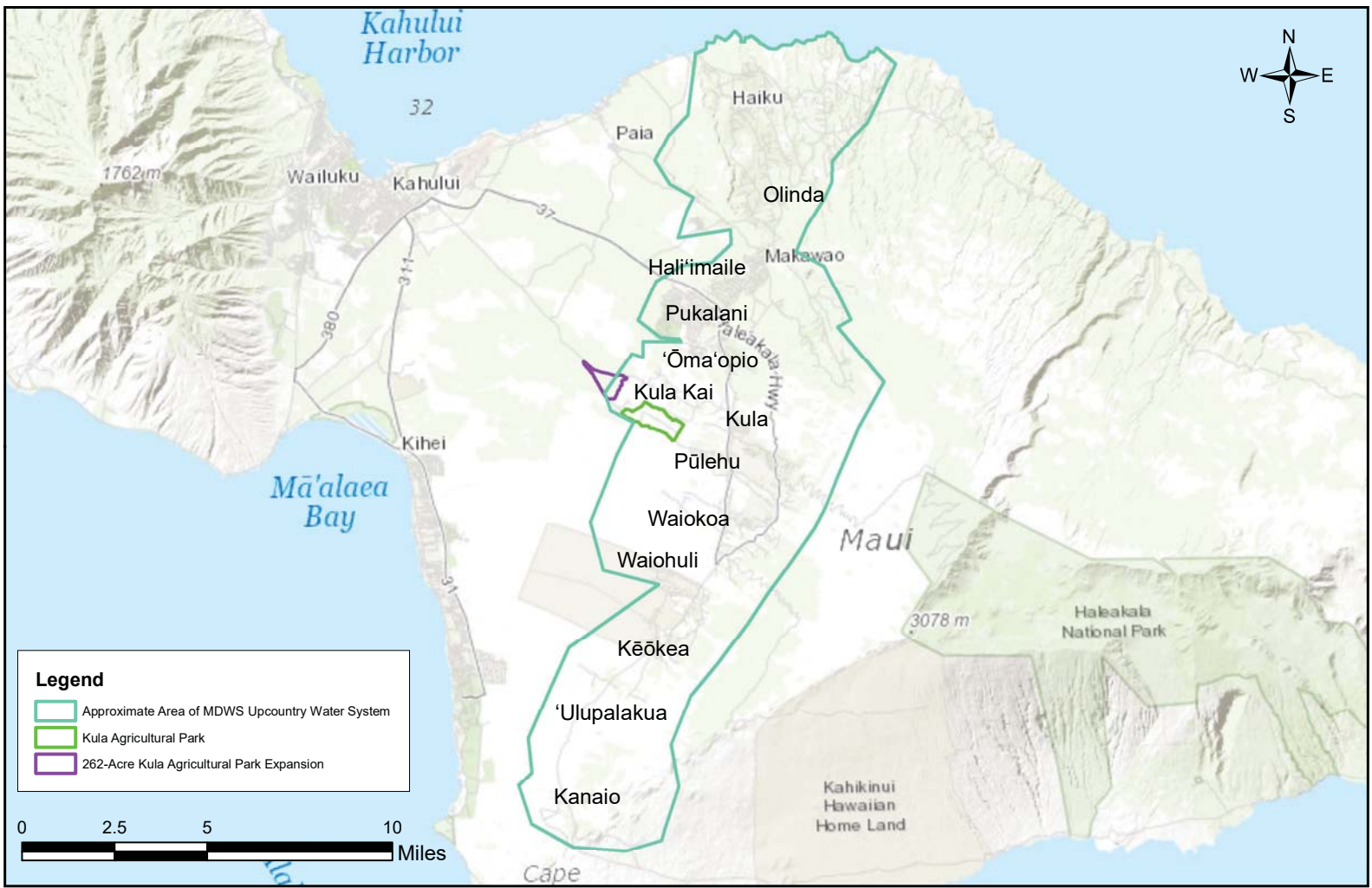


FIGURE 2-3

## Upcountry Maui Water System Service Area

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



EMI Aqueduct System through the Wailoa Ditch is assumed to be consistent with prior use, identified in the CWRM D&O as an average of 7.1 mgd.

### **2.1.3.1 Upcountry Maui Water System**

The Upcountry Maui Water System relies on three surface water sources, which accounts for approximately 80-90 percent (13 mgd) of water delivered through the Upcountry Maui Water System (CWRM D&O, FOF 799). One of the three surface water sources is delivered directly by the EMI Aqueduct System, through the Wailoa Ditch. Average daily use by the MDWS from the Wailoa Ditch is about 7.1 mgd, which includes water processed by the Kamole-Weir Water Treatment Plant (WTP) (discussed in further detail below) and non-potable water for the KAP, which receives water from Reservoir 40.

The other two surface water sources are not supplied by the EMI Aqueduct System, but are fed by streams located on lands previously owned by A&B and now owned by Mahi Pono. Under a contractual agreement with EMI, these waters are diverted and transported by two MDWS high-elevation aqueducts (Upper and Lower Waikamoi Flumes) that are also situated on land that was previously owned by A&B and now owned by Mahi Pono, located above the License Area (Ha'ikū Uka Watershed). These aqueduct systems deliver water to the MDWS' Olinda and Pi'iholo Water Treatment Plants (See Figure 2-4). These two high elevation aqueducts are maintained by EMI. However, these sources are not part of the proposed Water Lease being addressed by this DEIS as they are outside the License Area. The water received at the higher elevation is preferred by the MDWS because it can be delivered to users at higher elevations without the cost of pumping from a lower elevation source like the Wailoa Ditch.

The remaining approximately 10-20 percent of water delivered through the Upcountry Maui Water System comes from a series of basal aquifer wells: the Ha'ikū Well, Po'okela Well, and the two Kaupakalua wells. These four wells account for a total of about 4.9 mgd of water delivered. In times of emergency, the Upcountry Maui Water System can draw up to 1.5 mgd from the Hāmākuapoko Wells (CWRM D&O, FOF 808). However, there is concern over this water due to the presence of pesticides from former pineapple production. The total combined production capacity of the available water sources for the Upcountry Maui Water System (surface and groundwater) is approximately 17.9 mgd but, the reliable capacity is approximately 9.1 mgd due to limitations and maintenance requirements (CWRM D&O, FOF 811). Water from wells is also more expensive as it must be pumped.

The MDWS has been able to receive its surface waters from all three Upcountry Maui water sources through a series of agreements with EMI. Because the EMI agreements with the MDWS provide that water supplied to the MDWS is contingent upon the Water Lease being issued, for purposes of this EIS, no water is presumed to be provided to the MDWS if the Water Lease is not issued. Currently the MDWS is being charged 6¢ per 1,000 gallons to receive East Maui surface water for the KAP and other Upcountry Maui farm areas.

The Upcountry Maui Water System serves a total population of approximately 35,251, and the County anticipates the population will grow to approximately 43,675 by 2030. As there is no "excess" supply of water for Upcountry Maui, the MDWS customers have been required to adhere to strict conservation measures during periods of drought (Draft Maui



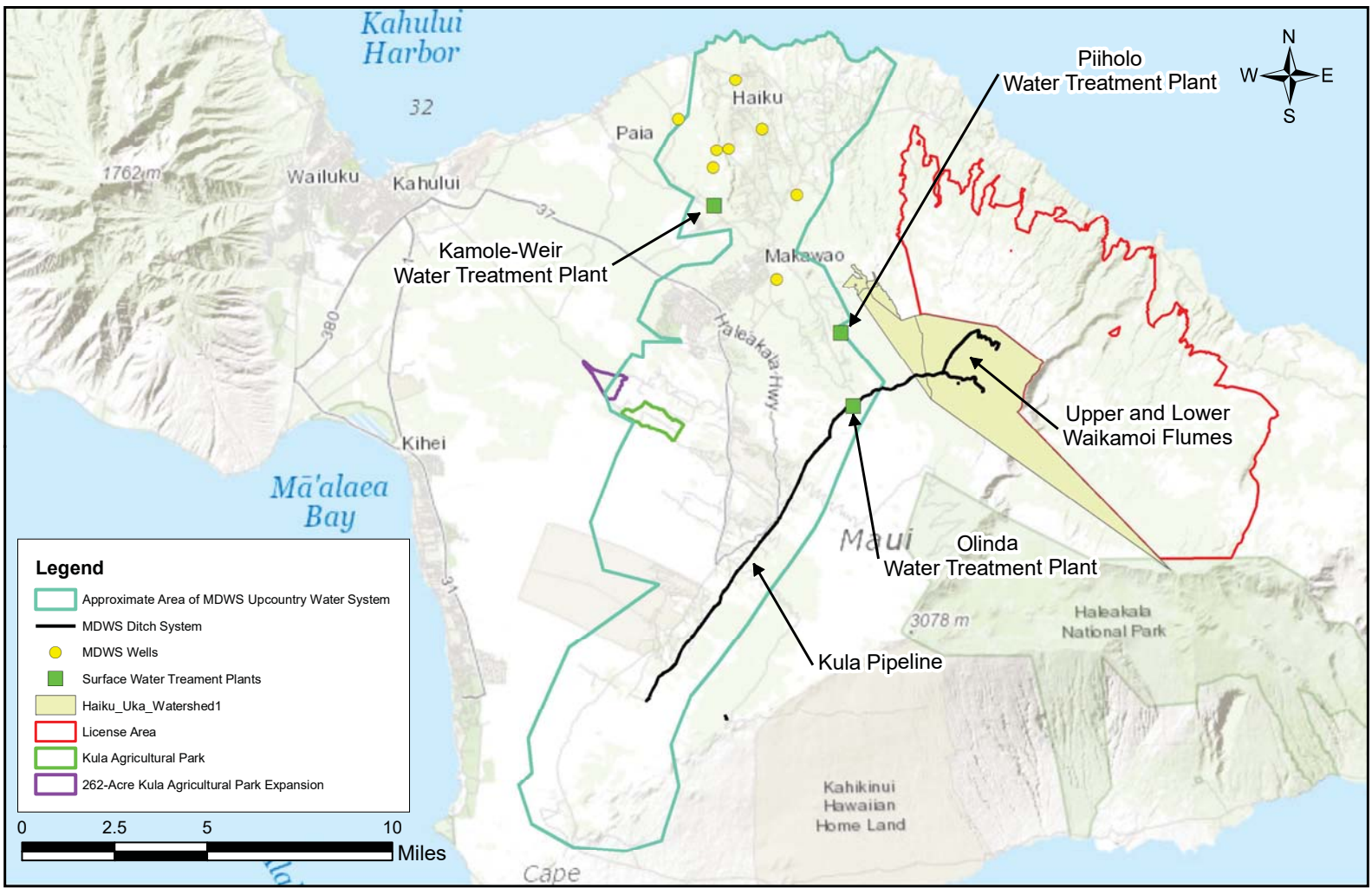


FIGURE 2-4

# Upcountry Maui Water System

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



Island Water Use and Development Plan, March 2019). Customer usage, based on meter readings between 2005 and 2013, averaged approximately 7.9 mgd, varying between 6 mgd and 10 mgd. The MDWS anticipates that the projected population growth would add an additional need for 1.65 mgd of water. Moreover, there is a long waiting list of Upcountry Maui residents seeking water meters, some of whom have been waiting for over a decade. Currently, there are approximately 9,865 water connections to the Upcountry Maui Water System, with approximately 1,852 applicants on the County's waiting list for new water connections (Draft Maui Island Water Use and Development Plan, March 2019).

While the MDWS has worked diligently in recent years to bring additional sources of water online for Upcountry Maui users, the County's dependence on water received through the EMI Aqueduct System cannot be overstated. The MDWS asserts that if all connections were to be made, the water demand of the Upcountry Maui Water System would increase by about 7.5 mgd, or approximately 95 percent of the current usage of 7.9 mgd because many of the 1,852 applicants are asking for multiple meters for subdivisions. Therefore, the 1,852 applicants represent many more meters. The MDWS expects it will need to develop between 4.2 mgd and 7.95 mgd by 2030 to meet demands of future population growth, new connections from the current list of water meters, as well as present uses (Draft Maui Island Water Use and Development Plan, March 2019).

Currently, the MDWS has no plans to drill new production wells to serve the Upcountry Maui communities as they are costly to develop and operationally use a large amount of energy due to the elevation that the water would need to be pumped (CWRM D&O, FOF 825). New basal well development would involve construction of new wells at the 1,300-foot elevation and/or wells at the 1,800-foot elevation, along with transmission pipelines, storage tanks, and booster pump stations. Moreover, there are legal issues that would need to be resolved before the MDWS could proceed with well development.<sup>2</sup> The EMI Aqueduct System continues to serve a critical role in providing Upcountry Maui with water, and should the delivery of water from the EMI Aqueduct System to the MDWS be curtailed, Upcountry Maui may be left without a reliable source of water.

The Upcountry Maui Water System's reliance on surface water (80-90%) makes the system extremely vulnerable to drought and presents as a challenge for the MDWS. For decades, the Upcountry Maui region has experienced voluntary and mandatory water use restrictions imposed on residential and agricultural users during droughts, primarily during the dry season, often negatively impacting the productivity of the farmers. Droughts are a natural phenomenon that have been historically experienced throughout the Hawaiian Islands, however, drought events have become more intense over the years, and are expected to intensify in the future.<sup>3</sup>

Droughts in Maui are a part of the regular climate cycle, and have been occurring on average every 3 to 4 years (Akinaka, 2019). These periods of low rainfall have even

---

<sup>2</sup> In 2003 the County entered into a consent decree in the matter of *The Coalition to Protect East Maui Water Resources et al. v. Board of Water Supply et al.* that requires that the MDWS conduct rigorous cost/benefit analyses of other water source options before developing groundwater in the East Maui Region. In that case, the plaintiffs demanded that before looking to East Maui as a source of groundwater, the MDWS must look first to surface water drawn from the Waikapu, 'Īao, and/or Waihe'e hydrologic units, and the MDWS must meet several other criteria before pursuing groundwater development in the East Maui area.

<sup>3</sup> Discussed in further detail in Section 4.3.1

affected the normally lush East Maui area. Historical occurrences as noted in the recently updated Hawai'i Drought Plan (2017) have occurred many times within the past 70 years. Since 1950, droughts occurred in East Maui in 1953, 1962, 1971, 1981, 1984, 1999, 2006, and most recently a long period of 2008 to 2013. During these times, the EMI Aqueduct System has delivered less than 50,000 million gallons annually to the County of Maui. The average of the delivery over the past century has been 61,000 mg per year (Akinaka, 2019). Historically, Kamole-Weir WTP is the primary source of water for all of Upcountry Maui during times of drought. However, the facility lacks raw water storage and is restricted to how much water that the facility can treat or how much water that can be delivered through the Wailoa Ditch (Draft Maui Island Water Use and Development Plan, March 2019).

The recent CWRM D&O for East Maui streams would result in decreased base flows for Wailoa Ditch, which is the main source of water for the Kamole-Weir WTP (Draft Maui Island Water Use and Development Plan, March 2019). With the IIFS established, surface water under extended low flow/drought conditions (Q90), is not sufficient to meet the projected municipal demand of the MDWS Upcountry Maui Water System (Draft Maui Island Water Use and Development Plan, March 2019). Typically, during drought periods, the average daily demand increases per user. Even with decreased offstream use resulting from the proposed diversified agricultural use in Central Maui (which will use less water than historically used for sugar cultivation), water shortage in droughts will likely continue as long as the Upcountry Maui Water System relies on surface water as its primary source. Peak demands for Upcountry Maui's projected needs must be accounted for to ensure a reliable water supply. Should the EMI Aqueduct System be curtailed, MDWS will need to expand existing water resources and seek the development of alternative water resources.

There are three MDWS water treatment facilities that rely on water from the EMI Aqueduct System or water from the privately-owned Ha'ikū Uka Watershed that supply the Upcountry Maui Water Service Area with municipal water: the Kamole-Weir WTP (supplied by the EMI Aqueduct System; subject to the Water Lease), the Pi'iholo WTP, and the Olinda/Upper Kula WTP (supplied by Waikamoi Flumes sourced and situated in the Ha'ikū Uka Watershed; not within the License Area).

The Kamole-Weir WTP receives surface water from the Wailoa Ditch, which, in turn receives water from diversions of various streams extending as far east as Makapipi Stream at the eastern border of the License Area. The streams are Honopou, Hanehoi, Puolua, Alo, Waikamoi, Puohokamoa, Ha'ipua'ena, Kōlea, Punalau, Honomanū, Nua'ailua, Pi'ina'au, Paluhulu, East and West Wailuānui, East and West Wailuāiki, Kopili'ula, Pua'aka'a, Waiohue, Pa'akea, Waia'aka, Kapā'ula, Hanawī, and Makapipi. The Kamole-Weir WTP serves the communities of Makawao, Pukalani, Hali'imaile, and Ha'ikū. The facility uses micro-filtration technology and is the largest surface water facility on the island of Maui. The average daily production at this facility is about 3.6 mgd, but it can process up to 6 mgd at maximum capacity. However, there is no raw water storage at Kamole-Weir WTP. The MDWS is considering development of a 100- to 200 mg reservoir at the Kamole-Weir WTP, which does not currently have a reservoir. No funds have been allocated towards design or construction of the potential new reservoir at this time. As required by the CWRM D&O, the MDWS will need to update the CWRM on the status of their plans for Kamole-Weir WTP.



The Pi'iholo WTP relies on water through the Lower Waikamoi (Kula) Flume, which diverts water from various streams in the Ha'ikū Uka Watershed (Waikamoi, Puohokamoa, Ha'ipua'ena, and Honomanū), previously owned by A&B and now owned by Mahi Pono, and serves the Lower Kula community. Water for this facility is stored in a reservoir with a capacity of 50 mg. Average daily production at the Pi'iholo Water Treatment Plant is 2.5 mgd, but it can process up to 5 mgd at maximum capacity.

The Olinda/Upper Kula WTP relies on water from the Upper Waikamoi (Kula) Flume, which diverts water from various stream diversions in the Ha'ikū Uku Watershed (Waikamoi, Puohokamoa, and Ha'ipua'ena), and serves the Upper Kula, Ulupalakua, and Kanaio communities. Water for this facility is stored in the 30 mg Waikamoi Reservoir and the 100 mg Kahakapao Reservoir. The average daily production of the Olinda/Upper Kula WTP is 1.6 mgd, with a maximum capacity of 2 mgd.

With the issuance of the Water Lease in the Proposed Action, the amount of water the MDWS could receive through the EMI Aqueduct System at its Kamole-Weir WTP assumed to remain at an average of 3.6 mgd (average daily use by the MDWS from the Wailoa ditch is 7.1 mgd, which includes water for the Kamole-Weir WTP and the KAP). Therefore unless, other water sources can be developed or storage capacity increased, the potential for growth would continue to be limited and the voluntary and mandatory restrictions during droughts will continue.

#### **2.1.3.2 The MDWS Kula Agricultural Park**

The MDWS also serves KAP with non-potable water from diversions of the same streams that serve the Kamole-Weir WTP through the Wailoa Ditch. Non-potable water for the KAP is pumped from the end of the Hāmākua ditch near Reservoir 40 to the KAP. The KAP is owned by the County of Maui and is managed by the County's Office of Economic Development for the purposes of promoting the development of diversified agriculture by providing appropriately sized agricultural lots at a reasonable cost per Maui County Code (MCC) Section 22.04A.030. The KAP currently consists of 31 farm lots, ranging in size from 7 to 29 acres, for a total of approximately 445 acres, and supports 26 farmers. Each individual lot at KAP is metered and billed by the MDWS. The diverted stream water that is used to supply the KAP is stored in two reservoirs with a combined total capacity of approximately 5.4 mg.

Presently, water demands at KAP are served by the County, which, by contractual agreement, is able to draw up to 1.5 mgd from the end of the Hāmākua Ditch and to utilize a former plantation reservoir to serve KAP. As noted previously, the Hāmākua Ditch is fed directly by the EMI Aqueduct System through the Wailoa Ditch. As of late 2015, the Maui County Office of Economic Development calculated that the current use for the KAP is approximately 548,191 gpd of which 80-90 percent of delivered water is from surface water sources with the remaining portion from basal aquifer wells. Due to the current design of the County's KAP distribution system (pump system in the reservoir), 1.5 mgd must be delivered to the County in order for it to provide the needed 548,191 gpd to the KAP users.

#### **2.1.3.3 The MDWS Nāhiku**

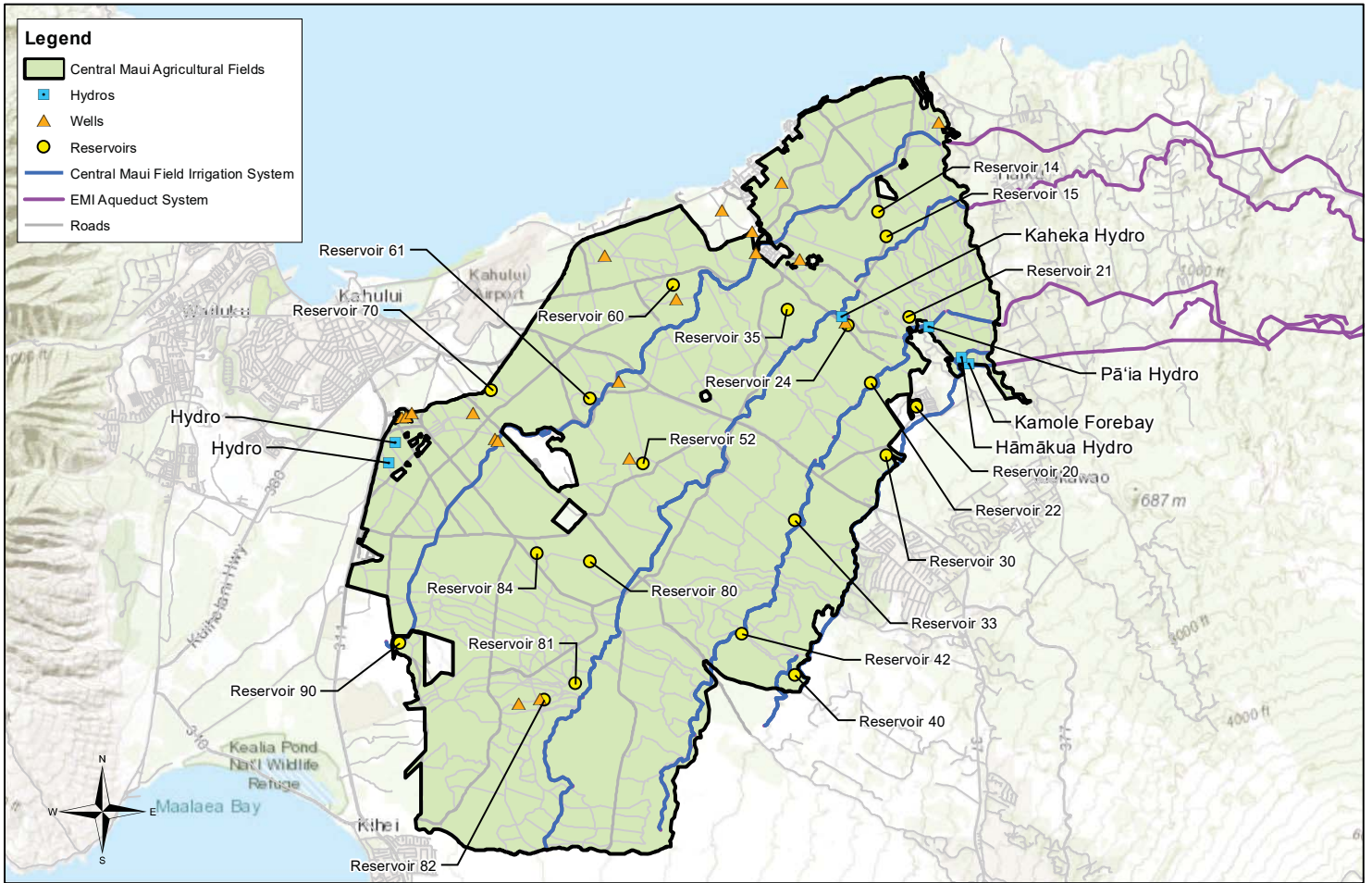
A portion of the Nāhiku community is also served by the MDWS directly through the EMI Aqueduct System via a development tunnel in the Koolau Ditch near Makapipi Stream. The tunnel draws between 20,000 to 45,000 gpd, dependent on weather, directly from the

EMI Aqueduct System. The area is at a lower elevation where the water system has sufficient pressure for residential service. Nāhiku overlies the Ke‘anae and Kūhiwa aquifers and is an area of high rainfall, receiving 219 inches annually at Hana Highway and nearly 300 inches at higher elevations. The MDWS purchases water delivery for domestic use from EMI’s West Makapipi Tunnel 2, Well No. 4806-07, which is also known as the “Nāhiku Tunnel” (Draft Maui Island Water Use and Development Plan, March 2019). The water serves 43 water meters located along Nāhiku Road. One meter is classified as an agricultural use while all the others are classified as single-family use. Water from the tunnel is chlorinated at the Upper Nāhiku Tank before it is serviced to the users. Based on water use in the Nāhiku portion of the Ko‘olau Water System, there is sufficient source to accept new meter service applications to meet future demands. However, the cost for water service, storage, and transmission is borne by the meter applicant (Draft Maui Island Water Use and Development Plan, March 2019).

#### **2.1.4 Central Maui Field System**

A&B cultivated sugarcane on the fields of Central Maui for over a century up until the termination of operations in 2016. Approximately 30,000 acres of the agricultural fields in Central Maui are irrigated by waters diverted by the EMI Aqueduct System and delivered into the agricultural fields in Central Maui which includes a system of reservoirs and ditches originally designed to service the cultivation of sugar cane (See Figure 2-5). Recently, these agricultural fields were sold to Mahi Pono, which plans to cultivate these fields with various diversified agriculture crops. Over its history, the long-term average delivery of water by the EMI Aqueduct System has been approximately 165 mgd (prior to any use of water by the MDWS or HC&S on the agricultural fields). Since 1999, however, deliveries have declined significantly. In the ten year period from 2004 to 2013, the average delivery was 126 mgd from the EMI Aqueduct System to the Central Maui agricultural fields (CWRM D&O, FOF 519).

In addition to the surface water imported from the EMI Aqueduct System to the Central Maui field irrigation system, the irrigation infrastructure includes fifteen brackish water wells that can supplement surface water to approximately 17,200 acres of the plantation at the lower elevations (CWRM D&O, FOF 738). These brackish wells extract groundwater from the subsurface aquifers lying beneath the agricultural lands, and which are cyclically dependent on recharge derived from the irrigation of the overlying lands by water from the EMI Aqueduct System. The remaining approximately 12,800 acres cannot be serviced by pumped ground water on a consistent basis due to their higher elevation, which makes the land uneconomical to reach with pumped water. Groundwater, however, can be delivered to 7,000 acres at higher elevations via a shared pipeline that served as a penstock line for a hydroelectric unit (CWRM D&O, FOF 739). This pump station was designed and built to be an emergency water source for the high-elevation fields in the event of extreme drought. The combined pumping capacity of these fifteen brackish water wells is 228 mgd of brackish water. However, installed pumping capacity is not an indication of how much water can be reliably provided by these wells. The true instantaneous pumping capacity of the wells – the most that can be pumped over 3 to 5 days – was 115 mgd during sugar cultivation, after which sump levels start to decline.



0 5,500 11,000 22,000 Feet  
 0 0.5 1 2 3 4 Miles  
 1 inch = 11,000 feet  
 Source: ESRI, State OP, & Akinaka

FIGURE 2-5

## CENTRAL MAUI INFRASTRUCTURE MAP

*Proposed Lease for Nāhiku, Ke'anae, Honomanū and Huelo License Areas*

From 1986 to 2013, A&B pumped an average of 71 mgd from the brackish water wells; during the 2008-to-2013 period, these wells delivered about 70 mgd of brackish groundwater to the lower-elevation fields. This was a suitable source of water for sugarcane during droughts because sugarcane can tolerate periodic use of water with higher salinity levels.

When the sugar cane fields were in cultivation, well water was being applied typically during dry periods, when surface water was not available for sustained periods. Sugar cane was cultivated in a twenty-four month crop cycle, providing ample time for the crop to recover from a prolonged use of brackish water. The crops planned for Mahi Pono's diversified agricultural operation may have a shorter crop cycle and be much less tolerant than sugar cane of higher salinity levels. Thus, the planned crops will generally be more vulnerable to the negative impacts on crop growth associated with prolonged exposure to brackish water and lower crop yields.

The supplementation of water demands by these brackish wells presents a significant constraint to the viability of the future implementation of diversified agriculture. Under sugar cultivation, the full needs of the 30,000 acres of Central Maui fields could not be met by stream waters diverted by the EMI Aqueduct System at all times of the year. Therefore, every month HC&S would be required to utilize its brackish wells to supplement available surface water supplies to meet the demands of its sugar cultivation operations in Central Maui.

Currently, the majority of the Central Maui fields are no longer in active cultivation, and approximately 20-25 mgd of water is being diverted by the EMI Aqueduct System. Seepage loss, which is recharged back into the groundwater, takes place beyond the last stream diversion at Maliko Gulch, and accounts for approximately 22.7% of the water delivered at Maliko Gulch.

To allow for the identification and analysis of impacts, alternatives considered, proposed mitigation measures, and to discuss all reasonably foreseeable consequences of the action, this DEIS incorporates Mahi Pono's farm plan which projects its 2030 vision (See Figure 2-6). For the purpose of this DEIS, Mahi Pono's farm plan projects use of the total amount of water available after compliance with the IIFS requirements of the CWRM D&O, although it is understood that the DHHL will eventually convert its water reservation to active use. Mahi Pono's water use will be incremental as diversified agriculture is brought back to Central Maui.

Mahi Pono's farm plan is, like any responsible farming plan, a fluid and responsive plan that responds to the ever-changing agricultural market demands and the type of agricultural activity to be pursued (i.e. orchard crops, tropical fruits, row and annual crops, energy crops, pasturage etc.), as well as responding to other variables such as the availability and cost of water for crop irrigation. All of these things must be considered when developing an evolving and feasible diversified agricultural plan for Central Maui.

Another factor in developing the farm plan is to be sensitive to the existing local farming community. Mahi Pono does not want to displace local farmers by planting competing crops or artificially accelerating the ramp-up of operations, both of which could have the potential to drive local farmers out of the market. Mahi Pono's goals for its diversified farm plan will be guided by its core principles of using reasonable and environmentally

responsible “best management practices”, planting non-GMO crops, and growing food for local consumption.

### Water Lease Limited to CWRM D&O Farm Plan

The Mahi Pono farm plan assumes the following:

- The total surface water available for use after system losses is estimated to be approximately 65.88 mgd.
- Surface water can be supplemented by a brackish groundwater amount equal to 20 percent of surface water. Taking into account the CWRM D&O, it is estimated that there could be up to 16.47 mgd of brackish groundwater used in the Central Maui agricultural fields. (Plasch, 2019)
- Under the CWRM D&O, the total water available for use on the Central Maui agricultural fields after system losses is approximately 82.35 mgd
- That total amount of water will be delivered to approximately 30,000 acres. Of those 30,000 acres:
  - Approximately 15,950 acres would be used for farming, including 12,850 acres for orchard crops and 3,100 acres for other crops.
  - Approximately 13,800 acres would be used for pasture, of which about 4,700 acres would be irrigated.
  - Approximately 250 acres would be used for green energy, such as a solar farm.

Because there is insufficient surface water to support the entire farm plan, brackish groundwater will also be used.

Given these figures and assumptions, a farm plan consistent with the amount of water available under the CWRM D&O is shown in the table below:

| <b>Proposed Use</b>                         | <b>Acres</b>  | <b>Gallon Per Acre a Day</b> | <b>Surface MGD</b> | <b>Ground water MGD</b> | <b>Total MGD</b> | <b>Annual MGD</b> | <b>% of Total</b> |
|---|---------------|------------------------------|--------------------|-------------------------|------------------|-------------------|-------------------|
| Community Farm                              | 800           | 3,392                        | 1.87               | 0.83                    | 2.70             | 987               | 3.28%             |
| Orchards (citrus, mac nuts, beverage crops) | 12,850        | 5,089                        | 53.39              | 12.04                   | 65.43            | 23,883            | 79.48 %           |
| Tropical Fruits                             | 600           | 4,999                        | 2.07               | 0.87                    | 2.94             | 1,073             | 3.57%             |
| Row and Annual Crops                        | 1,200         | 3,392                        | 3.14               | 0.95                    | 4.09             | 1,491             | 4.96%             |
| Energy Crops                                | 500           | 3,392                        | 1.18               | 0.53                    | 1.70             | 622               | 2.07%             |
| Pasture, irrigated                          | 4,700         | 1,161                        | 4.20               | 1.25                    | 5.46             | 1,992             | 6.63%             |
| Pasture, unirrigated                        | 9,100         | 0                            | 0                  | 0                       | 0.00             | 0                 | 0.00%             |
| Green Energy                                | 250           | 0                            | 0                  | 0                       | 0.00             | 0                 | 0.00%             |
| <b>TOTAL</b>                                | <b>30,000</b> | <b>2,744</b>                 | <b>65.86</b>       | <b>16.47</b>            | <b>82.33</b>     | <b>30,047.77</b>  | <b>100.00 %</b>   |

This farm plan would consist of the following:

- Approximately 20,650 acres of irrigated farm land, including 12,850 of orchard crops, 600 acres of tropical fruit, 1,200 acres of row and annual crops, in addition to a community garden and limited non-GMO energy crops.



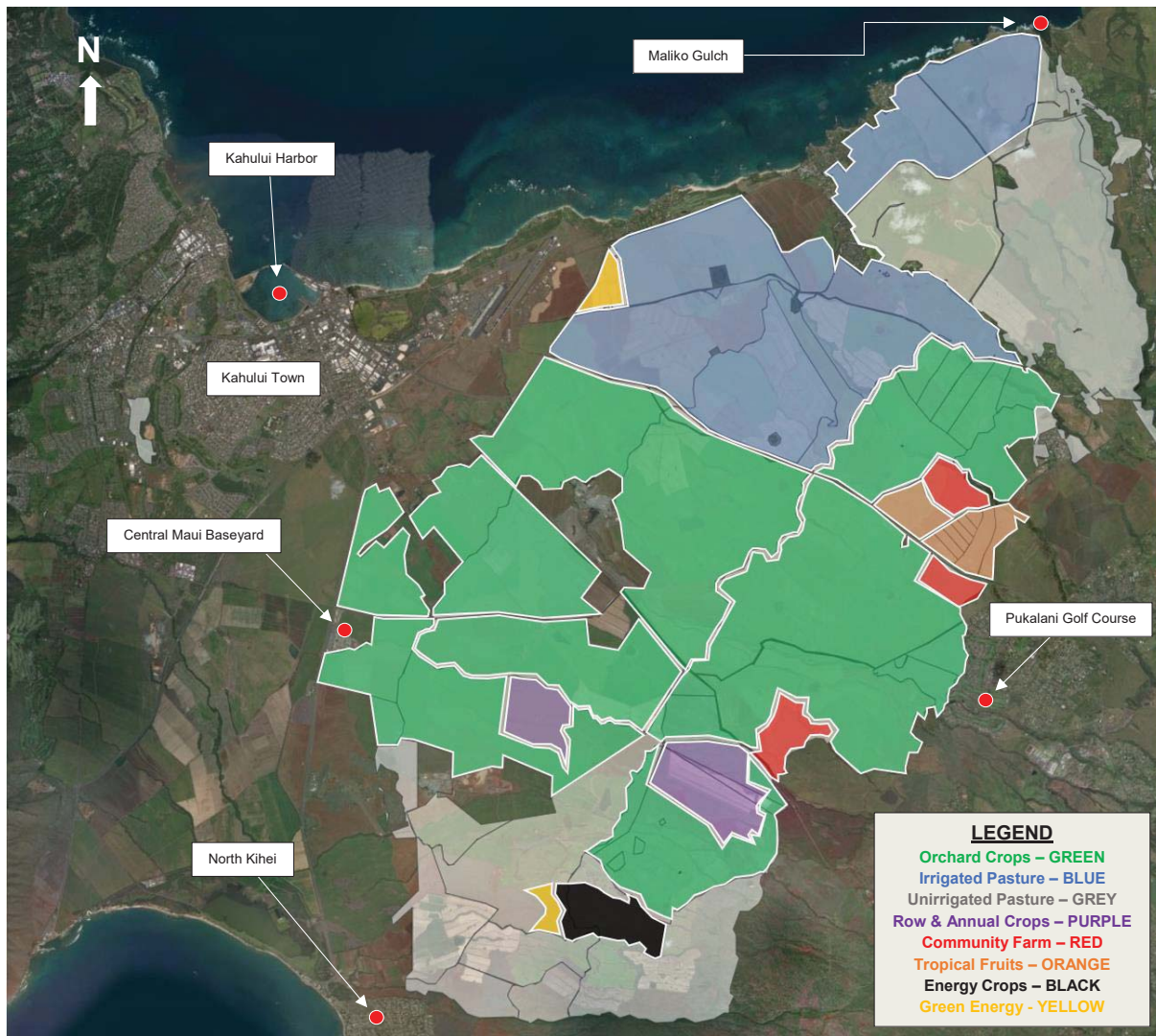
- Approximately 13,800 acres of cattle pasture, comprised of 4,700 acres of irrigated pasture, and 9,100 acres of unirrigated pasture. This should fit the proposed model of grass-finishing on irrigated pasture. The unirrigated acreage is less than 10,000 acres, which helps ensure that the entire area devoted to unirrigated pasture will remain productive.

### **2.1.5 Phasing and Timing of the Proposed Action**

After the Final EIS (FEIS) is published and accepted by the BLNR, the State of Hawai'i will conduct appraisals of the water from the License Area, produce lease agreements and a Watershed Management Plan (refer to Section 2.1). Once this is complete the Water Lease will be put to public auction. Once the Water Lease is issued by the BLNR, under the Proposed Action, Mahi Pono can implement its proposed farm plan.

An estimated 10 years will be required for Mahi Pono and lessees to remove volunteer sugarcane and weeds from the approximate 30,000 acres, amend soils, install field improvements, build warehouses and other structures, and plant crops. The predominant crops will be various types of orchard trees (avocado, coffee, citrus, macadamia nuts, etc.), which reflect a long-term commitment to farming. About 5 to 12 years will be required for orchard trees to reach full maturity, after which the trees will provide yields for 35 to over 100 years (Plasch, 2019).

In order for Mahi Pono and other farmers to justify the very substantial investment in a 30,000-acre farm, a long-term water lease will be required. A short-term lease would derail development of the Mahi Pono farm plan because of the risk of not being able to farm for a long enough period to recover their planned investment (Plasch, 2019).



**Figure 2-6 Mahi Pono Farm Plan**



---

# **Chapter 3:**

## Alternatives



### 3. ALTERNATIVES

Under Section 11-200-17(f), HAR, a DEIS must include a section discussing alternatives which could attain the objectives of the action regardless of cost, in sufficient detail to explain why they were rejected. In each case, the analysis of the alternatives must be sufficiently detailed to allow the comparative evaluation of the environmental benefits, costs, and risks of the Proposed Action and each **reasonable alternative**. Particular attention should be given to alternatives that might enhance the environmental quality or avoid, reduce, or minimize some or all of the adverse environmental effects, costs, and risks. In addition, an analysis of the "no action" alternative should be included.

The objectives of the Proposed Action are:

- Preserve and maintain the EMI Aqueduct System, including its access roads
- Continue to meet domestic and agricultural water demands in Upcountry Maui
- Continue to provide water for agricultural purposes in Central Maui (specifically, to transition fields previously used for sugar cane cultivation into new, diversified agricultural uses)
- Continue to serve community water demands in Nāhiku

With these objectives in mind, the alternatives considered are: (1) the Proposed Action, meaning a Water Lease being issued permitting water diversions up to the maximum amount authorized under the CWRM D&O (an assessment of the impacts of the Proposed Action is provided in Chapter 4); (2) a Water Lease issued permitting water diversions in an amount less than what is allowed under the CWRM D&O (this is the Reduced Water Volume alternative); and (3) a Water Lease issued with different terms, i.e. the Alternative Lease Duration alternative or the Modified Lease Area alternative. The "No Action" alternative, meaning no Water Lease being issued, is also assessed, although the No Action alternative clearly does not meet the objectives listed above.

#### 3.1 Alternatives Considered But Dismissed

This chapter also reviews alternative means of achieving some of the objectives of the Proposed Action through alternative sources of water. However, a preliminary analysis determined that these options are not considered viable for various reasons including the expected intensification of environmental effects and lack of feasibility. Therefore, these options are considered but dismissed from further study.

##### 3.1.1 Water Sources Alternatives

New and additional water sources could be used to supplement periodic and/or long-term deficits under the No Action alternative or Water Lease Volume alternative to achieve the objectives of the Proposed Action. Any alternative requiring significant development, including facilities such as wells, pumps, distribution pipes and reservoirs, however, would incur more cost, which would increase water delivery costs and potentially discourage, or at least limit, the diversity of agriculture that could otherwise be provided. Since the quantity of groundwater in Central Maui is dependent on surface water for recharge, increased pumping from existing wells in Central Maui cannot be depended on for long term development of agriculture in Central Maui. Additionally, the salinity levels of the groundwater in Central Maui, prohibit use

of groundwater as a sole source of water for diversified agricultural development in Central Maui. Diversified agricultural crops are generally less salt-tolerant than sugar, the previous agricultural crop grown in Central Maui.

Alternative water sources also have more potential for adverse environmental impacts than the Proposed Action, which would utilize the existing EMI Aqueduct System, and utilize the existing Central Maui irrigation system that is planned for upgrades by Mahi Pono. Mahi Pono's irrigation engineering team is designing a high-efficiency irrigation system that will reduce water usage by: (1) using automatic, real-time irrigation sensors to deliver precise amounts of water efficiently; (2) recycle and re-use all water used in Mahi Pono's processing plants; and (3) integrate various live technology feeds to constantly monitor plant, soil, and tree health.

### **3.1.1.1 Groundwater Alternative**

This alternative is intended to reduce the amount of surface water required for irrigation to support diversified agriculture in Central Maui. If sufficient groundwater sources can be developed, then the groundwater together with the amount of surface water that may be available through the No Action or Reduced Water Volume Alternative could, conceivably, meet objectives of the Proposed Action.

The Central Maui agricultural fields are within the MDWS's Central Maui Aquifer Sector which includes four aquifer systems: Pā'ia, Kahului, Kamaole, and Makawao aquifers. Currently, the Central Maui agricultural fields have 15 wells (see Figure 2-5) in the Pā'ia and Kahului aquifers. The average pumping rate from 1987 to 2006 was about 26,663 mg per year. This volume equates to a pumping average of 73 mgd. Brackish groundwater used on the Central Maui agricultural fields during that time was approximately 42.5 mgd. (Plasch, 2019). This average daily pumping rate is well above the Sustainable Yield (SY) of 8 mgd (7 mgd for the Pā'ia aquifer and 1 mgd for Kahului aquifer), as determined by the CWRM (see detailed discussion in Section 4.2.2). This high pumping rate may have been achievable in the past due to the large amount of recharge that was occurring when sugar was being cultivated and irrigated by surface water. During this same period, irrigation from surface water in Central Maui was approximately 112 mgd, and an additional approximately 44 mgd of surface water was applied to the fields through system losses (evaporation and leakage) within the Central Maui field system. The recharge from these system losses were replenishing the Kahului and Pā'ia aquifers and is likely the reason that pumping groundwater at rates greater than the SY was achievable. Under the Proposed Action, less surface water will be used for irrigation in Central Maui than was the case in the past, leading to less recharge of the underlying aquifers (92.32 mgd is the maximum amount of surface water estimated to be available). All of the existing wells are located within the Pā'ia and Kahului aquifers and, with little recharge from former sugar irrigation, maximum pumping exceeding the SY of 8 mgd would eventually increase salinity of the water drawn from the wells. At that point, pumping rates would need to be reduced to protect the aquifers. Given that there are other wells in these aquifers, the safe maximum pumping rate is probably about half, or 4 mgd (Akinaka, 2019).

To increase groundwater yields, additional wells could be drilled in other aquifers in Central and East Maui. Assuming that a single well is normally allowed to pump about 1 mgd within its area, 53 new well sites would need to be developed, each requiring site acquisition, drilling, testing and if adequate, brought into production. These wells would need to be spaced far

enough to avoid salt water intrusion into the aquifer. Each well site would have an estimated development cost of \$6 million. (Akinaka, 2019). To plan, obtain permits for, and construct 53 wells would probably be in the order of \$318 million. Added to this cost would be transmission pipes, additional pumping and related energy consumption to reach higher elevations, and reservoirs. It is anticipated to be very unlikely that 53 new wells could be constructed within the Central and East Maui areas, as the environmental impacts would be considerable and permit approvals would be prohibitive. Therefore, the groundwater alternative is viewed as an unreasonable alternative with greater risks of adverse environmental effects than the Proposed Action, and was dismissed from further review.

### **3.1.1.2 Reclaimed Water**

The alternative of using reclaimed water from the Wailuku-Kahului Wastewater Reclamation Facility (WWRF) was considered. Kahului WWRF is surrounded by Kanahāe Beach Park to the east, the Kanahā Pond Wildlife Sanctuary is mauka, and Kahului Harbor to the west. Presently, the Kahului WWRF has capacity for 7.9 mgd. Average flow in 2012 was 3.85 mgd. Average R-2 reuse in 2012 was 0.16 mgd. R-2 is secondary treated wastewater that has been disinfected. Presently, the R-2 recycled water from the Kahului WWRF is disposed through injection wells. R-2 recycled water can be used for subsurface irrigation of crops such as fruit trees where the edible portion of crops has minimal contact with the recycled water. R-2 surface drip or subsurface drip irrigation is allowed for timber and trees not bearing food crops. R-2 recycled water can be further treated to R-1 standard by filtration, which may entail adding a chemical flocculant to cause small particles in the water to clump together so they can be filtered out in the next step. R-1 recycled water is the highest quality and can be for agricultural irrigation via spray, surface drip or subsurface drip irrigation, as well as for watering livestock, with the exception of dairy animals that produce milk for human consumption.

Costs for using recycled water include costs for upgrading the water from R-2 to R-1 standards, transmission by pump and pipelines, and reservoir(s). Kahului WWRF is at a low elevation, approximately five feet above mean sea level. The use of any reclaimed water for irrigation purposes in Central Maui would involve pumping and related energy consumption. The installation of pipelines, reservoirs, and other infrastructure to bring the reclaimed water to Central Maui would entail construction in the vicinity of the Kanahā Pond Wildlife Sanctuary, a 143 acre State of Hawai'i facility that comprises large brackish water wetland features and is home to three endangered bird species, the Hawaiian stilt, the Hawaiian duck, and the Hawaiian coot, as well as a variety of other bird wildlife, increasing the risks of detrimental environmental impacts. Considering the limited amount of reclaimed water that could be obtained due to the capacity at Kahului WWRF, infrastructure and operational costs, and the risk of environmental impacts, this alternative is viewed as an unreasonable alternative with greater risks of adverse environmental effects than the Proposed Action, and was dismissed from further review.

### **3.1.1.3 Added Storage Alternative**

Given the variations in rainfall amounts in East Maui, if excess surface flows could be captured and stored to be used when flows through the EMI Aqueduct System are insufficient, the overall amount of diverted flow required to meet irrigation needs in Central Maui could be reduced. Currently, the EMI Aqueduct System has eight reservoirs, mostly along the lower

ditch systems, and the Central Maui field irrigation system has 48 major reservoirs<sup>1</sup>. The combined storage capacity of these existing reservoirs is approximately 1,344 mg (Akinaka, 2019). Most of these reservoirs, however, have not been used since the closure of sugar in 2016 and others have not been used because they do not meet dam safety requirements. As a result, many will require extensive upgrades to put them back into service. These upgrades could cost between \$50 – 100 million (Akinaka, 2019). Obtaining permits to upgrade and repair these reservoirs will also be challenging due to current dam safety requirements. Assuming that the existing reservoirs can be restored to their full capacity of 1,344 mg, and the amount of flow available for irrigation under the Proposed Action is approximately 92.32 mgd, then the existing reservoirs could provide about 16 days of storage capacity.

The existing reservoirs are fed by the EMI Aqueduct System so they can be filled when the amount of water delivered exceeds the amount used. The EMI Aqueduct System, however, is not designed to capture and convey high-volume freshet flows which overwhelm and bypass the diversions. If such freshet flows (in excess of the IIFS standards under the CWRM D&O) could be captured, it could significantly increase storage capacity.

If an additional storage volume of 1,200 mg is assumed, an additional two weeks of flow could be provided at the rate of 82.36 mgd. Combined with the storage capacity of the restored and existing reservoirs, a total of about a month of storage would be available, which would provide a substantial supply to weather periods of low rainfall during the dry season. Moreover, since captured freshet flows would be used to replenish the restored and existing reservoirs between freshets, the period that stored water could be used could be extended even longer.

A single reservoir of this size (to hold 1,200 mg) could be located upstream of the Koolau Ditch within Hānawī Gulch. This area is preferable for the location of a reservoir to capture and store water because of its elevation and rainfall. The reservoir would be created by damming a ravine above the ditch so it can be fed by gravity flow and allow streamflow to continue in compliance with the CWRM D&O. Based on a rough estimate, a reservoir of this size would encompass about 30 acres with a 4,000 foot long dam structure standing approximately 150 tall at its highest point. (Akinaka, 2019). Construction of such a reservoir would be in the order of some \$300 million. (Akinaka, 2019). Dams are uniquely engineered structures that require knowledge and experience in dam safety, particularly how to safely handle water flows in and out of the structure through appurtenant features, as well as mitigating the hazards of water passing through the dam embankment itself (seepage). Dams sustain high hydrostatic water loads, which can result in failure of the embankment if they are not properly designed. (DLNR, The Hawai'i Dam and Reservoir Safety Program, FY 2017). It is very unlikely such a reservoir could be constructed as its environmental impacts would be considerable in terms of impacts to views and public safety concerns.

### **3.1.2 Aqueduct Ownership**

During public scoping for the DEIS in 2016 and 2017, it was suggested that the EMI Aqueduct System should be brought under new ownership, without the further involvement of A&B and EMI, and potentially under public ownership. Ownership of the EMI Aqueduct System changed

---

<sup>1</sup> GIS data provided by the State Office of Planning does not include all 48 reservoirs within the Central Maui agricultural fields.

in January 2019 to include Mahi Pono, which intends to pursue diversified agriculture in Central Maui. Consideration of another change in ownership is too speculative at this point to warrant analysis. A change in the ownership of the EMI Aqueduct System will not enhance environmental quality or avoid, reduce, or minimize all or even some adverse environmental effects, costs, or risks of the Proposed Action. As discussed elsewhere in this DEIS, EMI has been operating the EMI Aqueduct System since the start of construction in the 1870s. Few have the knowledge to operate and maintain this unique and complex system, consisting of approximately 388 separate intakes, 24 miles of ditches, and 50 miles of tunnels, as well as numerous small dams, intakes, pipes, 13 inverted siphons and flumes. Furthermore, the EMI Aqueduct System is not for sale, and forced acquisition of the system is projected to be prohibitively expensive, resulting in substantial costs to the public. For these reasons, this alternative is viewed as a highly speculative and unreasonable alternative, and one that would not meet the objectives of the Proposed Action. Therefore, it was dismissed from further review.

### **3.2 Alternative Analysis**

#### **3.2.1 Reduced Water Volume Alternative**

The BLNR cannot authorize a lease that allows the use of more water than can be diverted under the CWRM D&O. However, the BLNR could elect to issue a water lease that authorizes the use of a lesser amount of water. Projections of the amount of government water available from the License Area at Honopou stream after taking into account the CWRM D&O, is approximately 87.95 mgd. This amount would be subject to further reduction in accordance with the DHHL reservation once called upon for use by the DHHL. The CWRM estimated that the amount of water potentially available after implementation of the CWRM D&O might be enough for about 90% of the irrigation needs for the approximately 23,000 IAL lands in Central Maui (although it is not clear if the CWRM D&O took into account the future DHHL reservation). However, there are approximately 30,000 agricultural acres in Central Maui (largely, but not exclusively, IAL lands), and Mahi Pono has expressed an intention to farm as much of that land as possible.

The existing water delivery agreements with the MDWS are contingent upon the Water Lease being issued, therefore if no Water Lease is issued, it is assumed that the delivery of water to the MDWS would terminate. Under the Reduced Water Volume alternative, depending on the amount of water authorized under the Water Lease, the MDWS may receive no water from the Wailoa Ditch or some amount up to 7.1 mgd. The greater the reduction in the amount authorized under the Water Lease, proportionally less water will be available to the MDWS.

#### **3.2.2 Water Lease With Different Terms**

##### **3.2.2.1 Alternative Lease Duration**

As discussed in Chapter 1, on May 14, 2001, A&B requested that the BLNR offer a long-term (30 year) lease at public auction for the right, privilege and authority to enter and go upon the State-owned License Area for the purposes of developing, diverting, transporting and using government-owned waters. However, the BLNR has the authority to offer such a lease with a term that is either shorter or longer than 30 years, provided, however, that under HRS § 171-36, the BLNR cannot authorize a lease for a term longer than sixty-five years. Some have



viewed a shorter term for the Water Lease as an opportunity to evaluate the lessee's performance during its term as a basis for further extension. In this context, a lease term shorter than 30 years could limit the ability of Mahi Pono or a lessee to obtain financing for the needed investment in establishing successful diversified agricultural operations and crops that may take years to reach economic viability. This would be inconsistent with the Proposed Action objective of developing diversified agriculture in Central Maui.

### **3.2.2.2 Modified Lease Area**

Although A&B's May 14, 2001 submittal referred to a License Area comprised of approximately 33,012.91 acres of State-land (subject to review and confirmation by the Department of Accounting and General Services, Survey Division), the BLNR has the discretion to set the geographic parameters of the Lease Area to an area that is smaller, but still maintains the safety and integrity of the EMI Aqueduct System. Limiting the geographic extent of the Lease Area to that which is reasonably necessary to operate the EMI Aqueduct System with appropriate buffers to ensure public safety and the security of the system, could be consistent with the objectives of the Proposed Action. EMI would not manage public access into the License Area, and that obligation will fall upon a State agency. While some have advocated for greater or unfettered public access into the License Area, potentially adverse impacts of such access could include the introduction and spreading of invasive species and damage to historic resources.

### **3.3 No Action**

Under a 1938 agreement between the Territory of Hawai'i and A&B, A&B was given a perpetual right and easement to convey water through those portions of the EMI Aqueduct System located within State lands, and to divert the water so conveyed through the EMI Aqueduct System, and A&B granted the Territory a similar perpetual right and easement. This agreement is in place irrespective of the issuance of any Water Lease. The No Action alternative would result in no Water Lease being issued from the State. However, under the 1938 agreement and a related calculation involving isohyet analysis of rainfall patterns, it is understood that approximately 30% of the water in the License Area streams is derived from the privately owned lands. Therefore, the EMI Aqueduct System could continue to divert approximately 30% of the water available from the Collection Area, plus the 4.37 mgd from that portion of the Collection Area that is derived from privately owned lands outside of the License Area between Honopou stream and Māliko Gulch. Under the No Action alternative, it is assumed that an estimated total of 26.39 mgd is available to be diverted from that portion of the Collection Area east of Honopou stream, and approximately 4.37 mgd of surface water would be available from privately owned lands (i.e. not within the License Area) between Honopou stream and Māliko Gulch. Thus, it is estimated that the maximum amount of surface water available to the EMI Aqueduct System under the No Action alternative would be approximately 30.76 mgd (Akinaka, 2019). This reduction in water would significantly limit Mahi Pono's ability to develop robust diversified agriculture in Central Maui, and would have associated detrimental impacts on food production and economic benefits that would be achieved under the Proposed Action.

The existing water delivery agreements with the MDWS are contingent upon the Water Lease being issued, therefore if no Water Lease is issued, it is assumed that the delivery of water to the MDWS would terminate. As a consequence, domestic and agricultural water needs in Upcountry Maui would need to be met by alternative water sources that would need to be

developed by the MDWS. At this point in time, it is unknown whether sufficient groundwater resources exist in Upcountry Maui to meet these water demands. It is anticipated that the development of alternative water-source infrastructure would be prohibitively expensive, and depending upon the specific sources, or combination of sources, could result in significant direct adverse impacts to the environment.

### **3.4 Comparative Evaluation of Reasonable Alternatives**

Alternatives are to be evaluated based upon the extent to which they are able to satisfy the objectives of the Proposed Action. An EIS must include a comparative evaluation of the environmental benefits, costs, and risks of the Proposed Action and each reasonable alternative. The objectives of the action are to:

- Preserve and maintain the EMI Aqueduct System, including its access roads
- Continue to meet domestic and agricultural water demands in Upcountry Maui
- Continue to provide water for agricultural purposes in Central Maui (specifically, to transition fields previously used for sugar cane cultivation into new, diversified agricultural uses)
- Continue to serve community water demands in Nāhiku

A comparative evaluation of impacts to relevant environmental characteristics and the various alternatives is provided in the following section (the impacts analysis for the Proposed Action is provided in Chapter 4).

#### **3.4.1 Topography**

Neither the Proposed Action nor any of the alternatives are expected to have any significant effect on topography within the License Area because no topographic changes to the License Area are proposed under the Proposed Action or the alternatives. Some construction related to the preparation of the Central Maui agricultural fields for the Mahi Pono farm plan and related agricultural facilities is anticipated under the Proposed Action, and would likely take place under the Modified Lease Area alternative as well. The extent of Mahi Pono's implementation of its farm plan and related facilities under either the Reduced Water Volume alternative or the Alternative Lease Duration alternative would depend upon the degree of certainty required to warrant such investment.

#### **3.4.2 Soils**

##### **East Maui**

Neither the Proposed Action nor any of the alternatives are expected to have any significant effect on soils within East Maui because no changes are proposed under the Proposed Action or the alternatives. However, under the Modified Lease Area alternative, there may be some adverse impact to soils within the License Area through greater public access to and use of the License Area.

### **Upcountry Maui**

Under the Proposed Action, there may be some beneficial alteration to soils in Upcountry Maui as more currently fallow former sugarcane fields will be put into productive agricultural uses at the planned 262-acre expansion to KAP, and the continued supply of irrigation water to the existing KAP would maintain status quo or potentially allow for greater improvements to the soils at KAP. Under the Reduced Water Volume alternative, the beneficial impacts to the Upcountry Maui soils may not take place, depending upon how much water from the EMI Aqueduct System is available for use in Central Maui. Under the No Action alternative, it is assumed that no water would be transported through the EMI Aqueduct System to the MDWS, therefore no beneficial impacts to Upcountry Maui soils are expected. The Alternative Lease Duration alternative would not have a direct impact on Upcountry Maui, but indirectly it is assumed that a Water Lease of a longer term will provide greater stability and predictability, thereby enhancing the changes of beneficial impacts to Upcountry Maui soils, and a shorter Water Lease term could have an opposite effect. The Modified Lease Area alternative is not expected to have any impact on Upcountry Maui.

### **Central Maui**

Under the Proposed Action, there will be a beneficial impact on soils in Central Maui as they are improved through the removal of volunteer (i.e., rogue) sugarcane and weeds, and related soil preparations for diversified agriculture. These preparations include the application of effective micronutrients, plastic removal, pH adjustments, and the application of organic matter. Under the Reduced Water Volume alternative, the beneficial impacts to the Central Maui soils would be more limited, depending upon the amount of water actually available through the Water Lease. The No Action/No Lease alternative would require less soil preparations due to the reduction of acreage devoted to diversified agriculture. Instead of diversified agriculture, a significant amount of acreage would be allocated for use as cattle pasture. The Alternative Lease Duration alternative could have similar impacts to the No Action alternative should the Water Lease be issued for a period of time that is insufficient for Mahi Pono to make the desired improvements to the Central Maui fields as proposed under the Proposed Action. The Modified Lease Area alternative is not expected to have any impact on Central Maui.

## **3.4.3 Surface Water and Aquatic Environment**

### **License Area**

The HSHEP model requires specific diversion conditions at each diversion. Applying the model to the Reduced Water Volume alternative would require information regarding where stream flows are proposed to be increased over the Proposed Action and the amounts. Given such information, the HSHEP model is able to readily calculate the number of remaining Habitat Units (HU) in any given scenario. Under the No Action alternative, 30% of remaining low flow discharge is diverted at each individual diversion after complying with the CWRM D&O. Therefore, approximately 70% of the total HU would remain, or put conversely, the No Action alternative reduces HU by approximately 30% from natural flow conditions. Neither the Alternative Lease Duration alternative nor the Modified Lease Area alternative are expected to have any significant effect on surface water hydrology and aquatic environment because the stream diversions would not change under either alternative.

No effects to surface waters are expected to Upcountry Maui or Central Maui under the Proposed Action or the alternatives because no alterations to streams in those areas, to the extent any streams exist, would take place.

#### **3.4.4 Groundwater**

##### **East Maui**

Neither the Proposed Action nor any of the alternatives include activities that would draw upon groundwater in East Maui (i.e. no well development is proposed) or have the potential to cause significant adverse effects to groundwater in East Maui, because no development in East Maui is proposed under any of the alternatives. There may be a connection between decreased stream diversions and increased groundwater as would be the case under the Reduced Water Volume alternative and the No Action alternative. However, the current pumpage of wells in the four aquifers in East Maui (Ha'ikū, Honopou, Waikamoi, and Ke'anae of the Ko'olau Aquifer Sector) is well below the SY, as discussed in Section 4.2.2.

##### **Upcountry Maui**

No significant, direct impacts to groundwater resources in Upcountry Maui are expected under the Proposed Action or any of the alternatives. However, any alternative that reduces the amount of surface water delivered by the EMI Aqueduct System to the MDWS (such as the No Action alternative and potentially the Reduced Water Volume alternative) could have a secondary effect of causing the MDWS to seek replacement water through the development of wells that draw upon groundwater.

##### **Central Maui**

The Proposed Action and other alternatives have the potential to cause beneficial impacts to groundwater resources in Central Maui, with the understanding that the more surface water that is used to irrigate Central Maui, the greater the replenishment of the underlying aquifers. The irrigation recharge that has occurred over the years of sugarcane farming in Central Maui (recharge of the Kahului and Pā'ia aquifers) is believed to be the reason why wells in those aquifers have been able to pump at rates that exceed the SY (the CWRM's establishment of SY for aquifers does not take into account water transfers). Furthermore, a simulated scenario in a USGS study prepared in 2008 suggests that the complete removal of irrigation return recharge would decrease water levels and increase salinity in the Central Maui Aquifer Sector.

#### **3.4.5 Coastal Waters**

##### **East Maui**

Neither the Proposed Action or any of the alternatives include activities that would impact the coastal waters in East Maui or have the potential to cause significant adverse effects to coastal waters or the marine environment in East Maui, because the vastly larger ocean environment is not be impacted by the intensity of the flow in stream water that diverts into the ocean.

A reduction in the volume of water diverted from East Maui streams under the No Action/No Lease alternative and the Reduced Water Volume alternative may lessen the suspended-sediment concentrations in streams during large storms which discolor coastal waters during and following storms. The sediment deposited into the marine environment may also be stressful for marine life and coral reef. However, because of the continuous wave energy in shore areas in East Maui, nearshore areas in East Maui do not constitute important habitats

for coral reef communities and associated marine species (Sea Engineering, Inc (SE) & Marine Research Consultants, Inc (MRC), 2019).

#### **Upcountry Maui**

Neither the Proposed Action nor any of the alternatives include activities that would significantly impact the coastal waters or the marine environment based upon activities in Upcountry Maui because there are no coastal waters in Upcountry Maui.

#### **Central Maui**

The Proposed Action and other alternatives may have beneficial impact on coastal waters in Central Maui near to the agricultural fields (Māliko Bay, Ho'okipa Beach Park, Pā'ia Bay, and Ma'alaea Bay) because the amount of wind-blown erosion which may damage nearshore environments is minimized by cultivation of the agricultural fields. Theoretically, a reduction in the volume of water diverted from East Maui streams under the No Action/No Lease alternative and the Reduced Water Volume alternative may decrease the amount of runoff from the agricultural fields that may impact the nearby coastal waters. However, in actuality, under all alternatives, including the No Action/No Lease alternative, Mahi Pono will apply BMP that control the volume and flow rate of runoff water, keep the soil in place, and reduce soil transport.

### **3.4.6 Drainage**

#### **East Maui**

Under the Reduced Water Volume alternative and the No Action alternative, the streams within the License Area would have an increase in stream flow. However, drainage facilities throughout the communities in East Maui, which can include, but not limited to drains, gutters, storm sewers, etc., are only impacted when storm runoff reaches extremely high levels. The Proposed Action and the other alternatives will have no discernible impacts on such storm flows and their impact on drainage facilities.

#### **Upcountry Maui**

Neither the Proposed Action nor any of the alternatives would significantly impact the drainage facilities in Upcountry Maui.

#### **Central Maui**

The Central Maui agricultural fields are designed and operated to efficiently utilize irrigation water from the EMI Aqueduct System so there is no surface runoff. Neither the Proposed Action nor any of the alternatives would significantly impact the drainage facilities in Central Maui.

### **3.4.7 Natural Hazards**

#### **East Maui**

Climate change indicators suggest that East Maui will face increased periods of intense, episodic rainfall where several inches of rain fall in a few hours (SOEST, 2014). With several streams being within East Maui, greater, episodic rainfall could increase stream flows and possibly exceed the capacity of the EMI Aqueduct System as discussed in Section 4.3.1. The continued use and maintenance of the EMI Aqueduct under the Proposed Action and all

alternatives will not exacerbate those impacts, and may help to lessen the severity of such impacts to the extent that the system helps to manage, redirect and disburse flows. The Modified Lease Area alternative could present risks to public safety if unfettered public access within the License Area meant more people could be put at risk due to stream flooding. If the No Action alternative involved the abandonment of the EMI Aqueduct System, these risks may be greater. However, Mahi Pono has developed a preliminary farm plan to be implemented in the event the Water Lease is not issued as presented in Section 3.4.14, and that plan continues to rely on the EMI Aqueduct System. The Alternative Lease Duration alternative could conceivably encourage the abandonment of the system, but this scenario is too speculative to evaluate.

As discussed in SE & MRC report (See Appendix B), global rates of mean sea-level change (SLC) is  $+3.4 \pm 0.42$  mm/yr. The sea level trend in Kahului Harbor from 1947 to 2017 is  $+2.21 \pm 0.42$  mm/yr. Hawai'i has thus far experienced a rate of sea level rise that is less than the global rate, but that is expected to change over the next few decades as the impacts from melting ice originating far from Hawai'i will begin to be felt in Hawai'i. Relatedly, coastal erosion in Hawai'i is expected to increase as discussed in Section 4.3.2. Without any changes to the existing surface of land and sea floor (as is the case under the Proposed Action and all alternatives), there will be an increase of passive flooding along the shoreline in East Maui, resulting in an expected landward regression of landforms combined with an increase in elevation. Neither the Proposed Action nor the alternatives involve any construction along or near the shoreline that would be at risk from sea-level rise.

According to the FEMA Flood Insurance Rate Maps (FIRM), the License Area is predominantly designated as Zone "X", "Areas determined to be outside the 0.2% annual chance floodplain." A number of adjacent parcels along the makai edge of the License Area lie in areas designated as Zone "A", "Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies." (See Figure 4-28 in Section 4.3.3) However, flooding in East Maui generally caused by freshets.

According to the Tsunami Evacuation Zone maps for Maui, the entire License Area is outside of the tsunami evacuation zones. There are areas below the Ke'anae and Honomanū portions of the License Area that are within the tsunami evacuation and extreme tsunami evacuation zone (See Figure 4-29 in Section 4.3.3).

Neither the Proposed Action nor any other alternatives involve any construction or any ground disturbance that would alter the topography that may potentially impact flooding or tsunami hazards.

### **Upcountry Maui**

Climate change may cause a decline in rainfall in Upcountry Maui. Any alternative that may result in less water being delivered through the EMI Aqueduct System to the MDWS for use in the Upcountry Maui Water System could increase periods of intense water shortages in Upcountry Maui. Regarding sea level rise, Upcountry Maui is between the 1000-4000 feet elevation. There are no coastal waters adjacent to Upcountry Maui. Neither the Proposed Action nor any of the alternatives are anticipated to cause or suffer from any impacts related to sea level rise.



According to the FEMA FIRM, Upcountry Maui is predominantly designated as Zone "X", "Areas determined to be outside the 0.2% annual chance floodplain." (See Figure 4-30 in Section 4.3.3) Moreover, according to the Tsunami Evacuation Zone maps for Maui, Upcountry Maui is entirely outside of the tsunami evacuation zones. A small portion of Maliko Bay within the MDWS Upcountry Maui Water System service area lies within the Tsunami Evacuation Zone (See Figure 4-31 in Section 4.3.3).

Neither the Proposed Action nor any other alternatives would impact flooding or tsunami hazards in Upcountry Maui.

### **Central Maui**

Central Maui is already relatively dry. If climate change increases the periods of drought in Central Maui, as is predicated, continued diversified agriculture under the Proposed Action and all alternatives is vulnerable. Any alternative that may result in less water being delivered through the EMI Aqueduct System to Central Maui increases the likelihood of wildfires. To the extent that the use of renewable energy, such as Mahi Pono's proposed utility scale solar farm, offers any climate change avoidance benefits, all of the alternatives, including the Proposed Action, will provide a beneficial impact.

According to the FEMA FIRM, Central Maui is predominantly designated as Zone "X", "Areas determined to be outside the 0.2% annual chance floodplain." A number of adjacent parcels along the makai edge of Central Maui lie in areas designated as Zone "AE", "Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies," and Zone "VE", "Areas subject to inundation (See Figure 4-32 in Section 4.3.3).

According to the Tsunami Evacuation Zone maps for Maui, the majority of the Central Maui agricultural fields are outside of the tsunami evacuation zone. However, there are portions of the Central Maui agricultural fields in the vicinity of Kihei, Pā'ia, and Kahului that are within the tsunami evacuation zone (See Figure 4-33 in Section 4.3.3).

Neither the Proposed Action nor any other alternatives involve any construction or any ground disturbance that would alter the topography that may potentially impact flooding or tsunami hazards.

## **3.4.8 Flora, Fauna, and Invertebrates**

### **East Maui**

The Modified Lease Area alternative may have a significant effect on flora, fauna, and invertebrate species in East Maui because the License Area could see an increase in public access. More hiking, hunting, gathering, and other recreational and/or cultural activities within the License Area would result in vegetation trampling, which, depending on degree of access and use of the area, may have a significant impact on existing flora. In addition, the potential for weed introduction and invasion would increase. Weeds, by definition, can outcompete most flora for space and nutrient resources. Weed invasions, if they were to occur, would decrease the quality and quantity of habitat available for native plant species, which in turn may decrease the quality of critical habitat for the Maui parrotbill and crested honeycreeper. The presence of vehicles and humans for various activities in the License



Area could disrupt the normal behavior of wildlife and temporarily displace individuals from roadside habitat. Human noise and activity would increase due to an increase in access, which would have a negative impact on wildlife. None of the other alternatives, including the Proposed Action, are expected to generate significant effect on flora, fauna, or invertebrate species (SWCA Environmental Consultants (SWCA), 2019).

### **Upcountry Maui**

Neither the Proposed Action nor any of the alternatives are expected to have any significant impacts on flora, fauna, or invertebrate species in Upcountry Maui because no alternative directly involves the development of any new lands in Upcountry Maui.

### **Central Maui**

Under the No Action alternative and the Reduced Water Volume alternative, if the reduction is significant, and depending upon the viability of Mahi Pono's No Action/No Lease farm plan (see Table 3-1 in subsequent Section 3.4.12), it is possible that some proportion of the Central Maui fields would be abandoned and become fallow. This could result in a pattern of succession of weedy plants, beginning with herbaceous species and grasses such as wild sugarcane (*Saccharum spontaneum*), Guinea grass, and swollen fingergrass. Tree tobacco, castor bean, and woody species such as African tulip, albizia, Java plum, and Christmas berry would ultimately follow. Few to no native species would colonize the fields in the foreseeable future. Holding ponds would dry up and fill in, which would eliminate nest and foraging habitat for endangered Hawaiian waterbirds and foraging habitat for migrant shorebirds and migrant waterfowl. If Central Maui fields were to remain fallow, over time, biodiversity could gradually rise as the establishment of woody species would increase the complexity of the habitat structure, which would provide more nesting opportunities for MBTA-listed birds such as cattle egret, northern cardinal, mourning dove, and house finch. The potential for tree tobacco to colonize abandoned fields would be beneficial for the Blackburn's sphinx moth because it would increase available breeding habitat. Impacts could be similar under the Alternative Lease Duration alternative, if the term of the Water Lease is too short to allow for the implementation of the Mahi Pono farm plan.

## **3.4.9 Historic Resources**

### **East Maui**

A reduction in the volume of water diverted from East Maui streams under the Reduced Water Volume alternative will not include partial or total destruction or alteration of historic properties, detrimental alteration of the surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with chance of resulting damage, nor neglect resulting in deterioration or destruction. As such, the Reduced Water Volume alternative will have no impact to archaeological historic properties. Similarly, the Alternative Lease Duration alternative will have no significant effect on historic resources because the duration of the Water Lease will not include partial or total destruction or alteration of historic properties, detrimental alteration of the surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with chance of resulting damage, nor neglect resulting in deterioration or destruction (CSH LRFI, 2019).

The Modified Lease Area alternative, if resulting in an increase in unmanaged public access to the License Area, has the potential to impact historic properties. Potential impacts from

unmanaged access could include looting and “rock-robbing” of surface and subsurface historic properties, littering, harvesting of archaeologically-associated flora such as ti (Cordyline fruticose), trampling or erosion from pedestrian/vehicular access, and unpermitted ground disturbance. Consultation with the SHPD is recommended in order to determine the appropriate historic preservation requirements if there is to be an increase in vehicular/pedestrian traffic or uncontrolled public access within the License Area.

The No Action alternative involves the continued use of the EMI Aqueduct System to supply irrigation water to Central Maui in support of Mahi Pono's No Lease/No Action farm plan and should not have a significant effect on historic properties. However, if the No Action alternative does not include continued maintenance and repair of the existing EMI Aqueduct System, then the No Action alternative has the potential to pose an impact to historic properties. Components of the aqueduct system that deteriorate and begin to fail, such as broken ditch walls or collapsed tunnels, have the potential to alter natural drainage patterns and increase erosion in downstream areas that are outside of established stream channels. These areas have the potential to contain surface and subsurface historic properties that could be affected by flooding and erosion. As an architectural resource, the EMI Aqueduct System would also be affected by “neglect resulting in deterioration or destruction” if maintenance and repair of the EMI Aqueduct System are discontinued (Mason Architects, 2019).

No impacts to historic resources in Upcountry Maui or Central Maui are anticipated under the Proposed Action or any of the alternatives.

### **3.4.10 Cultural Resources and Practices**

#### **East Maui**

The Reduced Water Volume alternative has the potential for cultural impacts related to the diversion of water but potentially to a lesser extent than the Proposed Action. These impacts include: interest in getting clarification on stream flow, water diversion, and climate statistics; concern regarding indigenous freshwater species that may be impacted by the act of diverting water; concern of water not exiting stream beds and flowing into the ocean; and concern of the lack of water needed to maintain a healthy and productive lo'i kalo or taro patch in areas where water may continue to be diverted. Recommended mitigation for the Reduced Water Volume alternative is equal to that of the Proposed Action (see Section 4.6). The application of the IIFS under the CWRM D&O has the potential to reduce or eliminate this cultural impact as many of the streams that are currently in use by community participants where these impacts are identified have been fully restored in accordance with the CWRM D&O (CSH CIA, 2019).

The Alternative Lease Duration alternative has the potential for cultural impacts related to the diversion of water to an equal extent as the Proposed Action (see Chapter 4) and similar mitigation measures would be proposed. The IIFS requires under the CWRM D&O has the potential to reduce or eliminate this cultural impact as many of the streams that are currently in use by community participants where these impacts are identified have been fully restored in accordance with the CWRM D&O.

The Modified Lease Area alternative is assumed to increase public access to the License Area, but not to alter stream diversions. Unfettered public access could make traditional cultural

resources more available for consumptive use, but risk unsustainable overuse of those resources.

Under the No Action alternative, no Water Lease would be issued, but the EMI Aqueduct System would continue to be authorized to divert to 30 percent of the water from the larger 50,000-acre Collection Area based on previous agreements, in addition to surface water collection arising from the areas between Honopou (the western end of the License Area) and Māliko. As such, the No Action alternative may have impacts similar to the Proposed Action, but to a lesser extent due to the reduction in water volume and the locations of the diversions. Also, as with the Proposed Action, the application of the CWRM D&O has the potential to reduce or eliminate cultural impacts of the No Action alternative as many of the streams that are currently in use by community participants where impacts were identified have been fully restored in accordance with the CWRM D&O. Mitigations measures would be similar as those under the Proposed Action.

#### **Upcountry Maui**

No impacts to cultural resources are anticipated in Upcountry Maui under any of the alternatives because no new development or activities (with the exception of the planned 262-acre expansion of the KAP, which expansion is within lands that were formerly used for sugarcane production) are planned for Upcountry Maui related to the Water Lease.

#### **Central Maui**

No impacts to cultural resources in Central Maui are anticipated under any of the alternatives. The agricultural fields have been cultivated for over a century to grow sugarcane and there are no known cultural practices that occur or cultural resources within the agricultural fields in Central Maui.

### **3.4.11 Social Characteristics**

#### **East Maui**

East Maui residents expressed concerns about the physical condition of the EMI Aqueduct System and a hope that Mahi Pono's ownership of EMI would lead to improved stewardship of the EMI Aqueduct System. In light of Mahi Pono's intention to pursue diversified agriculture under all alternatives, even the No Lease/No Action alternative, and to irrigate the Central Maui fields with diverted surface water from East Maui, ongoing maintenance and operation of the EMI Aqueduct System is expected to take place under all alternatives, to the extent operations and maintenance of the system is financially feasible. In addition, Mahi Pono is designing a high-efficiency irrigation system for use in the Central Maui fields, which is intended to reduce water usage overall and to integrate various live technology feeds to constantly monitor plant, soil, and tree health. As such, under the Proposed Action and all alternatives, beneficial impacts to the Central Maui irrigation system are anticipated. The East Maui residents' concerns about social and emotional impacts from generations of having East Maui streams diverted to Central Maui is a significant impact present under all alternatives (Earthplan, 2019).

#### **Upcountry Maui**

The effect of the Proposed Action and the alternatives on Upcountry Maui social characteristics depends on the amount of water that will be delivered by the EMI Aqueduct System for the MDWS use. The more water that is released to Upcountry Maui, the more it will benefit the

social community of the region. Upcountry Maui residents are concerned about the continuation of reliable water service, and recognize that the MDWS would be challenged to adapt should water delivery from the EMI Aqueduct System cease. They also recognize that replacing the water would require developing new source with related costs that would get passed to the MDWS customers. These concerns and potential impacts should only be present under the No Lease/No Action alternative or potentially under the Reduced Water Volume alternative. However, other impacts are less physical, such as concerns about water being a public trust. These impacts would be present under all alternatives.

### **Central Maui**

Under the Proposed Action and all alternatives, Central Maui will be put into agricultural production, which is seen as a beneficial impact to the Central Maui community that values agriculture as a major land use in Central Maui and values green fields in Central Maui and seeks to avoid urban development in this area.

Under all alternatives, crops will be grown, but the extent to which the crops will supply local vendors and restaurants, as desired by Central Maui residents, and increase food self-sufficiency will depend upon the amount of water that can be diverted from the License Area. Similarly, the extent to which the Mahi Pono farm plan will encourage the younger generations to consider farming as a way of life, may depend upon the extent of the farm plan. Under the Proposed Action, Central Maui will ultimately produce some 338 million pounds of crops per year, including 8 million pounds from the community farms that Mahi Pono will incorporate into Central Maui (Plasch, 2019). Productive community farms may contribute to making farming attractive to future generations. In contrast, under the No Lease/No Action farm plan, Central Maui would produce about 110.5 million pounds per year in crops, which is only about a third of the production under the Proposed Action, with only around 3 million pounds per year from community farms. Central Maui residents also care about Mahi Pono's commitment to planting non-GMO crops, which commitment is present under all alternatives.

## **3.4.12 Economic and Fiscal Resources**

### **East Maui**

No significant differences to the economic and fiscal impacts are expected within East Maui under any of the alternatives. Due to the heavy rainfall on the windward slopes of Haleakalā and the many streams in the area, many of the makai communities in East Maui are well suited for growing taro and truck crops. (Munekiyo, 2019). Also, a number of farmers in East Maui have appurtenant and riparian rights to use water from these streams. Collectively, there are about 45 acres in East Maui that are suitable for growing taro, and about 35 acres for truck crops (Plasch, 2019). As such, the factor that had the most influence in potentially altering the economic and fiscal impacts in East Maui was the issuance of the CWRM D&O that established IIFS and required full restoration of stream flows of all taro streams in East Maui. Neither the Water Lease (under any alternative) nor the No Action/No Lease alternative has the potential to change that.

The impacts of East Maui farming activity would be the same for the Proposed Action, Reduced Water Volume alternative, Alternative Lease Duration alternative, Modified Lease Area alternative, and the No Action alternative. At full development, East Maui farms would produce about 1.0 million pounds per year of taro and about 400,000 pounds per year of other crops,

resulting in \$2.9 million in direct and indirect sales per year. Farms would support a total of 21 direct and indirect jobs. However, State revenues, Maui County property taxes, and City and County of Honolulu excise tax surcharge revenues associated with East Maui farming activities would be nominal. (Munekiyo, 2019).

There is a potential for impacts to the Nāhiku Community, located in East Maui. The Nāhiku Community receives domestic water service from the MDWS which is directly sourced from the EMI Aqueduct System, and the MDWS services approximately 43 water meters, located along Nāhiku Road. The Proposed Action would allow for the continued water service for the approximately 43 water meters in the Nāhiku community. Under the No Action/No Lease alternative, water service to Nāhiku community is assumed to terminate. Water delivery amounts under the Reduced Water Volume alternative depend upon the amount of permitted diversions (Munekiyo, 2019).

### **Upcountry Maui**

There are potentially significant economic and fiscal impacts related to Upcountry Maui under the various alternatives. Under the Proposed Action, it is anticipated that the rate the MDWS pays for water delivery through the EMI Aqueduct System will increase from the current \$0.06 per kgal because EMI's per unit operating cost will increase as a result of fixed costs being spread out over a lower volume of water diverted and possible higher payments to the State for Water Lease rent as compared to historic payments. (Munekiyo, 2019).

Furthermore, even under the Proposed Action, which contemplates continued delivery of water to the MDWS, the County is nevertheless expected to need an additional 7.95 mgd to meet future demands arising from growth. The life-cycle unit cost of developing and operating incremental basal wells is projected to be \$34 per thousand gallons (kgal), which far exceeds the current average water service rate of \$4 per kgal. The total life-cycle cost for 7.95 mgd of new wells is \$1.2 billion. It is assumed that the MDWS would seek a variety of funding sources to cover the cost to develop the new wells, but due to the significant cost of new water source development, it would also be reasonable to expect that the water service rate charged by the MDWS would increase. The Reduced Water Volume alternative would have impacts ranging between those under the Proposed Action and those under the No Action/No Lease alternative, depending upon how much new water sources the MDWS would have to develop to make up for the shortfall. If the MDWS has to replace the 7.1 mgd supplied by the EMI Aqueduct System, and in addition develop to the 7.95 mgd projected to be needed to meet future water demands, the MDWS would need to develop 15.05 mgd of new water source. It is estimated that the life-cycle unit cost to develop those necessary wells and reservoirs for Upcountry Maui is \$38 per kgal. This would translate to \$2.6 billion, compared to \$1.2 billion under the Proposed Action. The significantly higher costs associated with the No Action alternative would impact the County's Water Supply Fund and would be expected to have a corresponding impact to the MDWS finances and on the ratepayers Countywide. (Munekiyo, 2019).

Furthermore, the approximately 37,100 residents and 14,200 households within the Upcountry Maui service area in 2017 had a collective income of \$1.1 billion and residential property values within the Upcountry Maui service area was about \$2.3 billion, and the approximately 880 businesses in Upcountry Maui in 2017, employed 5,400 individuals with a payroll estimated at \$245.7 million. The lack of reliable and sufficient water has the potential to constrain the otherwise anticipated growth in population, business, and jobs (Munekiyo, 2019).



Water availability under the various alternatives may have economic and fiscal impacts related to Upcountry Maui agriculture. Under the Proposed Action, with continued and expanded farming, it is projected that about 1,510 acres would be farmed in 2030, and this farming would generate about \$31.8 million per year in direct and indirect sales, about 150 direct and indirect jobs, and about \$5.8 million in payroll for these jobs. Under the No Action/No Lease alternative, this farming is anticipated to terminate (Munekiyo, 2019).

### **Central Maui**

There are potentially significant economic and fiscal impacts related to Central Maui under the various alternatives. Impacts are assessed in two phases, a development period, where the Central Maui fields get prepared and used for diversified agriculture, and that period is followed by the full operations period, when the fields are in full operation under the Mahi Pono farm plan. Under the Proposed Action, there is an estimated 10-year development period to establish the Mahi Pono farm plan. Under the No Action alternative, preparation of the Central Maui fields for the No Lease farm plan will be less and is estimated to take 6 years.

Full development of the Mahi Pono farm plan under the Proposed Action would result in substantial beneficial impacts. Direct crop sales are projected at \$155.9 million per year, and total combined farm sales, including crops, cattle, and energy revenues, would reach \$168.9 million per year in direct sales (far exceeding the \$101 million of revenue in 2006 derived from sugar production). Farm employment is expected to reach 790 direct jobs. Diversified agricultural operations would generate an estimated \$4.5 million in State tax revenues by 2030. Property taxes paid to the County of Maui would be about \$800,000 per year. The City and County of Honolulu would derive about \$140,000 per year from the excise tax surcharge (Munekiyo, 2019).

In contrast, under the No Action/No Lease alternative, at full operations, the scaled-down Farm Plan would result in a significant reduction in acreage dedicated to crop cultivation and an increase in unirrigated pasture, and related reduction in sales, employment, and State and County tax revenues. Annual sales are expected to reach \$51.3 million based upon about only a third as much crop production as under the Proposed Action. The pastures would support a cattle herd of about 9,700 cow-and-calf animal units, produce nearly 9,700 calves per year, and generate revenues of about \$6.3 million per year. The solar farm would generate about 82,125 mW of electricity per year, with revenues of about \$8.2 million per year. Combined farm and energy revenues would reach about \$65.9 million per year in direct sales and \$57.7 million per year in indirect sales for a total of \$123.5 million per year, of which about \$103.4 million would be on Maui and \$20.2 million on Oahu. Profits from farm operations, energy operations, and indirect sales would be about \$12.4 million.

At full operations, there would be one-third as much employment as the Proposed Action: about 270 direct jobs, 120 indirect jobs, and 390 total jobs. Payroll for direct and indirect jobs is estimated at \$15.6 million. The direct and indirect jobs would support an estimated 880 residents. State tax revenues would be less than half that of the Proposed Action: about \$1.7 million per year. Property taxes paid by to the County of Maui would be about \$650,000 per year (Munekiyo, 2019).

During the farm development period, State taxes to be generated from the No Lease/No Action farm plan arising from the conversion of Central Maui farmlands from sugar cane to diversified agriculture and green energy would generate an average of about \$1.9 million per year in State taxes, for a 6-year cumulative total of about \$11.4 million. The planned solar farm with the State subsidy would average about \$3.1 million per year, for a 6-year cumulative total of about \$18.8 million. Thus, State tax revenues minus the energy subsidy would average a negative \$1.2 million per year, for a 6-year cumulative total of a negative \$7.3 million. The County would derive negligible tax revenues from the anticipated development activity and the City and County of Honolulu would derive cumulative excise tax surcharges of about \$60,000 (Munekiyo, 2019).

The Reduced Water Volume alternative would have proportionally lesser beneficial economic and fiscal impacts than the Proposed Action. The Alternative Lease Duration alternative could have significantly less beneficial impacts than the Proposed Action depending upon whether the Water Lease term reasonably allowed for development of the Mahi Pono farm plan. It is not anticipated that the Modified Lease Area alternative would have any significant fiscal or economic effects.

### **3.4.13 Agricultural and Related Economic Resources**

#### **East Maui**

No significant differences to the agricultural activities and related economic benefits are expected within East Maui under any of the alternatives. Collectively, there are about 45 acres in East Maui that are suitable for growing taro and 35 acres suitable for truck crops and those estimates would not change under any of the alternatives. Related gross and net water requirements would be approximately 6.28 mgd and 1.52 mgd respectively (the high gross water requirement is due to the fact that nearly 80% of the water used for growing taro is diverted from streams, passed through lo'i, and is then returned to the streams). At full production, farmers in East Maui who rely depend on stream flows are estimated to be able to produce some 1 million pounds/year of taro and about 400,000 pounds/year of other crops at full development. Under all alternatives, East Maui farms are expected to generate about \$67,000 per year in State taxes and about \$100 per year in County property taxes. (Plasch, 2019). The farms that depend on stream water generate approximately \$1.4 million/year in direct sales and about \$2.9 million/year in direct and indirect sales.

#### **Upcountry Maui**

At full operations of the farm plan, under the Reduced Water Volume alternative, significant but smaller changes would occur for Upcountry Maui as are anticipated for Central Maui, e.g. for each 1 mgd less of surface water there would be a related reduction of 24.51 acres of lands in crops, a reduction in direct sales on Maui of about \$245,000 per year, a reduction in direct sales on Maui of about \$245,000 per year, about 2.4 fewer direct and indirect jobs, and a reduction in State tax revenues of about \$9,000. (Plasch, 2019).

Under the No Action alternative, farming activity in Upcountry Maui is expected to be near zero (reduced from approximately 1,520 acres and about 15.1 million pounds of crops per year under the Proposed Action). Without water through the EMI Aqueduct System, the County would have to develop new water sources, which is expected to take several years. In the interim, it is expected that farming in Upcountry would end, and even once new water sources



are developed to supply Upcountry Maui, it is not expected that significant farming would return to the area because better farming conditions exist in Central Maui. A significant drop in sales is estimated, from \$31.8 million/year direct and indirect sales under the Proposed Action to about zero under the No Action alternative.

The farms that depend on water from the EMI Aqueduct System would generate annual State taxes of about \$54,000 and County revenues of \$85,000 under the Proposed Action. The County revenues include both property taxes and rents from the KAP. The taxes generated from Upcountry Maui under the Proposed Action would drop to zero, or close thereto, under the No Action alternative because the County would no longer receive rents for lots at the KAP, and property tax rates are assumed to drop because the agricultural land would be assessed as pasture values. (Plasch, 2019).

Under the Proposed Action, development activity related to the conversion of the fallow sugarcane land at the expected KAP expansion is estimated to cost about \$1.3 million (about \$260,000/year assuming a 5 year development period). This would not take place under the No Action alternative. The 7.5 direct and indirect jobs associated with the KAP expansion during the development period, and the 150 direct and indirect jobs associated with the KAP expansion and other Upcountry Maui water users by 2030 would not materialize under the No Action alternative.

No additional State and County tax revenues generated from Upcountry Maui are anticipated under the No Action alternative, in contrast to the \$200,000 State tax revenues related to the expansion of the KAP under the Proposed Action during the development period, and the additional \$54,000/year in State taxes anticipated from the KAP expansion and other farmers in Upcountry Maui by 2030.

### **Central Maui**

There are potentially significant impacts to agriculture in Central Maui under the various alternatives. Impacts are assessed in two phases, a development period, where the Central Maui fields get prepared and used for diversified agriculture, and that period is followed by the full operations period, when the fields are in full operation under the Mahi Pono farm plan. Under the Proposed Action, there is an estimated 10-year development period to establish the Mahi Pono farm plan. Under the No Action alternative, preparation of the Central Maui fields for the No Lease farm plan will be less and is estimated to take 6 years.

The Reduced Water Volume alternative has the potential for a significantly adverse effect on agriculture production in Central Maui and the related economic impacts. For each 1 mgd less of surface water made available to the Central Maui fields, there is a related reduction by about 173 acres of land in crops, a reduction by about 15 acres of land in irrigated pasture, an increase of about 188 acres of land in unirrigated pasture, a reduction in direct sales on Maui of about \$1.7 million per year, a reduction in direct-and indirect sales on Maui and O'ahu of about \$3.3 million per year, about 8.5 fewer direct jobs on Maui and about 12 fewer direct-and-indirect jobs on Maui and O'ahu, and a reduction in State revenues of about \$50,000 per year.

For illustration, if the Water Lease permitted diversions in the amount of 70 mgd (an estimated 22.32 mgd reduction from the Proposed Action), there would be 189 fewer jobs than expected under the Proposed Action (604 jobs under the Reduced Water Volume if diversions of 70 mgd

were permitted v. 793 jobs under the Proposed Action). The detrimental effects of the Reduced Water Volume continue the greater the reduction in permitted diversions.

Under the No Action alternative there would be an estimated drop in water supply from 82.34 mgd under the Proposed Action to 29.72 mgd. Mahi Pono prepared a conceptual No Action, i.e. no Water Lease farm plan. This scaled-down farm plan would provide significantly less irrigated farm land, and therefore significantly fewer crops. At full operations, the No Action alternative farm plan includes:

- 9,080 acres of irrigated farm land, including 200 acres of tropical fruit, 4,180 of orchard, 400 acres of row and annual crops, in addition to 300 acres for a community farms and space for limited non-GMO energy crops. In contrast, under the Proposed Action there is expected to be 20,650 acres of irrigated farm land, including 12,850 of orchard crops, 600 acres of tropical fruit, 1,200 acres of row and annual crops, in addition to 800 acres for community farm, and space for limited non-GMO energy crops.
- 24,470 acres of cattle pasture, comprised of 3,800 acres of irrigated pasture, and 20,670 acres of unirrigated pasture (in contrast to approximately 13,800 acres of cattle pasture, comprised of 4,700 acres of irrigated pasture, and 9,100 acres of unirrigated pasture under the Proposed Action).
- 11,570 unirrigated acres will have limited agricultural utility. Mahi Pono will likely have to find alternative uses for this property, including utilizing the property for unirrigated pasture.

The Mahi Pono farm plan envisioned under the No Action alternative Proposed Action would consist of the following:

| <b>Table 3-1 Mahi Pono No Action/No Lease Farm Plan</b> |              |             |                    |                        |                  |                   |                   |
|---|--------------|-------------|--------------------|------------------------|------------------|-------------------|-------------------|
| <b>Proposed Use</b>                                     | <b>Acres</b> | <b>GPAD</b> | <b>Surface MGD</b> | <b>Groundwater MGD</b> | <b>Total MGD</b> | <b>Annual MGD</b> | <b>% of Total</b> |
| Community Farm  | 300          | 3,392       | 0.70               | 0.26                   | 0.97             | 353               | 3.25%             |
| Orchards (citrus, mac nuts, beverage crops)             | 4,180        | 5,089       | 17.36              | 3.39                   | 20.75            | 7,574             | 69.77%            |
| Tropical Fruits   | 200          | 4,999       | 0.69               | 0.26                   | 0.95             | 349               | 3.21%             |
| Row and Annual Crops                                    | 400          | 3,392       | 1.15               | 0.82                   | 1.98             | 722               | 6.65%             |
| Energy Crops  | 200          | 3,392       | 0.47               | 0.20                   | 0.68             | 248               | 2.28%             |
| Pasture, irrigated                                      | 3,800        | 1,161       | 3.40               | 1.01                   | 4.41             | 1,610             | 14.83%            |
| Pasture, unirrigated                                    | 20,670       | 0           | 0                  | 0                      | 0.00             | 0                 | 0.00%             |
| Green Energy  | 250          | 0           | 0                  | 0                      | 0.00             | 0                 | 0.00%             |

|              |        |     |       |      |       |           |         |
|--------------|--------|-----|-------|------|-------|-----------|---------|
| <b>TOTAL</b> | 30,000 | 991 | 23.79 | 5.95 | 29.74 | 10,855.16 | 100.00% |
|--------------|--------|-----|-------|------|-------|-----------|---------|

At full operations, once the No Action/No Lease farm plan was fully implemented, Central Maui would produce about 110.5 million pounds per year in crops, which is only about a third of the production under the Proposed Action, which is estimated to produce \$338 million pounds per year in crops (Plasch, 2019).

Under the No Action/No Lease alternative, annual crop sales would reach about \$51.3 million (compared to \$155.9 million under the Proposed Action). Cattle pasturage would increase from 7,300 cow-and-calf units generating \$4.8 million/year under the Proposed Action to 9,700 cow-and-calf units and revenues of \$6.3 million/year under the No Action alternative.

Total farm sales under the No Action/No Lease alternative could reach \$57.7 million/year, with \$46.1 million being Hawai'i sales and \$11.5 million being export sales. This is a sharp reduction from the \$160.7 million/year under the Proposed Action (with \$104.4 million of that being Hawai'i sales and \$56.2 million being export sales). To help put these numbers in context, under the Proposed Action, combined farm and energy revenues would reach \$168.9 million/year in direct sales, which far exceeds the \$116 million average revenues from sugar production between 2008 to 2013 and the \$101 million in revenues during the 2006 sugar period. Under the No Action alternative, combined farm and energy revenues would reach only \$65.9 million/year.

At full operations, the Mahi Pono No Action/No Lease farm plan would generate about one-third as many jobs (390 direct and indirect jobs with a payroll of \$15.6 million) as under the Proposed Action, which is anticipated to support some 1,140 jobs, with a payroll of \$45.3 million, and with about 1,000 of those jobs being on Maui. (Plasch, 2019).

State and County tax revenues would be about half as much under the No Action alternative as under the Proposed Action. At full operations anticipated in 2030, the Proposed Action farm plan would generate some \$7.5 million in State tax revenues, \$800,000 in County property taxes, and about \$140,000 to the City and County of Honolulu from the excise-tax surcharge. The No Action farm plan is estimated to generate about \$3.8 million per year, \$650,000 in County property taxes, and about \$50,000/year to the City and County of Honolulu for the excise-tax surcharge.

The No Action alternative would also result in far less in capital investments and less revenue to the State during the 6-year development period. Under the No Action/No Lease farm plan, capital investment for land preparation and related agricultural improvements would drop to \$144.8 million invested over about 6 years, with expenditures and indirect sales averaging approximately \$42.9 million per year (in contrast to the \$214.7 million capital investment under the Proposed Action, and \$39.9 million/year for 10 years in expenditures and indirect sales under the Proposed Action). During the farm development period, costs for converting the fallow sugarcane fields to support the No Lease farm plan are estimated at \$40.5 million (compared to \$89 million under the Proposed Action). Jobs during the relatively shorter development period (6 years compared to 10 years under the Proposed Action) are estimated at 290 direct and indirect jobs (compared to 330 direct and indirect jobs for the 10 year development period under the Proposed Action). Taxes paid to the State during the 6 year

development period are estimated at \$11.4 million over the 6-year development period, but with the State solar subsidy the State tax revenues would be negative \$7.3 million for the 6 year cumulative total. In contrast, State tax revenues the 10 year cumulative total under the Proposed Action is \$18.6 million under the Proposed Action, minus the State solar subsidy, resulting in a cumulative loss of State tax revenues of about \$100,000.

Development costs for the solar farm (\$93.8 million) are expected to be the same across all alternatives. Similarly, energy sales from the solar farm are expected to be the same under all alternatives; approximately \$8.2 million/year.

#### **3.4.14 Recreational Resources**

##### **East Maui**

The Modified Lease Area alternative would have different impacts on recreational resources in the License Area from the other alternatives, including the Proposed Action. Hunting and hiking are permitted in the License Area now and that is expected to be the case under all alternatives. However, the access is limited and regulated. If the License Area were reduced to make more of the State land open to the public that could potentially have a beneficial impact on the availability of recreational resources in East Maui.

##### **Upcountry Maui**

All of the alternatives that allow for water to continue to be supplied to the MDWS from the EMI Aqueduct System have the potential to have some beneficial impact on the Upcountry Maui recreational resources because many of the recreational facilities in Upcountry Maui have irrigated landscaping restrooms, showers, water fountains, and pools that are supplied with water delivered through the EMI Aqueduct System.

##### **Central Maui**

Neither the Proposed Action nor any of the alternatives are expected to have significant impact on the recreational resources in Central Maui because water derived from the EMI Aqueduct System is not used for any recreational facilities in Central Maui.

#### **3.4.15 Visual Resources**

##### **East Maui**

Neither the Proposed Action nor any of the alternatives are expected to have significant impact on the visual resources in the License Area because no new construction or land alteration is planned for the License Area. However, in the short-term, where diversions are lower due to the minimal amount of agricultural activity currently taking place in Central Maui, and once Mahi Pono's farm plan is significantly developed, there may be a decrease in stream flows and waterfalls that can be viewed along Hāna Highway. However, views from Hāna Highway were formally recognized a significant as early as the year 2000 (when President Clinton designated the Hāna Millennium Legacy Trail), when stream diversions were significantly greater than will be the case under the Proposed Action.

##### **Upcountry Maui**

Neither the Proposed Action nor any of the alternatives are expected to have significant impact on the visual resources in Upcountry Maui because no new construction or land alteration is planned for Upcountry Maui.

### **Central Maui**

Under the No Action alternative, the Mahi Pono farm plan would include some 9,080 acres in green open space in the form of farms and irrigated pasture, which is a significant reduction from the 20,650 green open space acres under the Proposed Action. Therefore, the No Action alternative and potentially the Reduced Water Volume alternative have the potential to decrease the amount of green open space planned under the Proposed Action because the water availability is directly connected to the acreage of land used for crops. The Alternative Lease Duration alternative may also negatively impact the visual resources should the Water Lease be issued for a period of time that is insufficient for Mahi Pono to fully implement its farm plan and make its desired improvements to the Central Maui agricultural fields.

### **3.4.16 Air Quality**

#### **East Maui / Upcountry Maui**

Neither the Proposed Action nor any of the alternatives are expected to have significant impact on the air quality in the License Area or Upcountry Maui because no new construction, water service facilities, or land alteration is planned for these regions. Thus, there would be no associated dust generation or emissions from construction-related vehicles or stationary equipment.

#### **Central Maui**

Under the Proposed Action and all the alternatives, there will be beneficial impacts on regional air quality because of the termination of sugarcane burning practices. Nevertheless, the transition to diversified agriculture may adversely affect air quality because of an increase in equipment emissions and dust from uncultivated land. Mitigation measures are described in Chapter 4.

### **3.4.17 Noise**

#### **East Maui**

Neither the Proposed Action nor any of the alternatives are expected to have significant impact on the noise levels in the License Area or East Maui overall because no significant noise generating activities are proposed. It is possible that under the Modified Lease Area alternative that with increased public access there would be some increase in noise levels, but not to any degrees that could be considered significant.

#### **Upcountry Maui**

Neither the Proposed Action nor any of the alternatives are expected to have significant impact on the noise levels in Upcountry Maui. Under the No Action alternative and potentially under the Reduced Water Volume alternative, water deliveries to the Upcountry Maui water system will be terminated or reduced, which could discourage new activities that might otherwise have a slight and short-term increase in noise, such as the KAP expansion. However, no significant noise related impacts are anticipated in Upcountry Maui under any of the alternatives or under the Proposed Action.

#### **Central Maui**

Under the Proposed Action and the alternatives, there may be impacts on noise in Central Maui because of the transportation vehicles and equipment used for the diversified agriculture.

However, due to the expansive agricultural fields and the internal cane haul roads in Central Maui, the noise levels will not affect public areas. None of the other alternatives will have a significant impact on noise quality in Central Maui.

### **3.4.18 Hazardous Materials**

#### **East Maui**

Under the Proposed Action and alternatives, no significant impacts are anticipated as EMI personnel will likely continue to use federally regulated herbicides to maintain the trails and access roads used to maintain the EMI Aqueduct System. The amount of water diverted will have little bearing on these maintenance requirements.

#### **Upcountry Maui**

Under the Proposed Action, and potentially all other alternatives except for the No Action alternative, expansion of the KAP may include a corresponding increase in the use of herbicides and pesticides for crop maintenance. Such use would be subject to federal regulations so no significant environmental impacts are anticipated. In the Reduced Water Volume and No Action alternatives agricultural use and the associated use of herbicides and pesticides may decline or end due to the potential contraction or elimination of the KAP.

#### **Central Maui**

Any use of agricultural chemicals for diversified agriculture in the Central Maui fields would be in strict compliance with federal regulations and Mahi Pono will exercise due care to prevent the release of fuels, lubricants and other hazardous materials. Hence, no significant impacts are anticipated. The Reduced Water Volume and No Action alternatives will result in fewer crops and a corresponding decrease in the use of agricultural chemicals.

### **3.4.19 Traffic**

#### **East Maui**

No significant impacts to traffic in East Maui are expected under any of alternatives, including the Proposed Action. Under the Modified Lease Area alternative with increased public access to the License Area, there may be a moderate increase in traffic as compared to the other alternatives.

#### **Upcountry Maui**

No significant impacts to traffic in Upcountry Maui are expected under any of alternatives, including the Proposed Action. Long term, should Upcountry Maui experience a lack of growth or even a loss of population or other activities, as anticipated under the No Action alternative, Upcountry Maui may have less traffic in the future or as compared to the other alternatives.

#### **Central Maui**

Even under the Proposed Action with the full implementation of the Mahi Pono farm plan, no significant impacts to Central Maui traffic are anticipated. The other alternatives would have even lesser impacts due to fewer Mahi Pono farm employees (estimated 790 employees at full operations under the Proposed Action compared to an estimated 270 jobs under the No Action alternative).



### **3.4.20 Public Water Systems**

#### **East Maui**

A portion of the Nāhiku community is served by the MDWS directly through the EMI Aqueduct System via a development tunnel in the Koolau Ditch near Makapipi Stream. The tunnel draws up 20,000 to 45,000 gdp, dependent on weather, directly from the EMI Aqueduct System. The area is at a lower elevation where the water system has sufficient pressure for residential service. Potential impacts to the Nāhiku community will depend upon the amount of water allowed to be diverted under the Water Lease. Under the Proposed Action, water delivery to the Nāhiku community is expected to continue to be provided. With increasingly deeper reductions in the amount of water available through the Water Lease, however, the reliability of water supplied to the Nāhiku community would become increasingly tenuous. Water delivery amounts under the Reduced Water Volume alternative depend upon the amount of permitted diversions. The alternative of a Water Lease with a shorter lease term would reduce the time horizon for certainty that water would be available to the Nāhiku community. Therefore, for the Nāhiku community, this would reduce the time to pursue alternative sources of water, which are limited. Under the No Action alternative, where no Water Lease is awarded and the only available water would be derived from privately owned land, water service to Nāhiku community is assumed to terminate.

#### **Upcountry Maui**

Potential impacts to the Upcountry Maui Water System will depend upon the amount of water allowed to be diverted under the Water Lease. Under the Proposed Action water delivery to Upcountry Maui is expected to continue as usual. Under the No Action/No Lease alternative, water service to Upcountry Maui is assumed to terminate. Water delivery amounts under the Reduced Water Volume alternative depend upon the amount of permitted diversions.

#### **Central Maui**

Neither the Proposed Action nor the alternatives are expected to have a significant adverse effect on public water systems because water service to Central Maui is through the privately owned EMI Aqueduct System. Regarding impacts to the private Central Maui irrigation system, Mahi Pono's irrigation engineering team is also designing a high-efficiency irrigation system. The new irrigation system will reduce water usage by: (1) using automatic, real-time irrigation sensors to deliver precise amounts of water efficiently; (2) recycle and re-use all water used in Mahi Pono's processing plants; and (3) integrate various live technology feeds to constantly monitor plant, soil, and tree health. As such, under the Proposed Action and all alternatives, beneficial impacts to the Central Maui irrigation system are anticipated.

### **3.4.21. Public Services and Facilities**

#### **East Maui**

No significant impacts are anticipated on public services and facilities as a result of the Proposed Action, Reduced Water Volume and No Action alternatives. Increased public access in the Modified Lease Area alternative could require greater involvement by the DLNR personnel and possibly by County police.

#### **Upcountry Maui**

No significant impacts are anticipated.

**Central Maui**

Under the Proposed Action, upon restoration of the Central Maui field irrigation system reservoirs, it is anticipated that the previous relationship with the Maui County Fire Department would resume whereby firefighters would use water from the reservoirs to fight fires. In the Reduced Water Volume and No Action alternatives, the amount of water in reservoirs, particularly during drier weather conditions, would likely be less or unavailable, reducing their usefulness in fighting fires. Wildfires in fallow fields in Central Maui would be of greatest concern, particularly during drier weather conditions.

(This page intentionally left blank)

---

## **Chapter 4:**

Description of Existing Environment,  
Impacts, and Mitigation Measures



#### **4. DESCRIPTION OF EXISTING ENVIRONMENT, IMPACTS, AND MITIGATION MEASURES**

This chapter describes the existing physical environment within the East Maui, Upcountry Maui, and at the Central Maui agricultural fields. This chapter also identifies the potential impacts to the environment within these different areas and, where appropriate, provides mitigation measures to address adverse environmental impacts from the Proposed Action.

For the purposes of this DEIS, East Maui refers to the area potentially affected by the Proposed Action. Depending on the topic of discussion, it includes the following:

- The License Area comprised of 33,000 acres of State-owned land that is the subject of the Proposed Action and which contains most of the EMI Aqueduct System as well the streams subject to the CWRM D&O;
- The Collection Area, which includes the License Area, as well as approximately 17,000 acres of privately-owned land mauka and west of the License Area that contributes to water diverted by the EMI Aqueduct System; and,
- Areas generally makai of the EMI Aqueduct System, including a portion of the Hāna Highway, various undeveloped, agricultural and rural areas - including the Nāhiku community of which a portion is served by the MDWS with water from the EMI Aqueduct System, and the adjoining coastal waters.

Upcountry Maui is considered to be comprised of several communities, including Kula, Pukalani, Makawao Ha‘ikū, Hāli‘imaile, Waiakoa, Kēōkea, Waiohuli, ‘Ulupalakua, Kanaio, Olinda, ‘Ōma‘opio, Kula Kai, and Pūlehu. Upcountry Maui also includes KAP and the 262-acre KAP expansion. The Upcountry Maui area considered in this DEIS is generally the area serviced by the portion of the Upcountry Maui Water System that gets water from the Kamole-Weir, Olinda, and Piiholo WTPs.

For the purposes of this DEIS, Central Maui is comprised of the approximately 30,000 acres of agricultural land that had been cultivated with sugarcane for over a century utilizing water from the EMI Aqueduct System. Geographically, what is referred to as Central Maui encompasses approximately 36,000 acres, but approximately 6,000 acres is comprised of uncultivated areas, including roads, gulches, and patches of uncultivated land as shown in Figure 4-1.

#### **4.1 Physiography**

##### **4.1.1 Geology and Topography**

Geologically, the island of Maui is part of a large volcanic mass that also includes the islands of Moloka‘i, Lāna‘i, and Kaho‘olawe. Historically, this mass was at one time a single island with an area of approximately 2,000 square miles. Maui itself consists of two separate shield volcanoes, West Maui (Mauna Kahalawai) and East Maui (Haleakalā).

##### **East Maui**

East Maui is located on the northern slopes of Haleakalā, which is now almost wholly covered by post-shield building stage alkali lavas. Formation of some of East Maui’s more spectacular



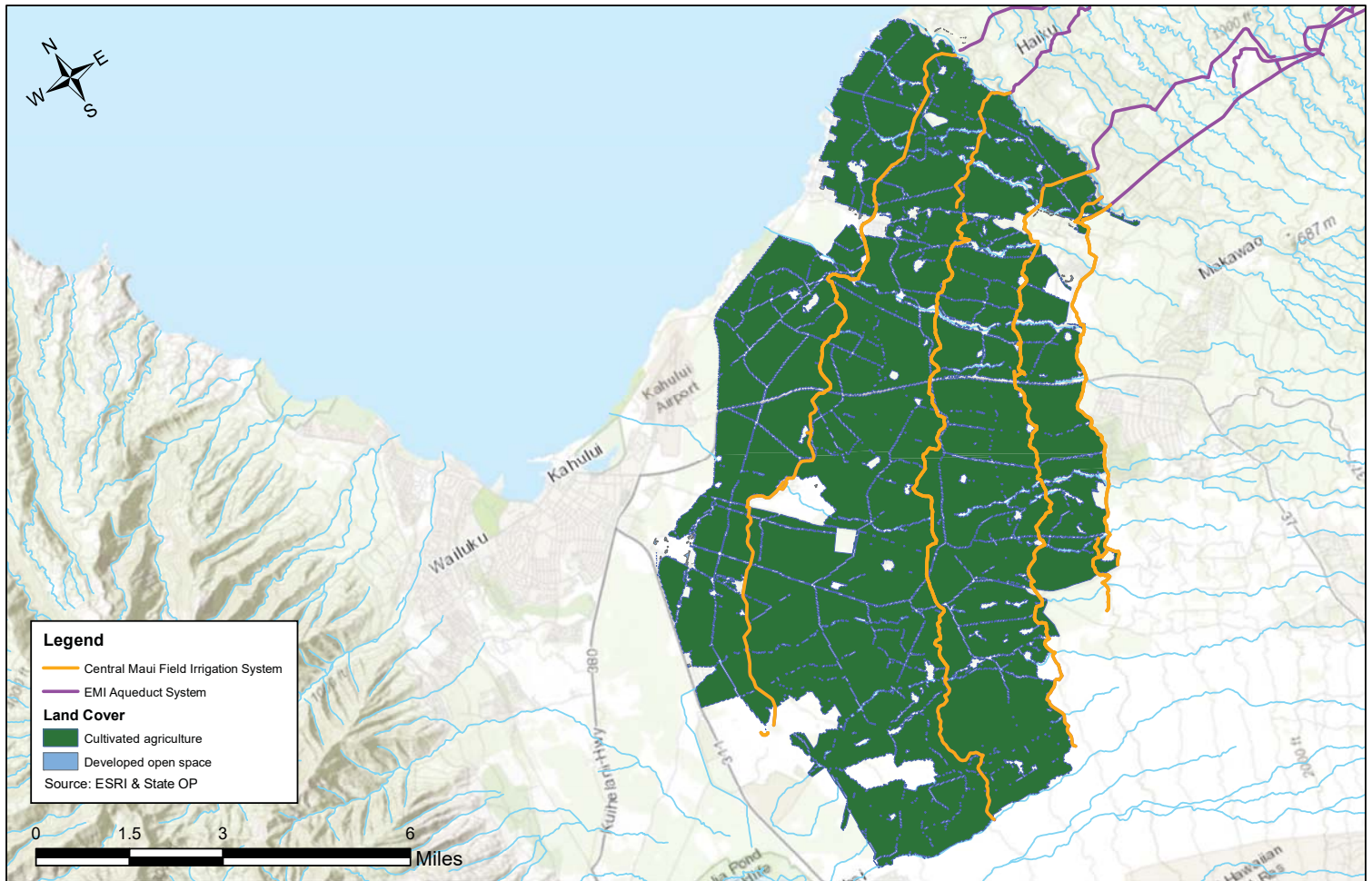


FIGURE 4-1

## Central Maui Land Cover Map

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



valleys, including the Ke'anae region, which is part of the License Area, began during the Honomanū Volcanic Series.

Three series of lava flows or Volcanic Series are found in East Maui, the Honomanū, Kula, and Hāna Volcanic Series. The oldest series, the Honomanū Volcanic Series forms the bulk of the Haleakalā volcanic dome and are present in exposures of tholeiitic olivine basalt to oceanite along the northern sea wall and valleys. The Honomanū Volcanic Series is overlain by alkalic lavas of the Kula Volcanic Series. Locally, the contact is marked by the presence of a thin layer of red ashy soil up to 15 cm thick, but elsewhere tholeiitic Honomanū Series lavas are interbedded with Kula alkalic olivine basalts over a transition zone 15 to 60 meters thick. Hawaiite is the predominant lithology of the Kula Volcanic Series, with lesser amounts of ankaramite and alkalic olivine basalt. Explosive eruptions were apparently fairly common at this time as large cinder cones are abundant in the Kula Series. A prolonged period of erosion marks the end of Kula volcanism. The Hāna Volcanic series then partially filled these deeper valleys and canyons and veneered the remainder of the mountain. Hāna lavas are andesitic, picritic and olivine basalts that carry minimal water except where they have buried earlier perennial streams.

The elevation in East Maui extends from approximately 2,000 meters above sea level at the highest point of the Collection Area down to sea level at the coastline (See Figure 4-2). The overall slope is gentle, retaining much of the shield volcano form of Haleakalā, but many deep ravines cutting through the overall formation have steep slopes, evidencing the high amount of rainfall on the island's windward exposure.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on geology or topography in the region are anticipated.

#### **Upcountry Maui**

Upcountry Maui is a region in Maui generally regarded as located on the western slope of Haleakalā, ranging in elevation from approximately 1,000 to 4,000 feet above sea level. For the purposes of this EIS, however, the area referred to as Upcountry Maui is generally the area served by the MDWS Upcountry Maui Water System, which is discussed in Section 2.2.3.1. (See Figure 4-3). While this service area generally lies within what is regarded as Upcountry Maui, it also extends to the coastline at the community of Ha'ikū. The Kula Volcanic Series covers the entire northwest region of Haleakalā. Receiving far less rainfall than East Maui, Upcountry Maui retains much of the gently sloping volcanic shield formation and lacks the deep cut ravines characterizing East Maui.

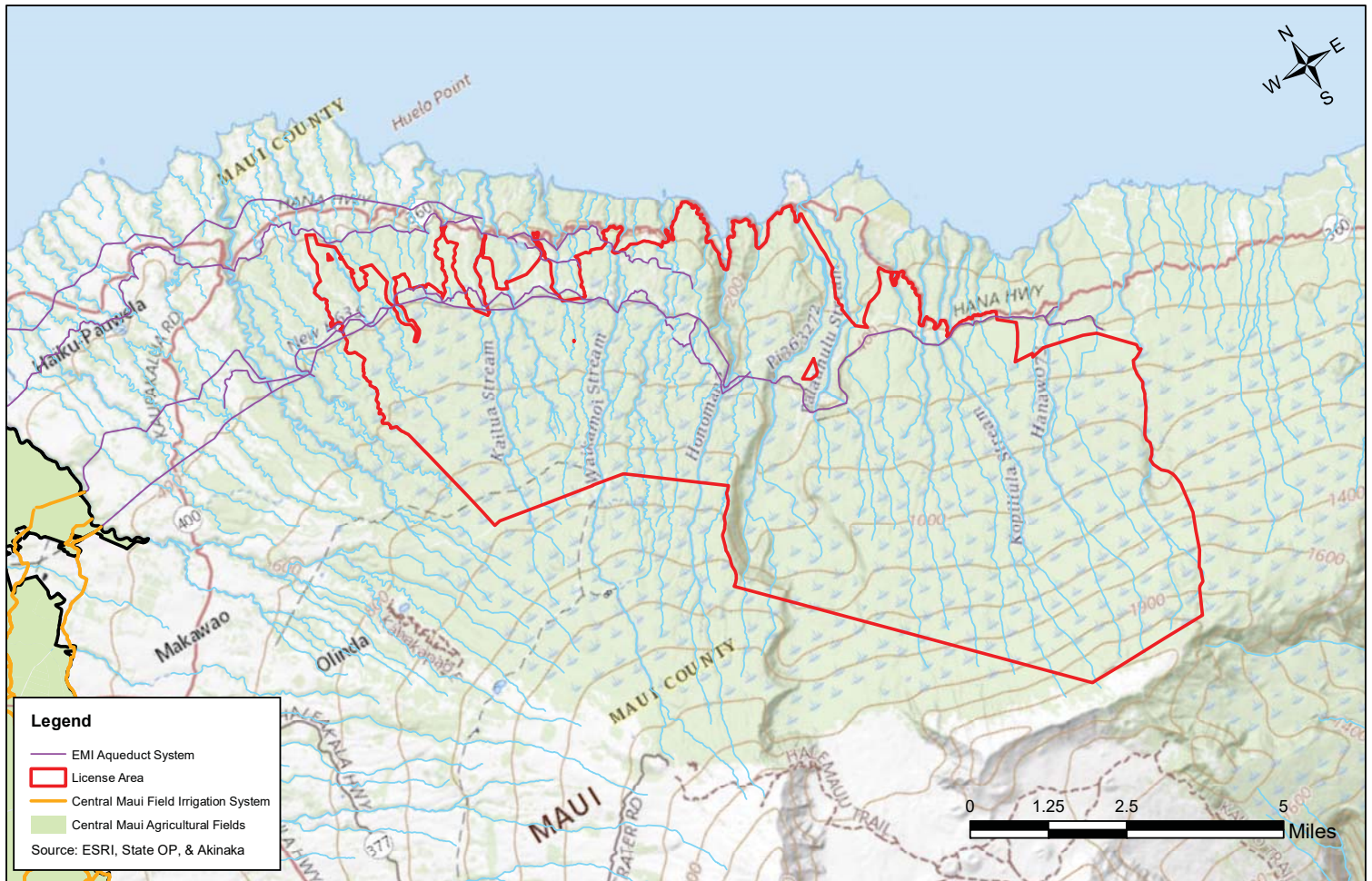


FIGURE 4-2

## USGS East Maui Topography Map

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS







### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui, including agricultural users at KAP and the 262-acre KAP expansion. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on geology or topography in the region are anticipated.

### **Central Maui**

The agricultural fields in Central Maui make up the majority of Maui's gently sloping isthmus. The isthmus is formed by nearly flat lying lava flows of Honomanū Basalt, interbedded with consolidated and unconsolidated sedimentary deposits. Beneath the isthmus, the Honomanū Basalt of Haleakalā overlies earthy sedimentary deposits and the older Wailuku Basalt of West Maui Mountain. The area has been cultivated from decades of sugar cultivation. The elevation of the agricultural fields in Central Maui range from sea level to approximately 400 meters above sea level (See Figure 4-4).

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on geology or topography in the region are anticipated.

Mahi Pono, the owner of the Central Maui agricultural fields, proposes to construct approximately 319,000 square feet of building space related to its agricultural operations such as washing and packing areas, storage, etc. Moreover, the former sugarcane fields would need to be cleared to allow for the transition to a diversified farm operation. Applicable best management practices (BMP) and erosion control measures will be implemented to ensure no adverse impact to the existing geology and topography.

## **4.1.2 Soils**

### **East Maui**

Soil information regarding the License Area in East Maui was provided by Cultural Surveys Hawai'i, Inc. (CSH) (2019). Soils in the License Area can be broken down into four areas: Huelo, Honomanū, Ke'anae, and Nāhiku. Below is a discussion regarding the soils within the four portions of the License Area.

According to the U.S. Department of Agriculture (USDA) (2001) Soil Survey Geographic (SSURGO) database and soil survey data gathered by Foote et al. (1972), soils within the

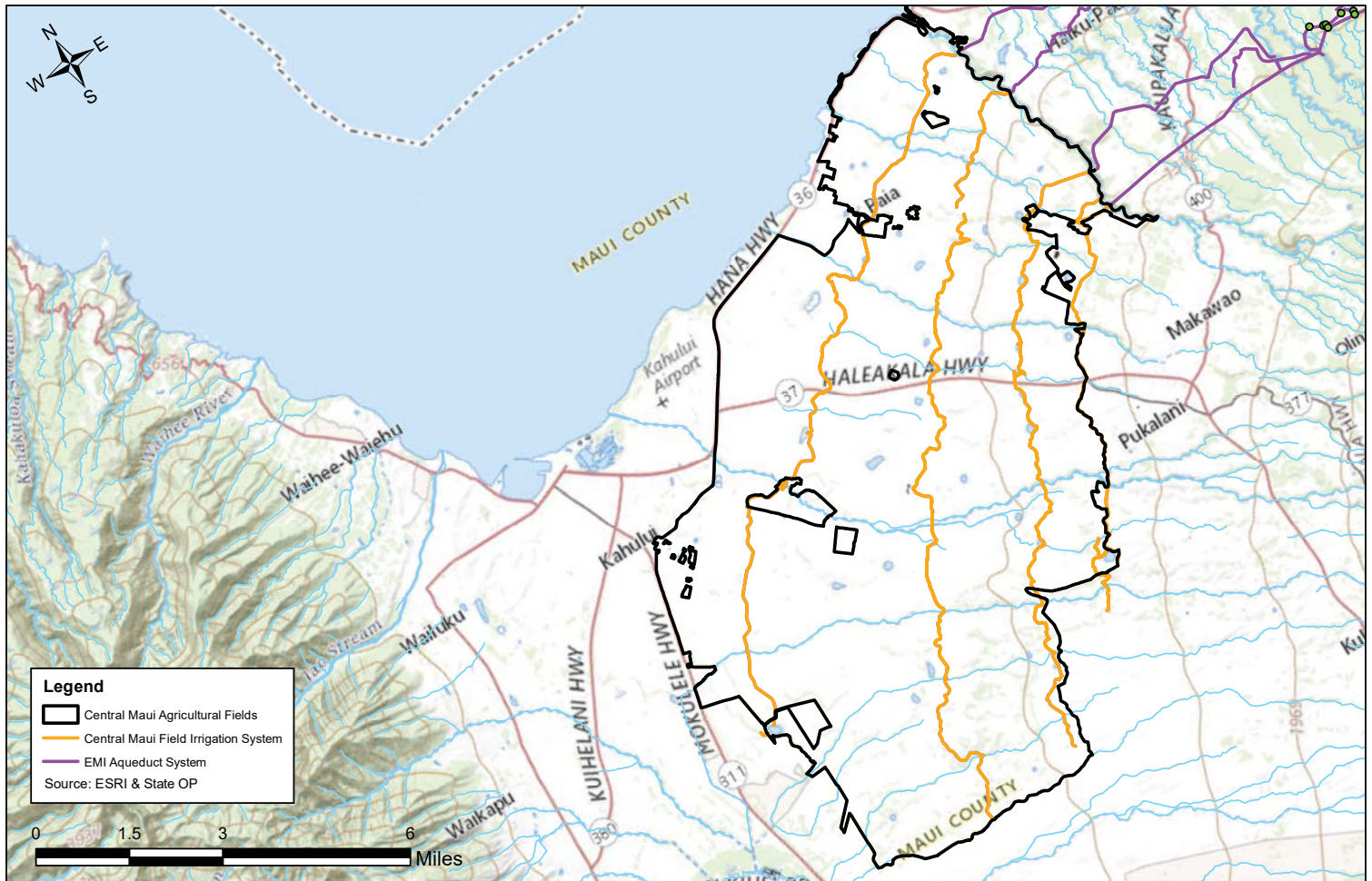


FIGURE 4-4



## USGS Central Maui Topography Map

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



Huelo portion of the License Area include Kailua silty clay (3 to 25 percent slopes) (KBID), Pauwela clay (15 to 25 percent slopes) (PfD), Rough broken land (rRR), Honomanu-Amalu association (rHR), Rough mountainous land (rRT), Amalu peaty silty clay (3 to 20 percent slopes) (rAMD), and water > 40 acres (W) (See Figure 4-5).

Kailua silty clay (3 to 25 percent slopes) (KBID) soils are described as follows:

This soil is on low uplands. Included in mapping were areas of Honomanu and Makawao soils. Also included were small, steep areas near cinder cones. In a representative profile the surface layer is dark brown silty clay about 9 inches thick. The upper part of the subsoil, about 18 inches thick, is dark-brown and dark reddish-brown silty clay that has subangular blocky structure. The lower part of the subsoil is very dark gray silty clay loam. The substratum is soft, weathered basic igneous rock. The soil is very strongly acid in the surface layer and strongly acid or medium acid in the subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. In places roots penetrate to a depth of 4 feet or more...

This soil is used for pasture, woodland, and wildlife habitat. (Capability classification IVe, nonirrigated; pasture group 11; woodland group 8). (Foote et al. 1972:53)

Pauwela clay (15 to 25 percent slopes) (PfD) soils are described as follows:

On this soil runoff is medium and the erosion hazard is moderate. Included in mapping were areas that are steep and moderately eroded. This soil is used for pasture and woodland. (Capability classification IVe, nonirrigated; pineapple group 8; pasture group 8; woodland group 7). (Foote et al. 1972:112)

Rough broken land (rRR) is described as follows:

Rough broken land (rRR) consists of very steep land broken by numerous intermittent drainage channels. In most places, it is not stony. It occurs in gulches and on mountainsides on all the islands except O'ahu. The slope is 40 to 70 percent. Elevations range from nearly sea level to about 8,000 feet. The local relief is generally between 25 and 500 feet. Runoff is rapid, and geologic erosion is active. The annual rainfall amounts to 25 to more than 200 inches.

These soils are variable. They are 20 to more than 60 inches deep over soft, weathered rock. In most places some weathered rock fragments are mixed with the soil material. Small areas of rock outcrop, stones, and soil slips are common. Included in mapping were areas of colluvium and alluvium along gulch bottoms.

This land type is used primarily for watershed and wildlife habitat. In places, it is used also for pasture and woodland. The dominant natural vegetation in the drier areas consists of guava, lantana, natal redtop, Bermuda grass, koa haole,

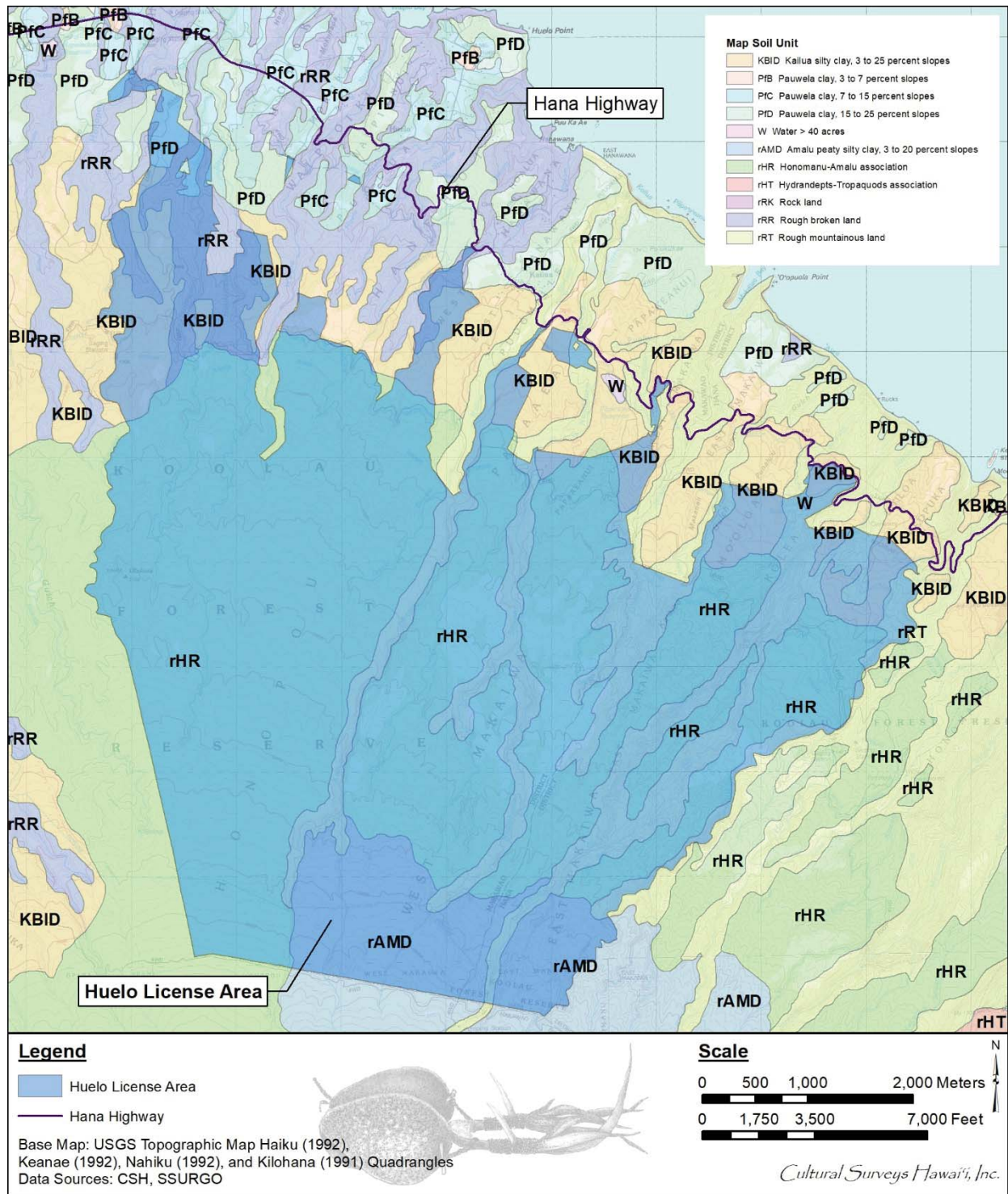


Figure 4-5. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the Huelo License Area (U.S. Department of Agriculture 2001)  
Cultural Surveys Hawai'i, Inc provided map that depicts soil within portions of License Area

and molasses grass. Ohia, kukui, koa, and ferns are dominant in the wetter areas. Puakeawe, aalii, and sweet vernal grass are common at the higher elevations. (Capability classification VIle, nonirrigated). (Foote et al. 1972:119)

Honomanu-Amalu association (rHR) soils are described as follows:

The soils in this association have the profiles described as typical of their respective series. The areas are almost inaccessible by vehicle or on foot. They are on gently sloping to moderately steep, intermediate uplands on East Maui. The Honomanu soils occupy the more sloping, better drained side slopes. The Amalu soils occur on the less sloping tops of ridges and interfluvies. The Honomanu soils are well drained; the Amalu soils are poorly drained. Runoff is slow to very slow, and the erosion hazard is slight.

Honomanu soils make up about 60 percent of the association, and Amalu soils about 40 percent. Included in mapping were small areas of Kailua soils and many small, very steep gulches. This association is used for water supply and wildlife habitat. It is covered with dense min forest vegetation. (Honomanu part is in capability classification IVe, nonirrigated; woodland group 8. Ama1u part is in capability classification VIIw, nonirrigated). (Foote et al. 1972:43)

Rough mountainous land (rRT) is described as follows:

Rough mountainous land (rRT) occurs in mountainous areas on all islands in the survey area. It consists of very steep land broken by numerous intermittent drainage channels. In most places it is not stony. Elevations range from nearly sea level to more than 6,000 feet. The annual rainfall amounts to 70 to more than 400 inches. Over much of the area, the soil mantle is very thin. It ranges from 1 inch to 10 inches in thickness over saprolite. In most places the saprolite is relatively soft and permeable to roots and water.

The land surface is dominated by deep, V-shaped valleys that have extremely steep side slopes and narrow ridges between the valleys. In most places, the local relief exceeds 500 feet. The soil material on the narrow ridgetops is similar to that of the Amalu and Olokui series. Rock land, rock outcrop, soil slips, and eroded spots make up 20 to 40 percent of the acreage.

This land type is used for water supply, wildlife habitat, and recreation. The natural vegetation consists of ohia, false staghorn fern, tree fern, yellow foxtail, lantana, kukui, and puakeawe. (Capability classification VIIIe, nonirrigated) (Foote et al. 1972:119)

Amalu peaty silty clay (3 to 20 percent slopes) (rAMD) soils are described as follows:

This soil is on high ridges and mountaintops. Included in mapping were small areas of Honomanu and Olokui soils and of steep gulches. In a representative profile an organic layer of black peat, about 8 inches thick, overlies a layer of gray massive clay about 8 inches thick. The substratum is soft, weathered basic

igneous rock capped by a horizontal ironstone sheet 1/8 to 1 inch thick. The soil is extremely acid above the ironstone layer.

Permeability is restricted by the ironstone sheet, which is impermeable except for cracks. Runoff is very slow, and the erosion hazard is no more than slight. Roots penetrate to a depth of 8 to 15 inches in places...

This soil is used for water supply and wildlife habitat. (Capability classification VIIw, nonirrigated; woodland group 16). (Foote et al. 1972:28)

According to the USDA (2001) SSURGO database and soil survey data gathered by Foote et al. (1972), soils within the Honomanū portion of the License Area includes Kailua silty clay (3 to 25 percent slopes) (KBID), Stony alluvial land (rSM), Honomanu-Amalu association (rHR), Rough mountainous land (rRT), and Amalu peaty silty clay (3 to 20 percent slopes) (rAMD) (See Figure 4-6).

Stony alluvial land (rSM) soils are described as follows:

Stony alluvial land (rSM) consists of stones, boulders, and soil deposited by streams along the bottoms of gulches and on alluvial fans. In most places, the slope is 3 to 15 percent. Elevations range from nearly sea level to 1,000 feet. The annual rainfall amounts to 15 to 200 inches.

This land type is suited to pasture in the dry areas and to pasture and woodland in the wet areas. The natural vegetation consists of kiawe, klu, ilima, piligrass, and lantana in the dry areas and guava, kukui, hilograss, and Christmas berry in the wet areas. Improvement of this land is difficult because of the stones and boulders. (Capability classification VIIs, nonirrigated). (Foote et al. 1972:120)

According to the USDA (2001) SSURGO database and soil survey data gathered by Foote et al. (1972), soils within the Ke'anae portion of the License Area consists of Kailua silty clay (3 to 25 percent slopes) (KBID), Stony alluvial land (rSM), Honolua silty clay (7 to 15 percent slopes) (HwC), Honomanu-Amalu association (rHR), Rough mountainous land (rRT), Honomanu silty clay (5 to 25 percent slopes) (rHOD), and Hydrandepts-Tropaquods association (rHT) (See Figure 4-7).

Honolua silty clay (7 to 15 percent slopes) (HwC) is described as follows:

This soil is on smooth interfluvies on uplands. Included in mapping were small areas of Alaeloa and Olelo soils. Also included were small, gently sloping areas and small, eroded spots.

In a representative profile, the surface layer is dark-brown silty clay about 12 inches thick. The subsoil, about 58 inches thick, is dark reddish-brown and reddish-brown silty clay that has subangular blocky structure. The substratum is soft, weathered basic igneous rock. The soil is strongly acid in the surface layer and subsoil.



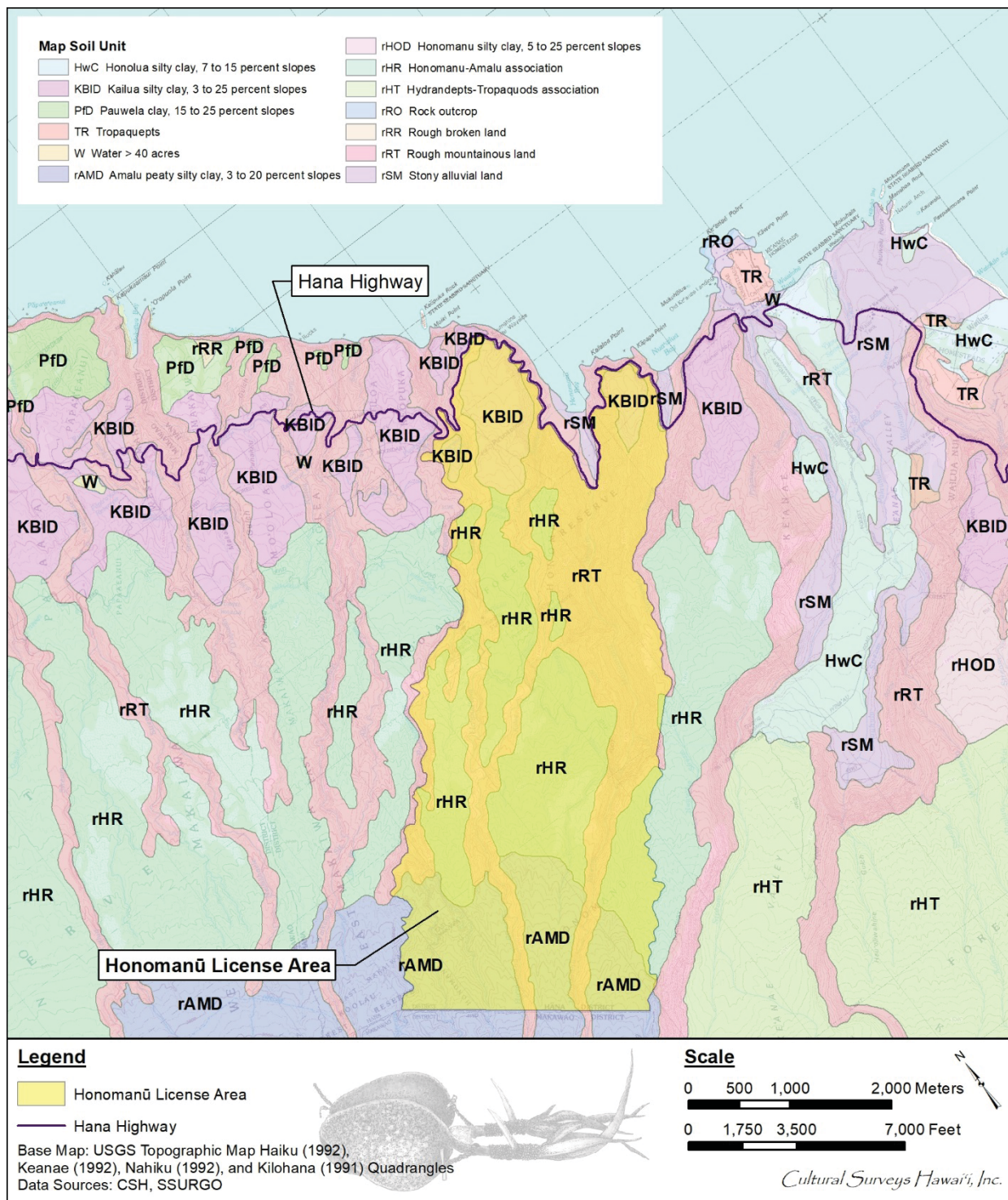


Figure 4-6. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the Honomanū License Area (U.S. Department of Agriculture 2001)

Cultural Surveys Hawai‘i, Inc provided map that depicts soil within portions of License Area



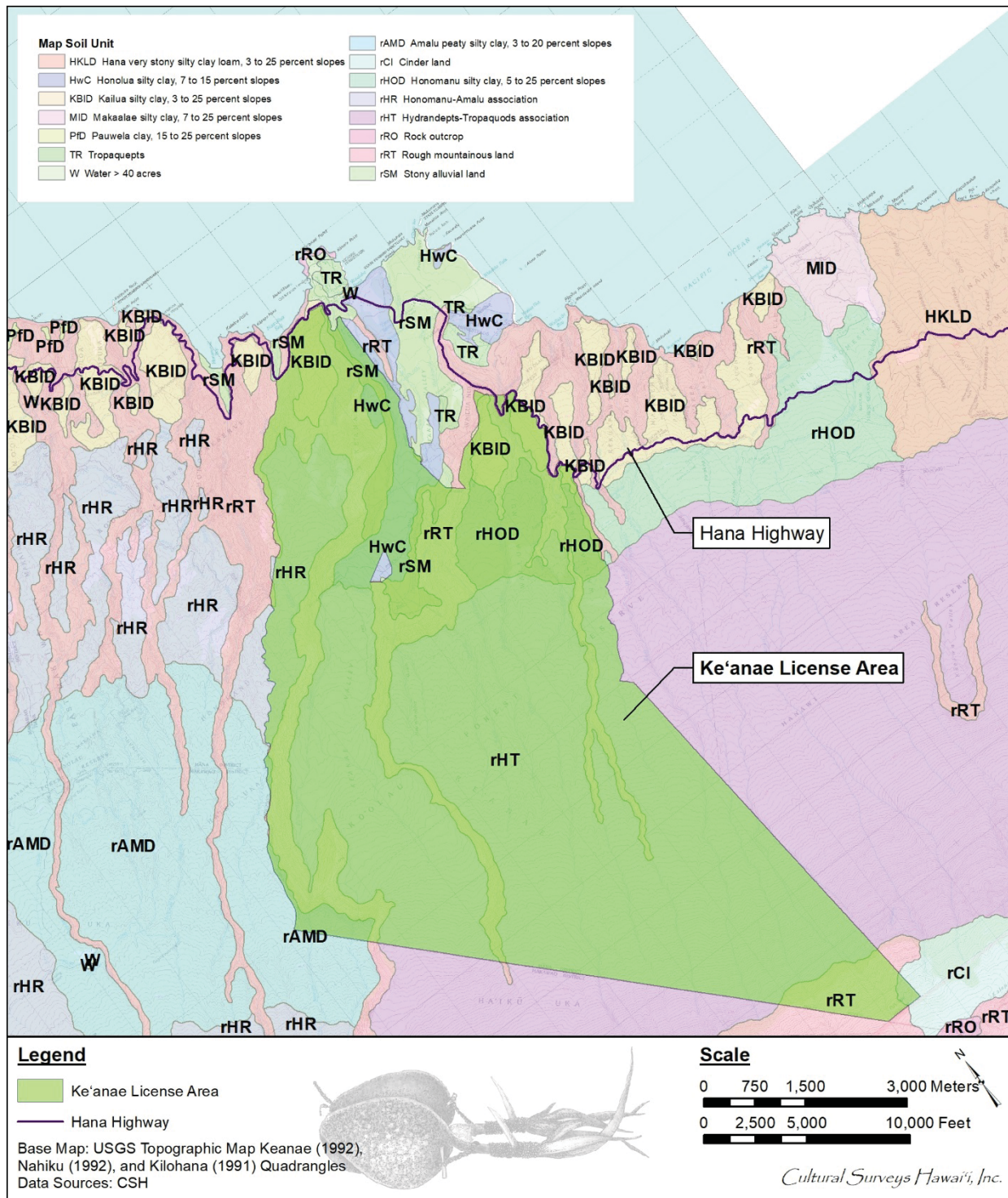


Figure 4-7. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the Keanae License Area (U.S. Department of Agriculture 2001)

Cultural Surveys Hawai'i, Inc provided map that depicts soil within portions of License Area



Permeability is moderately rapid. Runoff is slow to medium, and the erosion hazard is slight to moderate. The available water capacity is about 1.2 inches per foot in the surface layer and about 1.4 inches per foot in the subsoil. In places roots penetrate to a depth of 5 feet or more...

This soil is used for pineapple, pasture, and woodland. (Capability classification IIIe, nonirrigated; pineapple group 3; pasture group 8; woodland group 7). (Foote et al. 1972:42)

Honomanu silty clay (5 to 25 percent slopes) (rHOD) soils are described as follows:

This soil is on the wettest parts of the northeastern slopes of Haleakalā. Included in mapping were small areas of Amalu and Kailua soils and rock outcrops.

In a representative profile the surface layer is very dark brown silt loam and dark yellowish-brown silty clay about 11 inches thick, capped with an organic layer about 3 inches thick. The subsoil, about 26 inches thick, is dark yellowish-brown and brown silty clay that has subangular blocky structure. The substratum is dark yellowish-brown loam and fragmental basic igneous rock. The soil is extremely acid in the surface layer and subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. In places roots penetrate to a depth of 4 feet or more...

This soil is used for water supply and wildlife habitat. (Capability classification IVe, nonirrigated; pasture group 11; woodland group 8). (Foote et al. 1972:43)

Hydrandepts-Tropaquods association (rHT) soils are described as follows:

Areas mapped as Hydrandepts-Tropaquods association (rHT) consist of well-drained to poorly drained soils on uplands. These soils are on the northern slopes of West Maui and the northern and eastern slopes of East Maui. They developed in volcanic ash and in material weathered from cinders and basic igneous rock. They are moderately sloping to steep. Elevations range from 1,000 to 6,000 feet. The annual rainfall amounts to 100 to 350 inches. The mean annual soil temperature is 60° F. This association is geographically associated with soils of the Amalu, Honomanu, and Olelo series.

Hydrandepts make up about 60 percent of the association, and Tropaquods 40 percent. Included in mapping were small areas of Rough mountainous land. Also included were small peat bogs.

Hydrandepts are the steeper areas of the association. These are well drained to moderately well drained soils that are similar to those of the Honomanu series. The surface layer is high in organic-matter content. The subsoil is dark-brown or dark yellowish-brown, smeary silty clay loam or silty clay. The

substratum consists of volcanic ash and cinders or weathered basic igneous rock. These soils dehydrate irreversibly into fine pebble size aggregates.

Tropaquods are poorly drained soils that are similar to those of the Amalu and Olokui series. They have a peaty or mucky surface layer that overlies a dark gray to very dark gray, mottled layer. The mottled layer rests on an ironstone sheet  $\frac{1}{4}$  to 1 inch thick. The ironstone is at a depth of 10 to 20 inches. It normally caps highly weathered basic igneous rock.

The soils in this association have low bearing capacity and low shear strength. They are slippery and difficult to traverse. Because of their ability to absorb water and to transmit it rapidly, these soils are important for maintenance of ground water for domestic use and irrigation.

This association is used for water supply and wildlife habitat. The natural vegetation consists of ohia, puakeawe, sedges, false staghorn fern, tree fern, and other rain forest vegetation. (Hydrandepts soils are in capability classification VIIe, nonirrigated. Tropaquods soils are in capability classification VIIw, nonirrigated). (Foote et al. 1972:46)

According to the USDA (2001) SSURGO database and soil survey data gathered by Foote et al. (1972), the soils within the Nāhiku portion of the License Area consists of Kailua silty clay (3 to 25 percent slopes) (KBID), Honomanu silty clay (5 to 25 percent slopes) (rHOD), Hana very stony silty clay loam (3 to 25 percent slopes) (HKLD), Rough mountainous land (rRT), Hydrandepts-Tropaquods association (rHT), and Cinder land (rCI) (See Figure 4-8).

Hana very stony silty clay loam (3 to 25 percent slopes) (HKLD) soils are described as follows:

This soil is on smooth, low mountain slopes. Included in mapping were small areas of Honomanu soils. Also included were small, steep areas near cinder cones.

In a representative profile, the surface layer is very dark-brown and very dark grayish-brown silty clay loam about 12 inches thick. The subsoil, about 22 inches thick, is dark-brown silty clay loam that has subangular blocky structure. The substratum is moderately weathered, pebble-size cinders overlying 'a'ā lava. The soil is strongly acid to medium acid in the surface layer and slightly acid in the subsoil.

Permeability is moderately rapid. Runoff is slow to medium, and the erosion hazard is slight to moderate. In places roots penetrate to a depth of 3 to 4 feet. The available water capacity is about 1.2 inches per foot in the surface layer and 1.4 inches per foot in the subsoil...

This soil is used for pasture. (Capability classification VIs, nonirrigated; pasture group 11; woodland group 8). (Foote et al. 1972:37)

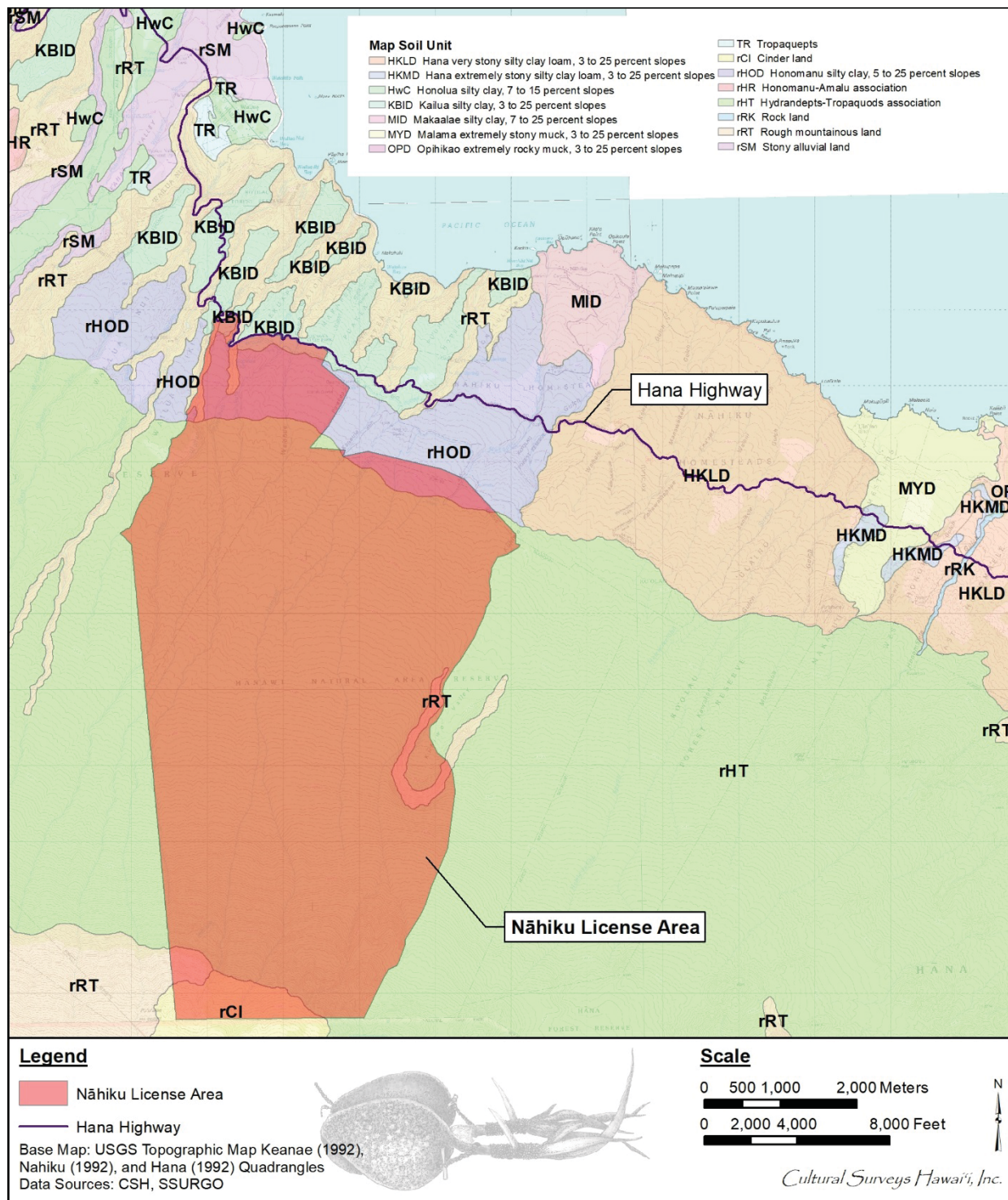


Figure 4-8. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the Nāhiku License Area (U.S. Department of Agriculture 2001)

Cultural Surveys Hawai'i, Inc provided map that depicts soil within portions of License Area

Cinder land (rCl) is described as follows:

Cinder land (rCl) consists of areas of bedded magmatic ejecta associated with cinder cones. It is a mixture of cinders, pumice, and ash. These materials are black, red, yellow, brown, or variegated in color. They have jagged edges and a glassy appearance and show little or no evidence of soil development.

Cinder land occurs on the islands of Maui and O'ahu. On Maui, it is mainly at elevations between 8,000 and 10,000 feet in the Haleakalā National Park. On O'ahu, it is mainly at elevations between 200 and 2,000 feet, near Mount Tantalus. The annual rainfall amounts to 20 to 30 inches on Maui and 60 to 100 inches on O'ahu.

Although Cinder land commonly supports some vegetation, it has no value for grazing, because of its loose nature and poor trafficability; It is used for wildlife habitat and recreational areas. (Capability classification VIIIs, nonirrigated)

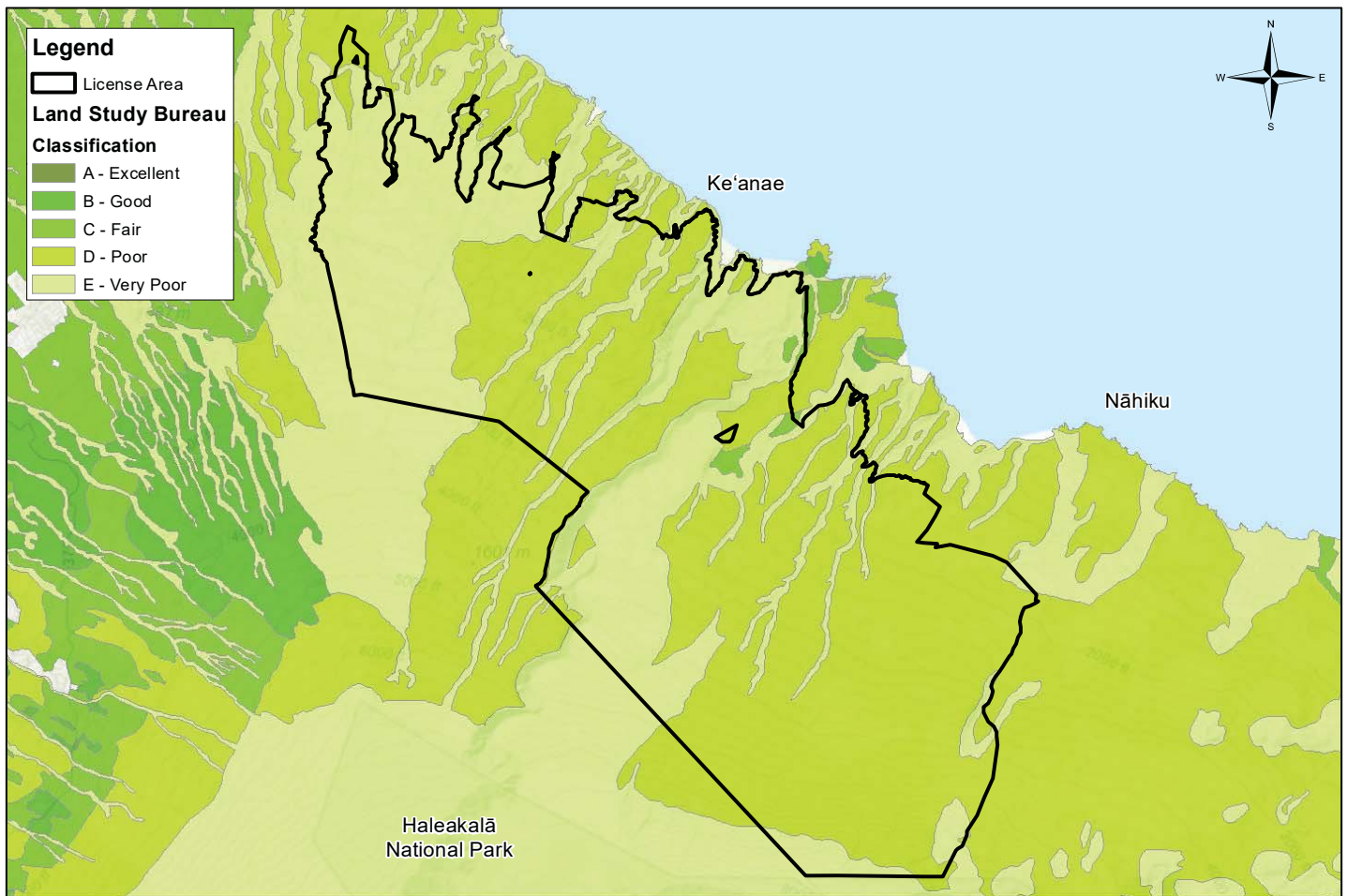
According to the Hawai'i Land Study Bureau (LSB) Detailed Land Classification, Island of Maui (LSB bulletin no. 7, 1967) and depicted online at the Hawai'i LSB Locator-ARC GIS by the Hawai'i Statewide GIS Program, Office of Planning, most of the soils in East Maui, including the License Area have been given an overall master productivity rating of E-Very Poor and D-Poor (See Figure 4-9). Pockets of soils within and makai of the Ke'anae portion of the License Area are rated C-Fair. Much of the land on the Ke'anae Peninsula and some in the Wailua area are rated B-Good.

The Agricultural Lands of Importance to the State of Hawai'i (ALISH) Classification System was developed and compiled in 1977 by the State Department of Agriculture with assistance from the U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS), and the College of Tropical Agriculture, University of Hawai'i. This classification system was developed to identify three classes of agriculturally important lands for the State of Hawai'i as part of a national effort to inventory important farmlands. Lands not considered for classification within this system are those that are not generally considered suitable for agriculture.

The Hawai'i Classification System identifies three categories of land (equivalent NRCS categories in Parentheses): Prime Agricultural Lands (Prime Farmlands), Unique Agricultural Lands (Unique Farmlands), and Other Important Lands (Additional Farmland of Statewide and Local Importance). A general description of each land type classification is as follows:

- Prime Agricultural Lands – Land which has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops economically when treated and managed according to modern farming methods.
- Unique Agricultural Lands – Land that has a special combination of soil quality, location, growing season, moisture supply, and is used to produce sustained high quality and of high quality yields of a specific crop when treated and managed according to modern farming methods.





1 inch = 11,000 feet  
Source: ESRI, State OP, & Akinaka

FIGURE 4-9

## EAST MAUI LSB MAP

*Proposed Lease for Nāhiku, Ke'anae, Honomanū and Huelo License Areas*

- Land other than Prime or Unique Agricultural Land that is also of statewide or local importance to agricultural use.

According to the ALISH map, some of the coastal area makai of the License Area have been classified "Other Agricultural Land" with some of the land lying below the western end of the License Area classified "Prime Agricultural Land" (See Figure 4-10). The latter areas were formerly in sugarcane cultivation. Notably, the same areas on the Ke'anae Peninsula and in the Wailua area that received an overall productivity rating of B-Good by the LSB, were classified Unique Agricultural Land on the ALISH map.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHH. No significant impacts on soils in the East Maui region are anticipated.

### **Upcountry Maui**

According to the USDA (2001) SSURGO database and soil survey data gathered by Foote et al. (1972), soils Upcountry Maui include the Haiku silty clay series (3 to 15 percent slopes), Hamakuapoko silty clay series (3 to 25 percent slopes), Haliimaile silty clay series (3 to 15 percent slopes) Kaipoioi loam series (7 to 40 percent slopes) Keahua silty clay loam series (3 to 25 percent slopes), Kula loam series (4 to 40 percent slopes), and water > 40 acres (W) (See Figure 4-11).

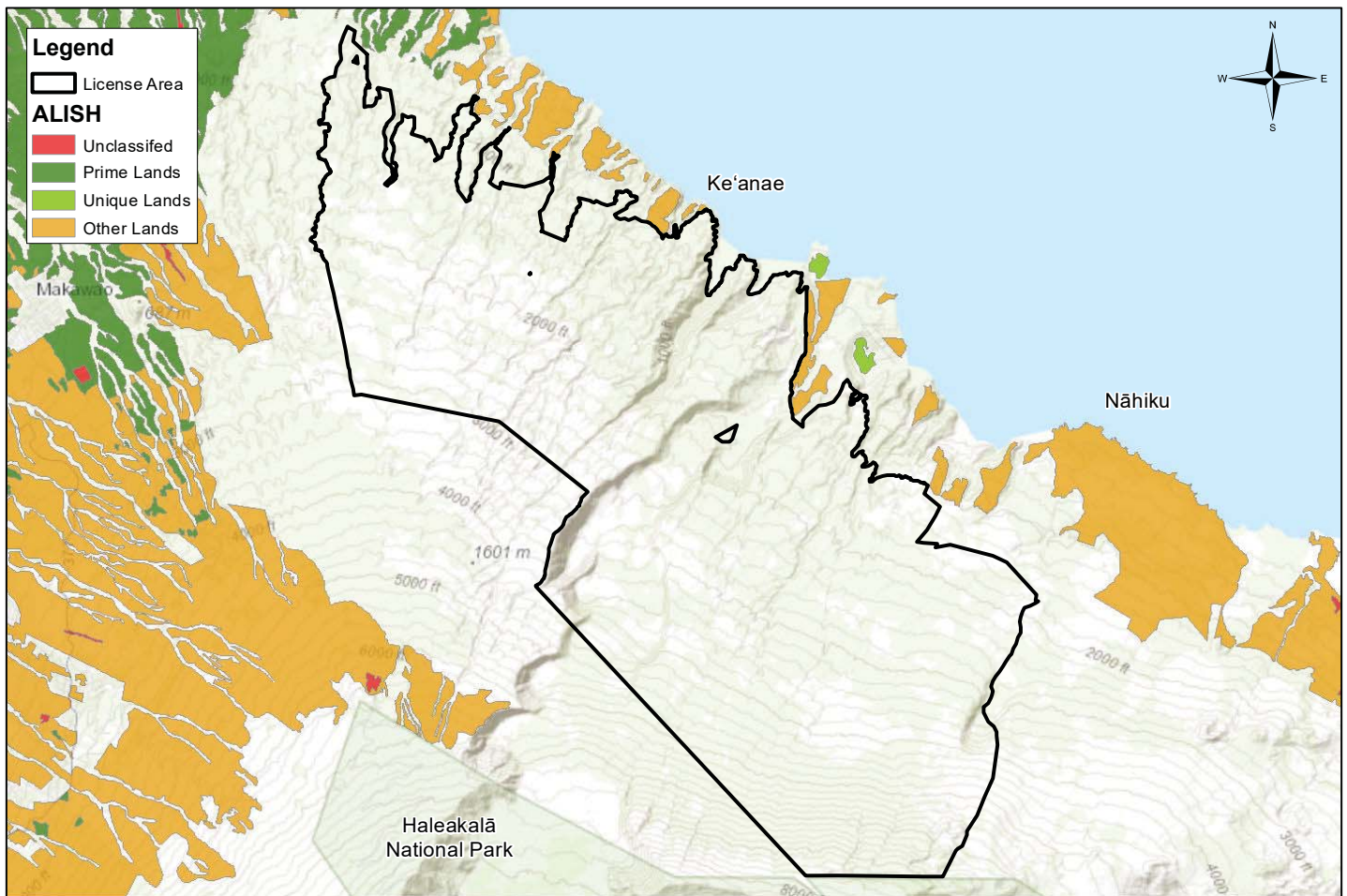
Haiku silty clay (3 to 7 percent slopes) (HaB) soils are described as follows:

This soil has a profile like that of Haiku clay, 7 to 15 percent slopes, except for the texture of the surface layer. It is a dark brown clay about 14 inches thick. The subsoil, about 31 inches thick, is yellowish-red, dark reddish-brown, and dark-red clay or silty clay that has angular and angular blocky structure. The substratum is soft, weathered, basic igneous rock. The soil is very strongly acid in the surface layer and extremely acid and very strongly acid in the subsoil and substratum. Runoff is slow, and the erosion hazard is slight. Included in mapping were small, nearly level areas. This soil is used for pineapple and homesites. (Foote et al. 1972:32)

Haiku silty clay (7 to 15 percent slopes) (HaC) soils are described as follows:

This soil has a profile like that of Haiku clay, 7 to 15 percent slopes, except for the texture of the surface layer. It is a dark brown clay about 14 inches thick. The subsoil, about 31 inches thick, is yellowish-red, dark reddish-brown, and dark-red clay or silty clay that has angular and angular blocky structure. The substratum is soft, weathered, basic igneous rock. The soil is very strongly acid



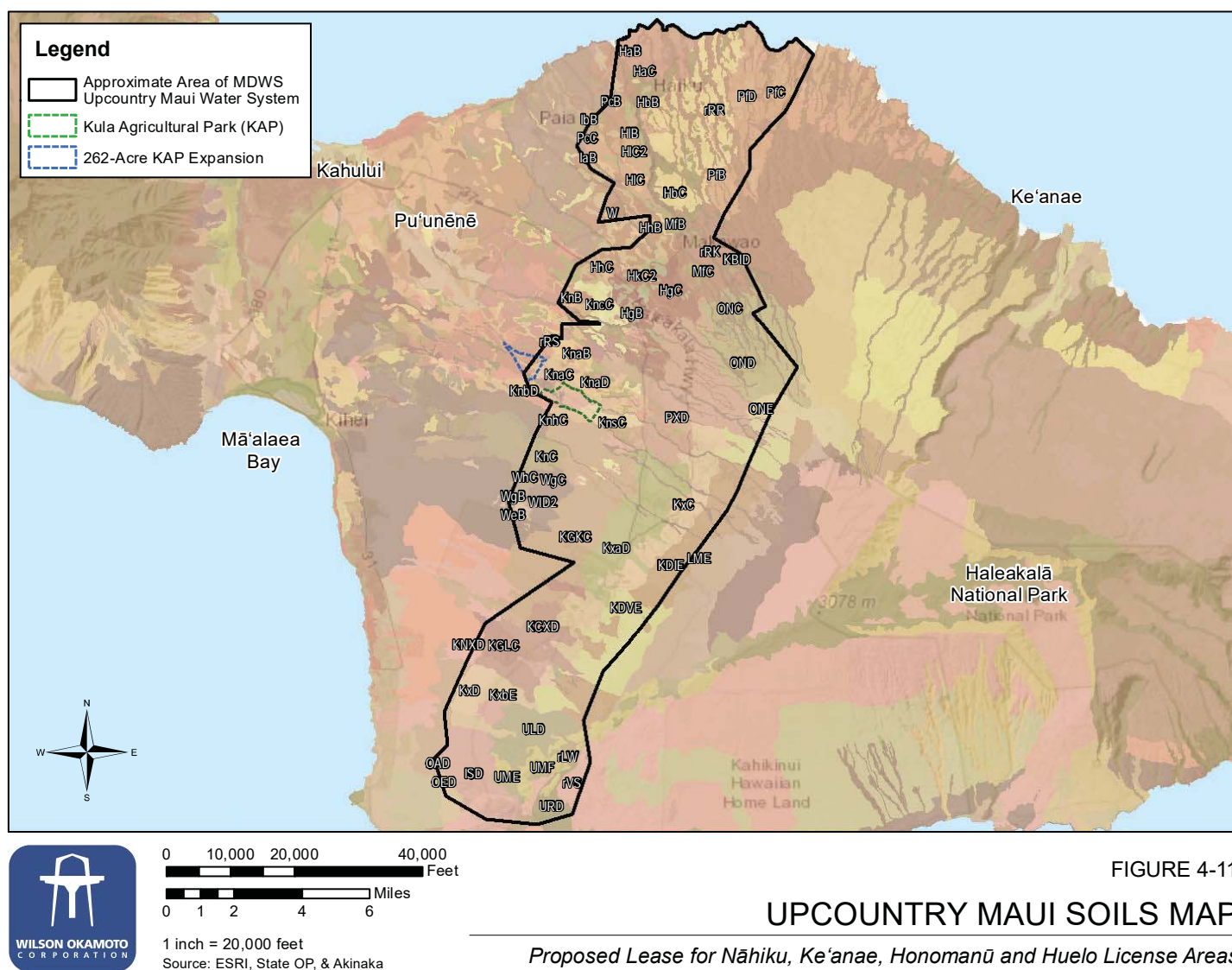


0 5,000 10,000 20,000 Feet  
 0 0.5 1 2 3 Miles  
 1 inch = 11,000 feet  
 Source: ESRI, State OP, & Akinaka

FIGURE 4-10

## EAST MAUI ALISH MAP

*Proposed Lease for Nāhiku, Ke'anae, Honomanū and Huelo License Areas*



in the surface layer and extremely acid and very strongly acid in the subsoil and substratum. This soil is used for pineapple. (Foote et al. 1972:32)

Haiku clay (3 to 7 percent slopes) (HbB) soils are described as follows:

On this soil, runoff is slow and the erosion hazard is slight. Included in mapping were small, nearly level areas. This soil is used for pineapple, pasture, and homesites. (Foote et al. 1972:32)

Haiku Clay (7 to 15 percent slopes) (HbC) soils are described as follows:

This soil occurs on uplands. Included in mapping were small areas of Paia and Pauwela soils. Also included were small eroded spots and small areas where the slope is as much as 25 percent.

In a representative profile, the surface layer is dark-brown clay about 14 inches thick. The subsoil, about 31 inches thick, is yellowish-red, dark reddish-brown, and dark-red clay or silty clay that has subangular and angular blocky structure. The substratum is soft, weathered, basic igneous rock. The soil is very strongly acid in the surface layer and extremely acid and very strongly acid in the subsoil and substratum.

Permeability is moderately rapid. Runoff is slow to medium, and the erosion hazard is slight to moderate. The available water capacity is about 1.4 inches per foot in the surface layer and 1.3 inches per foot in the subsoil. In places roots penetrate to a depth of 3 feet or more. (Foote et al. 1972:32)

Hamakuapoko silty clay (3 to 7 percent slopes) (HIB) soils are described as follows:

This soil is on smooth slopes in the uplands. Included in mapping were small areas of Haiku and Haliimaile soils. Also included were small, moderately steep areas.

In a representative profile, the surface layer is dark-brown silty clay about 16 inches thick. The subsoil, about 35 inches thick, is dark-brown and very dark grayish brown silty clay that has subangular blocky structure. The substratum is soft, weathered basic igneous rock. The soil is extremely acid in the surface layer and strongly acid or very strongly acid in the subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.2 inches per foot in the surface layer and 1.5 inches per foot in the subsoil. In places roots penetrate to a depth of 4 feet or more. (Foote et al. 1972:36)

Hamakuapoko silty clay (7 to 15 percent slopes) (HIC) soils are described as follows:

On this soil, runoff is medium and the erosion hazard is moderate. Most of this soil is used for pineapple. A small acreage is used for pasture and homesites. (Foote et al. 1972:36)

Hamakuapoko silty clay (7 to 25 percent slopes, eroded) (HIC2) soils are described as follows:

This soil has a profile like that of Hamakuapoko silty clay (3 to 7 percent slopes), except that it is eroded. In most places about 50 percent of the original surface layer has been removed by erosion. In a few places all of the surface layer and part of the subsoil have been lost. Runoff is medium to rapid, and the erosion hazard is severe. This soil is used for pineapple. (Foote et al. 1972:36)

Haliimaile silty clay (3 to 7 percent slopes) (HhB) soils are described as follows:

This soil is on smooth uplands. Included in mapping were small areas of Keahua and Paia soils. In a representative profile, the surface layer is dark reddish-brown silty clay about 15 inches thick. The subsoil, to a depth of more than 60 inches, is dark reddish-brown silty clay and very dark grayish-brown clay. It has subangular blocky and angular blocky structure. The substratum is silt, weathered basic igneous rock. The soil is strongly acid in the surface layer and strongly acid to medium acid in the subsoil. Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.6 inches per foot in the surface layer and about 1.2 inches per foot in the subsoil. In places, roots penetrate to a depth of 5 feet or more. (Foote et al. 1972:35)

Haliimaile silty clay (7 to 15 percent slopes) (HhC) soils are described as follows:

On this soil, runoff is medium and the erosion hazard is moderate. Included in mapping were small, cobbly areas and small, moderately steep areas. This soil is used for sugarcane, pineapple, and homesites. (Foote et al. 1972:36)

Haliimaile gravelly silty clay (7 to 15 percent slopes, eroded) (HkC2) soils are described as follows:

This soil has a profile like that of Haliimaile silty clay (3 to 7 percent slopes), except that in most places about 50 percent of the original surface layer has been lost through erosion. In a few places, all the surface layer and part of the subsoil have been removed. Runoff is medium to rapid, and the erosion hazard is severe. (Foote et al. 1972:36)

Haliimaile silty clay loam (3 to 7 percent) (HgB) soils are described as follows:

This soil has a profile like that of Haliimaile silty clay (3 to 7 percent slopes), except for the texture of the surface layer. Included in mapping were small eroded areas on knolls. The surface layer of the included areas contains few to



many pebble-size rock fragments. This soil is used for pineapple, pasture, and homesites. (Foote et al. 1972:36)

Haliimaile silty clay loam (7 to 15 percent) (HgC) soils are described as follows:

This soil has a profile like that of Haliimaile silty clay (3 to 7 percent slopes), except for the texture of the surface layer. Runoff is medium, and the erosion hazard is moderate. Included in mapping were small eroded areas on knolls. The surface layer of the included areas contains few to many pebble-size rock fragments. This soil was used for pineapple, pasture, and homesites. (Foote et al. 1972:36)

lao silty clay (3 to 7 percent slopes) (laB) soils are described as follows:

This soil has a profile like that of lao clay (3 to 7 percent slopes), except for the texture of the surface layer. The subsoil, about 45 inches thick, is very dark brown, dark-brown, and very dark grayish-brown clay and silty clay. The substratum is clayey alluvium. The soil is neutral in the surface layer and subsoil. This soil is used for sugarcane. (Foote et al. 1972:47)

lao cobbly silty clay (3 to 7 percent slopes) (lbB) soils are described as follows:

This soil has a profile like that of lao clay (3 to 7 percent slopes), except for the texture of the surface layer and the content of the cobblestones. The subsoil, about 45 inches thick, is very dark brown, dark-brown, and very dark grayish-brown clay and silty clay. The substratum is clayey alluvium. The soil is neutral in the surface layer and subsoil. This soil is used for sugarcane and homesites. (Foote et al. 1972:47)

lo silt loam (7 to 25 percent slopes) (ISD) soils are described as follows:

This soil is on smooth, low mountain slopes. Included in mapping were small areas of Kula and Oanapuka soils. Also included were small, cobbly areas and small, steep areas near cinder cones.

In a representative profile, the surface layer is very dark brown silt loam about 10 inches thick. The subsurface layer is dark-brown silty clay loam about 7 inches thick. The subsoil, 10 to 30 inches thick, is dark-brown and dark reddish-brown clay loam that has subangular blocky structure. The substratum is black, unweathered, fine cinders and dark reddish-brown loam. The soil is neutral in the surface layer and mildly alkaline in the subsoil.

Permeability is moderately rapid. Runoff is slow to medium, and the erosion hazard is slight to moderate. The available water capacity is about 1.8 inches per foot in the surface layer and subsoil. In places roots penetrate to a depth of more than 25 inches. This soil is used for pasture, truck crops, and wildlife habitat. (Foote et al. 1972:47)



Kailua silty clay (3 to 25 percent slopes) (KBID) soils are described as follows:

This soil is on low uplands. Included in mapping were areas of Honomanu and Makawao soils. Also included were small, steep areas near cinder cones.

In a representative profile the surface layer is dark-brown silty clay about 9 inches thick. The upper part of the subsoil, about 18 inches thick, is dark-brown and dark reddish-brown silty clay that has subangular blocky structure. The lower part of the subsoil is very dark gray silty clay loam. The substratum is soft, weathered basic igneous rock. The soil is very strongly acid in the surface layer and strongly acid or medium acid in the subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. In places roots penetrate to a depth of 4 feet or more. (Foote et al. 1972:53)

Kaimu extremely stony peat (7 to 25 percent slopes) (KCXD) soils are described as follows:

This soil is on rough, undulating, relatively young 'A'ā lava flows. Included in mapping were small areas of 'lo and Kula soils. Outcrops of 'A'ā lava are common.

In a representative profile, the surface layer is extremely stony black peat about 8 inches thick. The substratum is fragmental 'A'ā lava that has a little soil material in voids and cracks. The soil is neutral in reaction.

Permeability is very rapid. Runoff is very slow, and the erosion hazard is no more than slight. In places roots penetrate to a depth of 2 feet. (Foote et al. 1972:53)

Kaipoioi loam (7 to 40 percent slopes) (KDIE) soils are described as follows:

This soil is on smooth to rolling high mountain slopes. Included in mapping were small areas of Laumaia and Olinda soils and a few scattered rock outcrops.

In a representative profile, the surface layer is black loam about 10 inches thick. The subsoil, about 51 inches thick, is black and very dark brown silt loam or silty clay loam that has subangular blocky structure. The substratum is ash and cinders. The soil is neutral in the subsoil.

Permeability is moderately rapid. Runoff is slow to medium, and the erosion hazard is slight to moderate. The available water capacity is about 2.6 inches per foot in the surface layer and about 1.6 inches per foot in the subsoil. In places roots penetrate to a depth of 60 inches or more. (Foote et al. 1972:54)

Kaipoioi very rocky loam (7 to 40 percent slopes) (KDVE) soils are described as follows:

This soil is similar to Kaipoioi loam (7 to 40 percent slopes), except that rock outcrops cover 10 to 25 percent of the surface. Workability is very difficult. Included in mapping were small, very steep areas and small, eroded spots. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:54)

Kamaole very stony silt loam (3 to 15 percent slopes) (KGKC) soils are described as follows:

This soil is on uplands. Included in mapping were small areas of Keawakapu and Kula soils. Also included were small areas where slopes have been removed. Outcrops of 'A'ā lava are common.

In a representative profile, the surface layer is dark-brown and dark reddish-brown silt loam and silty clay loam about 8 inches thick. The subsoil, about 12 inches thick, is dark reddish-brown silty clay that has subangular blocky structure. The substratum is fragmental 'A'ā lava that has very little soil material in voids. The soil is medium acid and slightly acid in the surface layer and mildly alkaline in the subsoil.

Permeability is moderate. Runoff is slow to medium, and the erosion hazard is slight to moderate. The available water capacity is about 1. Inches per foot in the surface layer and subsoil. In places roots penetrate to a depth of 2 feet. (Foote et al. 1972:59)

Kama'ole extremely stony silt loam (3 to 15 percent slopes) (KGLC) soils are described as follows:

This soil is similar to Kama'ole very stony silt loam (3 to 15 percent slopes), except that stones cover 3 to 15 percent of the surface. Included in mapping were small areas of rock outcrop. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:59)

Keahua silty clay loam (3 to 7 percent slopes) (KnB) soils are described as follows:

This soil is on uplands. Included in mapping were small areas of Haliimaile and Molokai soils, and small areas that are 20 to 40 inches deep over soft, weathered basic igneous rock. Also included were small areas of silty clay and some areas that are nearly level.

In a representative profile, the surface layer is dark reddish-brown silty clay loam about 10 inches thick. The subsoil, about 50 inches thick, is dark reddish-brown silty clay loam and very dark gray clay loam that has subangular blocky structure. The substratum is dominantly soft, weathered basic igneous rock. The soil is slightly acid in the surface layer and slightly acid to neutral in the subsoil.

Permeability is moderate. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.3 inches per foot of soil. In places, roots penetrate to a depth of 4 feet or more. (Foote et al. 1972:65)

Keahua cobbly silty clay loam (3 to 7 percent slopes) (KnaB) soils are described as follows:

This soil has a profile like that of Keahua silty clay loam (3 to 7 percent slopes), except that it is cobbly on the surface. Included in mapping were small areas that are 20 to 40 inches deep over soft, weathered basic igneous rock. Also included were small areas of silty clay. This soil is used for sugarcane. A few acres are used for truck crops. (Foote et al. 1972:66)

Keahua cobbly silty clay loam (7 to 15 percent slopes) (KnaC) soils are described as follows:

On this soil, runoff is low to medium and the erosion hazard is slight to moderate. Included in mapping were small areas that are 20 to 40 inches deep over soft, weathered basic igneous rock. This soil is used for sugarcane and pasture. A few acres are used for truck crops. (Foote et al. 1972:66)

Keahua cobbly silty clay loam (15 to 25 percent slopes) (KnaD) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is moderate. Included in mapping were small areas that are not cobbly. Also included were a few steep areas. This soil is used for sugarcane and pasture. (Foote et al. 1972:66)

Keahua very stony silty clay loam (7 to 25 percent slopes) (KnBd) soils are described as follows:

This soil has a profile like that of Keahua silty clay loam (3 to 7 percent slopes), except that stones cover as much as 3 percent of the surface. Runoff is slow to medium, and the erosion hazard is slight to moderate. Included in mapping were small areas that are 20 to 40 inches deep over soft, weathered basic igneous rock. In a few places stones cover 3 to 15 percent of the surface. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:66)

Keahua silty clay loam (7 to 15 percent slopes) (KnC) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. This soil is used for sugarcane and pasture. Small acreages are used for pineapple and truck crops. (Foote et al. 1972:66)

Keahua silty clay (7 to 15 percent slopes) (KncC) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. Included in mapping were small areas that are 20 to 40 inches deep over soft, weathered basic igneous rock. This soil is used for pineapple, pasture, and homesites. (Foote et al. 1972:66)

Keahua cobbly silty clay (7 to 15 percent slopes) (KnhC) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. Included in mapping were small areas that are 20 to 40 inches deep over soft, weathered igneous rock. This soil is used for sugarcane and pasture. Small acreages are used for truck crops. (Foote et al. 1972:66)

Keahua stony silty clay (7 to 15 percent slopes) (KnsC) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. Included in mapping were small, moderately steep areas. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:66)

Keawakapu extremely stony silty clay loam (3 to 25 percent slopes) (KNXD) soils are described as follows:

This soil is low on uplands. Included in mapping were small areas of Kama'ole and Oanapuka soils.

In a representative profile the surface layer, about 2 inches thick, is dark reddish-brown extremely stony silt loam that has platy structure. The subsoil, about 16 inches thick, is dark reddish-brown silty clay loam and silty clay that has prismatic and subangular blocky structure. The substratum is fragmental 'A'ā lava that has a little soil material in the voids. The soil is neutral in the surface layer and subsoil.

Permeability is moderate. Runoff is slow to medium, and the erosion hazard is slight to moderate. The available water capacity is about 1.5 inches per foot of soil. In places roots penetrate to a depth of 30 inches. (Foote et al. 1972:68)

Kula cobbly loam (12 to 20 percent slopes) (KxaD) soils are described as follows:

This soil is on intermediate uplands. Included in mapping were small areas of Kaipoioi and Kamaole soils. Also included were small areas of gently sloping soils.

In a representative profile, the surface layer is dark reddish-brown loam about 8 inches thick. The subsoil, about 46 inches thick, is dark reddish-brown loam, silt loam, and silty clay loam that has subangular blocky structure. The substratum is slightly weathered basic igneous rock. The soil is slightly acid in the surface layer and slightly acid to neutral in the subsoil.

Permeability is moderately rapid. Runoff is medium, and the erosion hazard is moderate. The available water capacity is about 1.8 inches per foot of soil. In places roots penetrate to rock.

This soil is used for pasture. Small areas are used for truck and orchard crops. Most of the cobblestones have been removed in areas where truck crops are grown. (Foote et al. 1972:78)

Kula loam (4 to 12 percent slopes) (KxC) soils are described as follows:

This soil has a profile like that of Kula cobbly loam (12 to 20 percent slopes), except that it is nearly free of cobblestones. This soil is used for truck crops and pasture. (Foote et al. 1972:78)

Kula loam (12 to 20 percent slopes) (KxD) soils are described as follows:

This soil has a profile like that of Kula cobbly loam (12 to 20 percent slopes), except that it is nearly free of cobblestones. Included in mapping were small, stony areas and a few rock outcrops, mainly on knolls and the sides of small gulches. This soil is used for pasture and truck crops. (Foote et al. 1972:78)

Kula loam (12 to 40 percent slopes) (KxbE) soils are described as follows:

This soil has a profile like that of Kula cobbly loam (12 to 20 percent slopes), except that rock outcrops cover 10 to 25 percent of the surface. Runoff is medium, and the erosion hazard is moderate. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:78)

Laumaia loam (7 to 40 percent slopes) (LME) soils are described as follows:

This soil is on complex, high mountain slopes. Included in mapping were small areas of Kaipoioi and Uma soils. Also included were small areas of eroded, extremely stony soils and rock outcrops.

In a representative profile, the surface layer is very dark brown or black loam about 9 inches thick. The subsoil, about 33 inches thick, is very dark brown silty clay loam and silt loam that has subangular blocky structure or is massive. The substratum consists of hard, cemented layers of volcanic ash and cinders interbedded with loamy soil material. The soil is mildly alkaline in the surface layer and neutral to medium acid in the subsoil.

Permeability is moderately rapid. Runoff is slow to medium, and the erosion hazard is slight to moderate. In places roots penetrate to a depth of 3 feet or more. (Foote et al. 1972:80)

Lava flows, Aa(rLW) soils are described as follows:

Lava flows, Aa consists of areas of geologically recent lava flows on the island of Maui. The flows are a mass of clinker, hard, glassy, sharp pieces of lava on rough to undulating topography. The areas are difficult to traverse. Elevations range from nearly sea level to 8,000 feet. The annual rainfall amounts to 20 to 75 inches.



This miscellaneous land type is used for water supply, wildlife habitat, and recreation. Vegetation is limited to lichens, a few grasses, herbs, shrubs, and scrubby trees. (Foote et al. 1972:80)

Makawao silty clay (3 to 7 percent slopes) (MfB) soils are described as follows:

This soil is on smooth side slopes and intermediate slopes in the uplands. Included in mapping were small areas of Haiku and Kailua soils.

In a representative profile, the surface layer is dark reddish-brown silty clay about 9 inches thick. The subsoil, about 30 inches thick, is dark reddish-brown silty clay that has subangular blocky structure. The substratum is soft, weathered basic igneous rock. The soil is strongly acid to medium acid in the surface layer and slightly acid in the subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard slight. In places roots penetrate to a depth of 5 feet or more. (Foote et al. 1972:89)

Oanapuka very stony silt loam (7 to 25 percent slopes) (OAD) soils are described as follows:

This soil is on the lower uplands. Included in mapping were small areas of 'lo and Makena soils.

In a representative profile the surface layer, about 6 inches thick, is very dark brown and very dark grayish brown silt loam that has granular and subangular blocky structure. The subsoil, about 9 inches thick, is very dark grayish-brown silt loam that has prismatic structure. The substratum is dark yellowish-brown silt loam, loam, and stone-size 'A'ā lava. The soil is medium acid to slightly acid in the surface layer, neutral in the subsoil, and neutral to mildly alkaline in the substratum.

Permeability is moderately rapid. Runoff is low, and the erosion hazard is slight to moderate. The available water capacity is about 1.0 inch per foot of soil. In places roots penetrate to a depth of 4 feet or more. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:101)

Oanapuka extremely stony silt loam (7 to 25 percent slopes) (OED) soils are described as follows:

This soil is similar to Oanapuka very stony silt loam (7 to 25 percent slopes) except that stones cover 3 to 15 percent of the surface area. Included in mapping were small areas of rock outcrop. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:101)

Olinda loam (4 to 12 percent slopes) (ONC) soils are described as follows:

On this soil, runoff is slow and the erosion hazard is slight. Included in mapping were small, eroded spots. This soil is used for truck crops and pasture. Small acreages are used for orchards. (Foote et al. 1972:103)

Olinda loam (12 to 20 percent slopes) (OND) soils are described as follows:

This soil is on smooth, intermediate to high mountain slopes. Included in mapping were small areas of Kaipoioi and Pane soils. In a few places small, eroded spots were included.

In a representative profile, the surface layer is dark reddish-brown loam about 6 inches thick. The subsoil, about 5 inches thick, is dark reddish-brown and yellowish-red silty clay loam that has subangular blocky structure. Below this is yellowish-red and reddish-brown silty clay loam and gravelly silty clay loam. This is underlain by slightly weathered basic igneous rock. The soil is slightly acid in the surface layer and subsoil.

Permeability is moderately rapid. Runoff is slow to medium, and the erosion hazard is slight to moderate. The available water capacity is about 2.4 inches per foot in the surface layer and about 1.6 inches per foot in the subsoil. In places roots penetrate to a depth of 3 feet or more. (Foote et al. 1972:103)

Olinda loam (20 to 40 percent slopes) (ONE) soils are described as follows:

This soil is subject to frequent fog and cloud cover. Small gullies are common. Runoff is medium to rapid, and the erosion hazard is moderate to severe. Included in mapping were small areas of rock outcrop and small, eroded spots. This soil is used for pasture. (Foote et al. 1972:104)

Paia silty clay (3 to 7 percent slopes) (PcB) soils are described as follows:

This soil is on uplands. Included in mapping were small areas of Haliimaile and Molokai soils. Also included were small, nearly level areas.

In a representative profile, the surface layer is dark reddish-brown silty clay and clay about 19 inches thick. The subsoil, about 41 inches thick, is dark reddish-brown clay that has angular and subangular blocky structure. The substratum is soft, weathered basic igneous rock. The soil is mildly alkaline in the surface layer and subsoil.

Permeability is moderate. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.3 inches per foot in the surface layer and about 1.6 inches per foot in the subsoil. In places roots penetrate to a depth of 4 feet or more. This soil is used for sugarcane. Small acreages are used for homesites. (Foote et al. 1972:107)

Paia silty clay (7 to 15 percent slopes) (PcC) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. Included in mapping were small, moderately steep areas. This soil is used for sugarcane. (Foote et al. 1972:107)

Pane silt loam (7 to 25 percent slopes) (PXD) soils are described as follows:

This soil is on rough side slopes and intermediate slopes in the uplands. Included in mapping were small areas of Haliimaile and Kaipoi soils. Also included were small areas of moderately shallow soils and soils that have a gravelly surface layer. In addition, small areas where the topography is undulating were included.

In a representative profile, the surface layer is dark reddish-brown silt loam about 8 inches thick. The subsoil, about 49 inches thick, is dark reddish-brown, reddish-brown, and dark-brown silt loam and loam that has prismatic and subangular blocky structure. The substratum is soft, weathered basic igneous rock. The soil is slightly acid in the surface layer and neutral in subsoil.

Permeability is moderately rapid. Runoff is slow to medium, and the erosion hazard is slight to moderate. The available water capacity is about 1.8 inches per foot in the surface layer and subsoil. (Foote et al. 1972:111)

Pauwela clay (3 to 7 slopes) (PfB) soils are described as follows:

This soil is on smooth uplands. Included in mapping were small areas of Haiku and Kailua soils.

In a representative profile, the surface layer is dark grayish-brown clay about 12 inches thick. The subsoil, about 21 inches thick, is dark reddish-brown clay that has angular blocky and subangular blocky structure. The substratum is soft, weathered basic igneous rock. The soil is very strongly acid to extremely acid in the surface layer and subsoil.

Permeability is moderately rapid. Runoff is low, and the erosion hazard is slight. The available water capacity is about 1.3 inches per foot of soil. In places roots penetrate to a depth of 3 feet or more. This soil is used for pasture and water supply. Small acreages are used for pineapple and woodland. (Foote et al. 1972:111)

Pauwela clay (7 to 15 percent slopes) (PfC) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is light to moderate. This soil is used for pasture and water supply. Small acreages are used for woodland. (Foote et al. 1972:112)

Pauwela clay (15 to 25 percent slopes) (PfD) soils are described as follows:

On this soil, runoff is medium and the erosion hazard is moderate. Included in mapping were areas that are steep and moderately eroded. This soil is used for pasture and woodland. (Foote et al. 1972:112)

Rock land (rRK) soils are described as follows:

Rock land is made up of areas where exposed rock covers 25 to 90 percent of the surface. It occurs on all five islands. The rock outcrops and very shallow soils are the main characteristics. The rock outcrops are mainly basalt and andesite. This land type is nearly level to very steep. Elevations range from nearly sea level to more than 6,000 feet. The annual rainfall amounts to 15 to 16 inches.

Rock land is used for pasture, wildlife habitat, and water supply. The natural vegetation at the lower elevations consists mainly of kiawe, klu, piligrass, Japanese tea, and koa haole. Lantana, guava, Natal redtop, and molasses grass are dominant at the higher elevations. This land type is also used for urban development. In many areas, especially on the island of O'ahu, the soil material associated with the rock outcrops is very sticky and very plastic. It also has high shrink-swell potential. Buildings on the steep slopes are susceptible to sliding when the soil is saturated. Foundations and retaining walls are susceptible to cracking. (Foote et al. 1972:119)

Rough broken land (rRR) is described as follows:

Rough broken land (rRR) consists of very steep land broken by numerous intermittent drainage channels. In most places, it is not stony. It occurs in gulches and on mountainsides on all the Islands except O'ahu. The slope is 40 to 70 percent. Elevations range from nearly sea level to about 8,000 feet. The local relief is generally between 25 and 500 feet. Runoff is rapid, and geologic erosion is active. The annual rainfall amounts to 25 to more than 200 inches.

These soils are variable. They are 20 to more than 60 inches deep over soft, weathered rock. In most places some weathered rock fragments are mixed with the soil material. Small areas of rock outcrop, stones, and soil slips are common. Included in mapping were areas of colluvium and alluvium along gulch bottoms.

This land type is used primarily for watershed and wildlife habitat. In places, it is used also for pasture and woodland. The dominant natural vegetation in the drier areas consists of guava, lantana, natal redtop, Bermuda grass, koa haole, and molasses grass. 'Ōhi'a, kukui, koa, and ferns are dominant in the wetter areas. Puakeawe, 'a'ali'i, and sweet vernal grass are common at the higher elevations. (Capability classification VIIe, nonirrigated). (Foote et al. 1972:119)

Rough broken and stony land (rRS) soils are described as follows:

This type of soil consists of very steep, stony gulches. The local relief is generally between 25 and 500 feet. Runoff is rapid, and geologic erosion is active. Elevations range from nearly sea level to 3,000 feet. The annual rainfall amounts to 20 to 40 inches.

The soil material is generally less than 20 inches deep over saprolite or bedrock. About 3 to 25 percent of the surface is covered with stones, and there are a few rock outcrops. Included in mapping were small areas of colluvium and alluvium along the bottoms of gulches.

This land type is used for pasture, wildlife habitat, and watershed. The dominant natural vegetation consists of lantana, koa, haole, klu, feather fingergrass, Bermuda grass, and 'ilima. (Foote et al. 1972:119)

Ulupalakua silt loam (7 to 25 percent slopes) (ULD) soils are described as follows:

This soil is on smooth intermediate mountain slopes. Included in mapping were small areas of 'lo and Kaipoioi soils. Also included were small, very steep areas.

In a representative profile the surface layer is very dark brown silt loam about 9 inches thick. The subsoil, about 24 inches thick, is dark reddish-brown silt loam and clay loam that has subangular blocky structure. The substratum is black, unweathered cinders. The soil is slightly acid in the surface layer and neutral to mildly alkaline in the subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. In places roots penetrate to a depth of 3 feet or more. (Foote et al. 1972:122)

Uma loamy coarse sand (15 to 40 percent slopes) (UME) soils are described as follows:

This soil is on smooth, intermediate mountain slopes. Included in mapping were small areas of Pu'u Pa and Ulupalakua soils. Also included were a few cinder cones and small areas of rock outcrop.

In a representative profile, the surface layer, about 6 inches thick, is black loamy coarse sand that has granular structure. The substratum is black, unweathered cinders, 3 to 10 millimeters in size. The soil is mildly alkaline in the surface layer.

Permeability is very rapid. Runoff is slow, and the erosion hazard is slight to moderate. In places, roots penetrate to a depth of about 1 foot. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:123)



Uma loamy coarse sand (40 to 70 percent slopes) (UMF) soils are described as follows:

This soil is similar to Uma loamy coarse sand (15 to 40 percent slopes), except for the slope. The erosion hazard is severe. Included in mapping were small areas of outcrop and cinder cones. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:123)

Uma rocky loamy coarse sand (7 to 25 percent slopes) (URD) soils are described as follows:

This soil is similar to Uma loamy coarse sand (15 to 40 percent slopes) except that rock outcrops cover 5 to 10 percent of the surface. Runoff is medium, and the erosion hazard is moderate. Included in mapping were small areas where there are few to many stones on the surface and in the profile. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:123)

Very stony land (rVS) soils are described as follows:

This land type occurs on Maui, Moloka'i, and Lana'i. The slope ranges from 7 to 30 percent. Included in mapping were very steep gulches.

On Maui, this land type consists of young 'A'ā lava that has a thin covering of volcanic ash that locally extends deep into cracks and depressions. It occurs as large areas, mainly on the upper slopes of Haleakalā at elevations between 4,000 and 9,000 feet. The annual rainfall amounts to 30 to 40 inches. The ash-covered areas support a stand of shrubs and grasses. Puakeawe, Yorkshire foggrass, and orchard grass are common at the higher elevations. Lantana, kiawe, Natal redtop, and pitted beardgrass are common at the lower elevations. This land type is used for pasture and wildlife habitat. Pasture improvement is very difficult because of the many stones. (Foote et al. 1972:124)

Waiakoa silty clay loam (3 to 7 percent slopes) (WeB) soils are described as follows:

This soil has a profile like that of Waiakoa very stony silty clay loam (3 to 7 percent slopes), except that it is nonstony. Included in mapping were small, nearly level areas. This soil is used for sugarcane. Small acreages are used for pasture and homesites. (Foote et al. 1972:127)

Waiakoa very stony silty clay loam (3 to 7 percent slopes) (WgB) soils are described as follows:

This soil is on smooth, low uplands. Included in mapping were small areas of Keahua and Keawakapu soils. Also included were small, nearly level areas.

In a representative profile the surface layer is dark reddish-brown silty clay loam about 2 inches thick. The subsoil, about 23 inches thick, is dark reddish-brown and very dark grayish-brown silty clay loam that has prismatic structure or is massive. The substratum is very dark brown silty clay loam and hard, basic igneous rock. The soil is neutral in the surface layer and slightly acid to neutral in the subsoil.

Permeability is moderate. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.5 inches per foot of soil. In places roots penetrate to bedrock. This soil is used for sugarcane, pasture, and wildlife habitat. (Foote et al. 1972:126)

Waiakoa very stony silty clay loam (7 to 15 percent slopes) (WgC) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:127)

Waiakoa extremely stony silty clay loam (7 to 15 percent slopes) (WhC) soils are described as follows:

This soil is similar to Waiakoa very stony silty clay loam (3 to 7 percent slopes), except that stones cover 3 to 15 percent of the surface. Runoff is slow to medium, and the erosion hazard is slight to moderate. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:127)

Waiakoa extremely stony silty clay loam (3 to 25 percent slopes) (WID2)

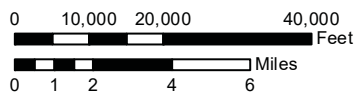
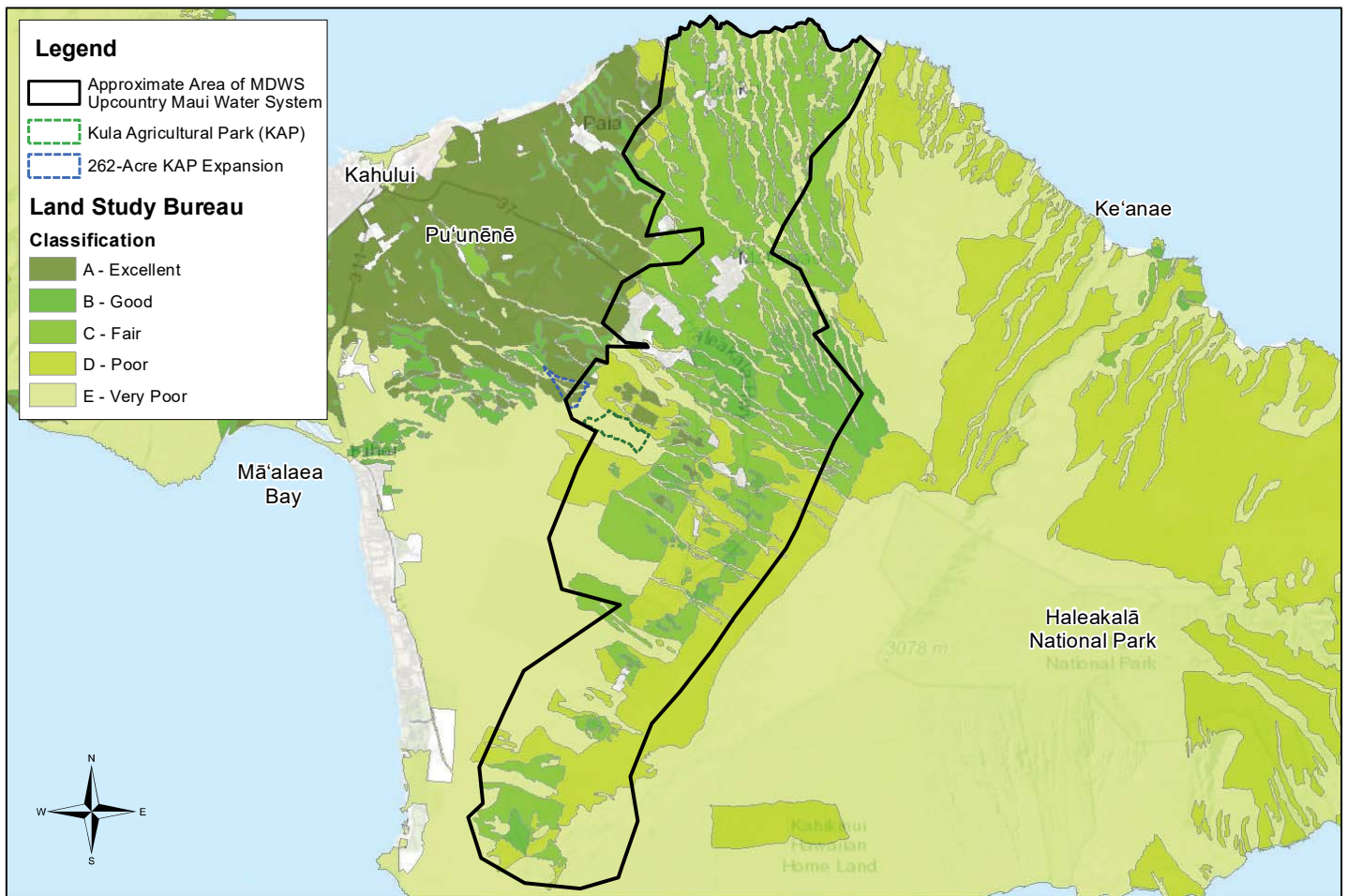
This soil is similar to Waiakoa very stony silty clay loam (3 to 7 percent slopes), except that it is eroded and stones cover 3 to 15 percent of the surface. In most areas about 50 percent of the surface layer has been removed by erosion. Runoff is medium, and the erosion hazard is severe. Included in mapping were small, steep areas. Also included were a few cinder cones. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:127)

Water (W) soils are described as follows:

Soils are labeled "W" when over 40 acres of land is 100 percent water.

According to the LSB Detailed Land Classification, Island of Maui (1967), much of Upcountry Maui has an overall productivity rating of C-Fair, which particularly dominates the lower elevation of the MDWS's Upcountry Maui Water System service area around Ha'ikū (See Figure 4-12). Areas mauka of Makawao - Pukalani have ratings of B-Good, as do pockets of land flanking the Kula Highway down to 'Ulupalakua Ranch. Some areas west and southwest of Pukalani are rated A-Excellent, including much of the proposed KAP expansion, which were formerly in sugar cultivation.

According to the ALISH map, most of Upcountry Maui above the approximately 1,000-foot msl elevation is classified Other Land (See Figure 4-13). Areas around Makawao - Pukalani are classified Prime Lands, as are lands in the lower portion of MDWS's Upcountry Maui Water System service area around Ha'ikū.

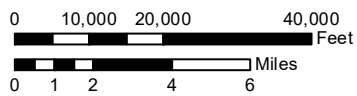
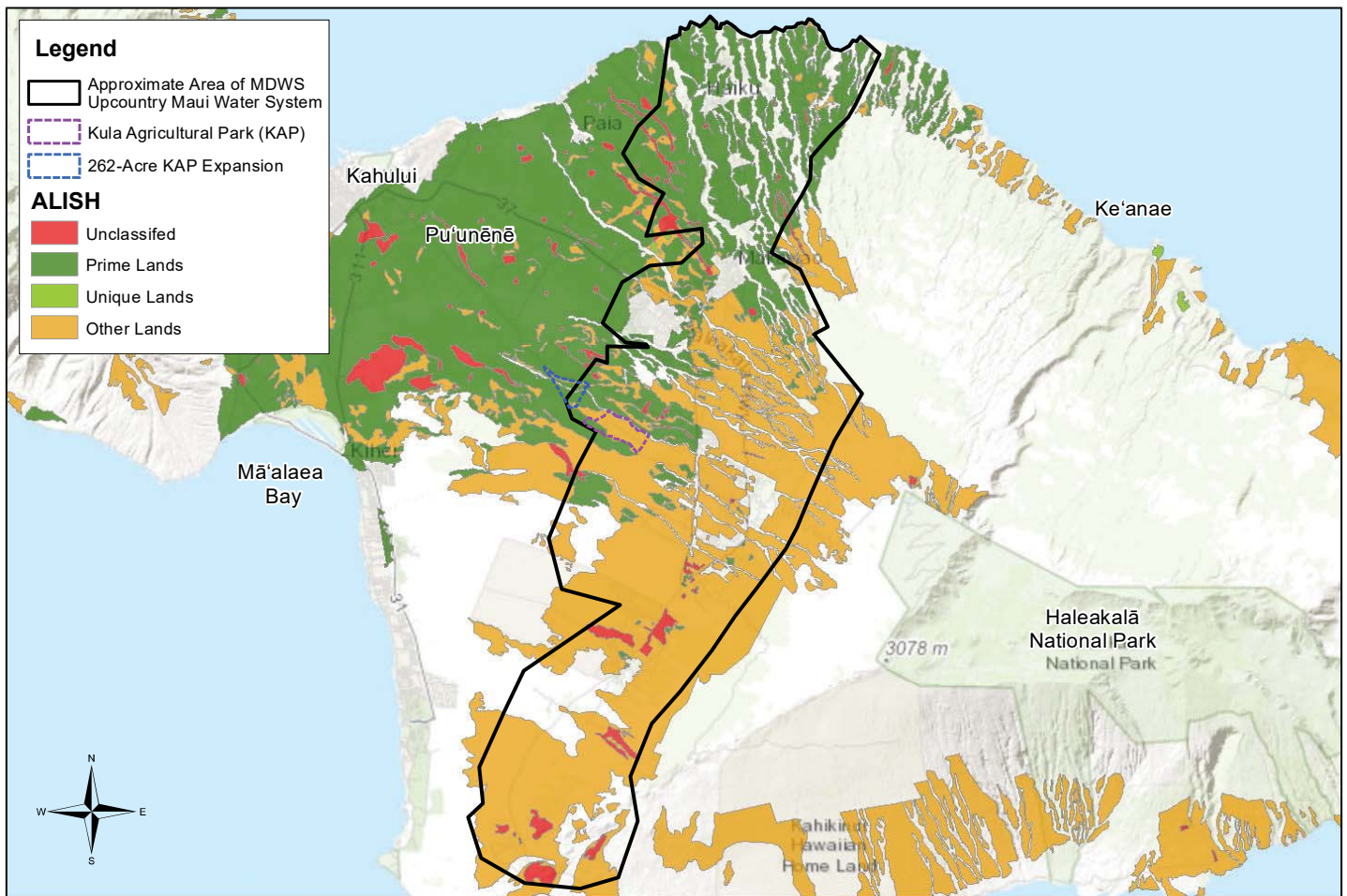


1 inch = 20,000 feet  
Source: ESRI, State OP, & Akinaka

FIGURE 4-12

## UPCOUNTRY MAUI LSB MAP

*Proposed Lease for Nāhiku, Ke'anae, Honomanū and Huelo License Areas*



1 inch = 20,000 feet  
Source: ESRI, State OP, & Akinaka

FIGURE 4-13

## UPCOUNTRY MAUI ALISH MAP

*Proposed Lease for Nāhiku, Ke'anae, Honomanū and Huelo License Areas*



### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on soils in the Upcountry Maui region are anticipated.

### **Central Maui**

According to the USDA (2001) SSURGO database and soil survey data gathered by Foote et al. (1972), soils in Central Maui include 'Alae loam series (0 to 3 percent slopes), Haiku silty clay series (3 to 15 percent slopes), Hamakuapoko silty clay series (3 to 25 percent slopes), Haliimaile silty clay series (3 to 15 percent slopes) Kaipoioi loam series (7 to 40 percent slopes) Keahua silty clay loam series (3 to 25 percent slopes), Molokai silty clay series (0 to 15 percent slopes), Paia silty clay series (7 to 15 percent slopes), and Pulehu series (0 to 7 percent slopes) and water > 40 acres (W) (See Figure 4-14).

Alae cobbly sandy loam (0 to 3 percent slopes) (AcA) soils are described as follows:

This soil occurs on smooth alluvial fans. Included in mapping were small areas of Ewa and Pulehu soils. In a representative profile, the surface layer, about 7 inches thick, is very dark grayish-brown sandy loam and coarse and very coarse sand. The soil is neutral or mildly alkaline in the surface layer and mildly to moderately alkaline in the substratum.

Permeability is rapid. Runoff is slow, and the erosion hazard is no more than slight. The available water capacity is about 1.2 inches per foot in the surface layer and 0.9 inch per foot in the substratum. In some places roots penetrate to a depth of 4 feet or more. (Foote et al. 1972:14; 25)

Alae cobbly sandy loam (3 to 7 percent slopes) (AcB) soils are described as follows:

On this soil, runoff is slow and the erosion hazard is slight. This soil is used for sugarcane and pasture. (Foote et al. 1972:26)

Alae sandy loam (3 to 7 percent slopes) (AaB) soils are described as follows:

This soil is similar to Alae cobbly sandy loam (0 to 3 percent slopes), except that there are no cobblestones on the surface. Runoff is slow, and the erosion hazard is slight. Included in mapping were small, nearly level areas. In places there are few to many pebble-size rock fragments in the surface layer. Most of this soils is used for sugarcane and pasture. A small acreage is used for truck crops. (Foote et al. 1972:26)





1 inch = 11,000 feet  
Source: ESRI, State OP, & Akinaka

# CENTRAL MAUI SOILS MAP

*Proposed Lease for Nāhiku, Ke‘anae, Honomanū and Huelo License Areas*

Beaches (BS) soils are described as follows:

Beaches occur as sandy, gravelly, or cobbly areas on all the islands in the survey area. They are washed and rewashed by ocean waves. The beaches consist mainly of light-colored sands derived from coral and seashells. A few of the beaches, however, are dark colored because their sands are from basalt and andesite.

Beaches have no value for farming. Where accessible and free of cobblestones and stones, they are highly suitable for recreational uses and resort development. (Foote et al. 1972:28)

Cinder pit (CPI) or cinder land (rCI) soils are described as follows:

Cinder land consists of areas of bedded magmatic ejecta associated with cinder cones. It is a mixture of cinders, pumice, and ash. These materials are black, red, yellow, brown, or variegated in color. They have jagged edges and a glassy appearance and show little or no evidence of soil development.

Cinder land occurs on the islands of Maui and O'ahu. On Maui, it is mainly at elevations between 8,000 and 10,000 feet, in the Haleakalā National Park. The annual rainfall amounts to 20 to 30 inches on Maui.

Although Cinder land commonly supports some vegetation, it has no value for grazing, because of its loose nature and poor trafficability. It is used for wildlife habitat and recreational areas. (Foote et al. 1972:29)

Dune land (DL) soils are described as follows:

Dune land consists of hills and ridges of sand-size particles drifted and piled by wind. The hills and ridges are actively shifting or are so recently fixed or stabilized that no soil horizons have developed. The sand is dominantly from coral and seashells. This miscellaneous land type occurs in coastal areas on the islands of Maui and Kaua'i. Elevations range from nearly sea level to 150 feet. The annual rainfall amounts to 15 to 90 inches.

This land type is used for wildlife habitat and recreational areas and as a source of liming material. Vegetation is sparse, but ironwood trees, koa haole, tropical almond, kiawe, and mixed grasses have gained a foothold in places. (Foote et al. 1972:29)

Ewa cobbly silty clay loam (0 to 3 percent slopes) (EcA) soils are described as follows:

This soil has a profile like that of Ewa silty clay loam (3 to 6 percent slopes), except that it is cobbly on the surface. Runoff is very slow, and the erosion hazard is no more than slight. Most of this soil is used for sugarcane. A small acreage is used for pasture. (Foote et al. 1972:30)

Ewa cobbly silty clay loam (3 to 7 percent slopes) (EcB) soils are described as follows:

This soil has a profile like that of Ewa silty clay loam (3 to 6 percent slopes), except that it is cobbly on the surface. Included in mapping were a few small, stony areas. Most of this soil is used for sugarcane. A small acreage is used for pasture. (Foote et al. 1972:30)

Ewa cobbly silty clay loam (0 to 3 percent slopes) (EsA) soils are described as follows:

This soil has a profile like that of Ewa silty clay loam (3 to 6 percent slopes), except for the texture of the surface layer. Runoff is very slow, and the erosion hazard is no more than slight. This soil is used for sugarcane. (Foote et al. 1972:30)

Fill land (Fd) soils are described as follows:

This land type consists mostly of areas filled with bagasse and slurry from sugar mills. A few areas are filled with material from dredging and from soil excavations. Generally, these materials are dumped and spread over marshes, low-lying areas along the coastal flats, coral sand, coral limestone, or areas shallow to bedrock. (Foote et al. 1972:31)

Haiku silty clay (3 to 7 percent slopes) (HaB) soils are described as follows:

This soil has a profile like that of Haiku clay, 7 to 15 percent slopes, except for the texture of the surface layer. It is a dark brown clay about 14 inches thick. The subsoil, about 31 inches thick, is yellowish-red, dark reddish-brown, and dark-red clay or silty clay that has angular and angular blocky structure. The substratum is soft, weathered, basic igneous rock. The soil is very strongly acid in the surface layer and extremely acid and very strongly acid in the subsoil and substratum. Runoff is slow, and the erosion hazard is slight. Included in mapping were small, nearly level areas. This soil is used for pineapple and homesites. (Foote et al. 1972:32)

Haiku silty clay (7 to 15 percent slopes) (HaC) soils are described as follows:

This soil has a profile like that of Haiku clay, 7 to 15 percent slopes, except for the texture of the surface layer. It is a dark brown clay about 14 inches thick. The subsoil, about 31 inches thick, is yellowish-red, dark reddish-brown, and dark-red clay or silty clay that has angular and angular blocky structure. The substratum is soft, weathered, basic igneous rock. The soil is very strongly acid in the surface layer and extremely acid and very strongly acid in the subsoil and substratum. This soil is used for pineapple. (Foote et al. 1972:32)

Haiku clay (3 to 7 percent slopes) (HbB) soils are described as follows:

On this soil, runoff is slow and the erosion hazard is slight. Included in mapping were small, nearly level areas. This soil is used for pineapple, pasture, and homesites. (Foote et al. 1972:32)

Hamakuapoko silty clay (3 to 7 percent slopes) (HIB) soils are described as follows:

This soil is on smooth slopes in the uplands. Included in mapping were small areas of Haiku and Haliimaile soils. Also included were small, moderately steep areas.

In a representative profile, the surface layer is dark-brown silty clay about 16 inches thick. The subsoil, about 35 inches thick, is dark-brown and very dark grayish brown silty clay that has subangular blocky structure. The substratum is soft, weathered basic igneous rock. The soil is extremely acid in the surface layer and strongly acid or very strongly acid in the subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.2 inches per foot in the surface layer and 1.5 inches per foot in the subsoil. In places roots penetrate to a depth of 4 feet or more. (Foote et al. 1972:36)

Hamakuapoko silty clay (7 to 15 percent slopes) (HIC) soils are described as follows:

On this soil, runoff is medium and the erosion hazard is moderate. Most of this soil is used for pineapple. A small acreage is used for pasture and homesites. (Foote et al. 1972:36)

Hamakuapoko silty clay (7 to 25 percent slopes, eroded) (HIC2) soils are described as follows:

This soil has a profile like that of Hamakuapoko silty clay (3 to 7 percent slopes), except that it is eroded. In most places about 50 percent of the original surface layer has been removed by erosion. In a few places all of the surface layer and part of the subsoil have been lost. Runoff is medium to rapid, and the erosion hazard is severe. This soil is used for pineapple. (Foote et al. 1972:36)

Haliimaile silty clay (3 to 7 percent slopes) (HhB) soils are described as follows:

This soil is on smooth uplands. Included in mapping were small areas of Keahua and Paia soils. In a representative profile, the surface layer is dark reddish-brown silty clay about 15 inches thick. The subsoil, to a depth of more than 60 inches, is dark reddish-brown silty clay and very dark grayish-brown clay. It has subangular blocky and angular blocky structure. The substratum is silt, weathered basic igneous rock. The soil is strongly acid in the surface layer and strongly acid to medium acid in the subsoil. Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.6 inches per foot in the surface layer and about 1.2 inches per foot in the subsoil. In places, roots penetrate to a depth of 5 feet or more. (Foote et al. 1972:35)

Haliimaile silty clay (7 to 15 percent slopes) (HhC) soils are described as follows:

On this soil, runoff is medium and the erosion hazard is moderate. Included in mapping were small, cobbly areas and small, moderately steep areas. This soil is used for sugarcane, pineapple, and homesites. (Foote et al. 1972:36)

lao silty clay (0 to 3 percent slopes) (laA) soils are described as follows:

On this soil, runoff is slow and the erosion hazard is no more than slight. This soil is used for sugarcane. (Foote et al. 1972:46-47)

lao silty clay (3 to 7 percent slopes) (laB) soils are described as follows:

This soil has a profile like that of lao clay (3 to 7 percent slopes), except for the texture of the surface layer. The subsoil, about 45 inches thick, is very dark brown, dark-brown, and very dark grayish-brown clay and silty clay. The substratum is clayey alluvium. The soil is neutral in the surface layer and subsoil. This soil is used for sugarcane. (Foote et al. 1972:47)

lao cobbly silty clay (3 to 7 percent slopes) (lbB) soils are described as follows:

This soil has a profile like that of lao clay (3 to 7 percent slopes), except for the texture of the surface layer and the content of the cobblestones. The subsoil, about 45 inches thick, is very dark brown, dark-brown, and very dark grayish-brown clay and silty clay. The substratum is clayey alluvium. The soil is neutral in the surface layer and subsoil. This soil is used for sugarcane and homesites. (Foote et al. 1972:47)

Jaucas sand, saline (0 to 12 percent slopes) (JcC) soils are described as follows:

This soil occurs near the ocean in areas where the water table is near the surface and salts have accumulated. It is somewhat poorly drained in depressions but excessively drained on knolls. In the depressions there is normally a layer of silty alluvial material flocculated by the high concentration of soluble salts. The water table is normally within a depth of 30 inches.

This soil is used for pasture, wildlife habitat, and urban development. Vegetation on the salty soil in the depressions consists of salt-tolerant plants. Kiawe grows profusely on the better drained soils on knolls. (Foote et al. 1972:49)

Keahua silty clay loam (3 to 7 percent slopes) (KnB) soils are described as follows:

This soil is on uplands. Included in mapping were small areas of Haliimaile and Molokai soils, and small areas that are 20 to 40 inches deep over soft, weathered basic igneous rock. Also included were small areas of silty clay and some areas that are nearly level.



In a representative profile, the surface layer is dark reddish-brown silty clay loam about 10 inches thick. The subsoil, about 50 inches thick, is dark reddish-brown silty clay loam and very dark gray clay loam that has subangular blocky structure. The substratum is dominantly soft, weathered basic igneous rock. The soil is slightly acid in the surface layer and slightly acid to neutral in the subsoil.

Permeability is moderate. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.3 inches per foot of soil. In places, roots penetrate to a depth of 4 feet or more. (Foote et al. 1972:65)

Keahua cobbly silty clay loam (3 to 7 percent slopes) (KnaB) soils are described as follows:

This soil has a profile like that of Keahua silty clay loam (3 to 7 percent slopes), except that it is cobbly on the surface. Included in mapping were small areas that are 20 to 40 inches deep over soft, weathered basic igneous rock. Also included were small areas of silty clay. This soil is used for sugarcane. A few acres are used for truck crops. (Foote et al. 1972:66)

Keahua cobbly silty clay loam (7 to 15 percent slopes) (KnaC) soils are described as follows:

On this soil, runoff is low to medium and the erosion hazard is slight to moderate. Included in mapping were small areas that are 20 to 40 inches deep over soft, weathered basic igneous rock. This soil is used for sugarcane and pasture. A few acres are used for truck crops. (Foote et al. 1972:66)

Keahua cobbly silty clay loam (15 to 25 percent slopes) (KnaD) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is moderate. Included in mapping were small areas that are not cobbly. Also included were a few steep areas. This soil is used for sugarcane and pasture. (Foote et al. 1972:66)

Keahua very stony silty clay loam (7 to 25 percent slopes) (KnB) soils are described as follows:

This soil has a profile like that of Keahua silty clay loam (3 to 7 percent slopes), except that stones cover as much as 3 percent of the surface. Runoff is slow to medium, and the erosion hazard is slight to moderate. Included in mapping were small areas that are 20 to 40 inches deep over soft, weathered basic igneous rock. In a few places stones cover 3 to 15 percent of the surface. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:66)

Keahua silty clay loam (7 to 15 percent slopes) (KnC) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. This soil is used for sugarcane and pasture. Small acreages are used for pineapple and truck crops. (Foote et al. 1972:66)

Keahua silty clay (7 to 15 percent slopes) (KncC) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. Included in mapping were small areas that are 20 to 40 inches deep over soft, weathered basic igneous rock. This soil is used for pineapple, pasture, and homesites. (Foote et al. 1972:66)

Keahua cobbly silty clay (7 to 15 percent slopes) (KnhC) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. Included in mapping were small areas that are 20 to 40 inches deep over soft, weathered igneous rock. This soil is used for sugarcane and pasture. Small acreages are used for truck crops. (Foote et al. 1972:66)

Molokai silty clay loam (0 to 3 percent slopes) (MuA) soils are described as follows:

The soil is on smooth slopes. In a representative profile the surface layer is dark reddish-brown silty clay loam about 15 inches thick. The subsoil, about 57 inches thick, is dark reddish-brown silty clay loam that has prismatic structure. The material at depths between 35 and 64 inches is moderately compact in place. The substratum is soft, weathered rock. The soil is slightly acid to neutral, except that areas used for pineapple are commonly very strongly acid or extremely acid in the surface layer.

Permeability is moderate. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.3 inches per foot of soil. In places roots penetrate to a depth of 5 feet or more. This soil is used entirely for sugarcane on Maui. (Foote et al. 1972:96)

Molokai silty clay loam (3 to 7 percent slopes) (MuB) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. Included in mapping were a few small areas that are eroded to soft, weathered rock. This soil is used for sugarcane, pineapple, pasture, wildlife habitat, and homesites. (Foote et al. 1972:96)

Molokai silty clay loam (7 to 15 percent slopes) (MuC) soils are described as follows:

This soil occurs on knolls and sharp slope breaks. Runoff is medium, and the erosion hazard is moderate. This soil is used for sugarcane, pineapple, pasture, wildlife habitat, and homesites. (Foote et al. 1972:97)

Paia silty clay (3 to 7 percent slopes) (PcB) soils are described as follows:

This soil is on uplands. Included in mapping were small areas of Haliimaile and Molokai soils. Also included were small, nearly level areas.

In a representative profile, the surface layer is dark reddish-brown silty clay and clay about 19 inches thick. The subsoil, about 41 inches thick, is dark reddish-brown clay that has angular and subangular blocky structure. The substratum is soft, weathered basic igneous rock. The soil is mildly alkaline in the surface layer and subsoil.

Permeability is moderate. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.3 inches per foot in the surface layer and about 1.6 inches per foot in the subsoil. In places roots penetrate to a depth of 4 feet or more. This soil is used for sugarcane. Small acreages are used for homesites. (Foote et al. 1972:107)

Paia silty clay (7 to 15 percent slopes) (PcC) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. Included in mapping were small, moderately steep areas. This soil is used for sugarcane. (Foote et al. 1972:107)

Paia silty clay (7 to 15 percent slopes) (PcC2) soils are described as follows:

This soil is similar to Paia silty clay (3 to 7 percent slopes), except that it is eroded. In most of the area, about 50 percent of the original surface layer has been lost. Runoff is medium, and the erosion hazard is moderate to severe. In places roots penetrate to a depth of 3 or 4 feet. This soil is used for sugarcane. (Foote et al. 1972:107)

Pulehu clay loam (0 to 3 percent slopes) (PsA) soils are described as follows:

This soil is on alluvial fans and stream terraces and in basins. Included in mapping were small areas of 'Ewa, Mala, and Waiālua soils. Also included were small areas of gravelly, stony, and gently sloping soils.

In a representative profile the surface layer is dark-brown clay loam about 21 inches thick. This is underlain by dark-brown, dark grayish-brown, and brown, massive and single grain, stratified loam, loamy sand, fine sandy loam, and silt loam about 39 inches thick. Below this is coarse, gravelly or sandy alluvium. The soil is neutral in the surface layer and neutral to mildly alkaline below the surface layer.

Permeability is moderate. Runoff is slow, and the erosion hazard is no more than slight. The available water capacity is about 1.4 inches per foot in the surface layer and subsoil. In places roots penetrate to a depth of 5 feet or more. Low areas are subject to flooding. This soil is used for sugarcane, truck crops, and pasture. (Foote et al. 1972:115-116)

Pulehu silt loam (0 to 3 percent slopes) (PpA) soils are described as follows:

This soil is similar to Pulehu clay loam (0 to 3 percent slopes), except that the texture is silt loam. This soil is used for sugarcane. Small acreages are used for homesites. (Foote et al. 1972:116)

Pulehu silt loam (3 to 7 percent slopes) (PpB) soils are described as follows:

This soil is similar to Pulehu clay loam (0 to 3 percent slopes), except that the texture is silt loam. Runoff is slow, and the erosion hazard is slight. Included in mapping were small areas underlain by coral sand at a depth of 20 to 36 inches. This soil is used for sugarcane and pasture. (Foote et al. 1972:116)

Pulehu cobbly silt loam (0 to 3 percent slopes) (PrA) soils are described as follows:

This soil is similar to Pulehu clay loam (0 to 3 percent slopes), except that the texture is silt loam and there are many cobblestones on the surface. In a few places cobblestones are common throughout the profile. Included in mapping were small areas underlain by coral sand at a depth of 20 to 36 inches. This soil is used for sugarcane and pasture. (Foote et al. 1972:116)

Pulehu cobbly silt loam (3 to 7 percent slopes) (PrB) soils are described as follows:

This soil is similar to Pulehu clay loam (0 to 3 percent slopes), except that the texture is silt loam and the surface layer is cobbly. Runoff is slow, and the erosion hazard is slight. Included in mapping were small areas underlain by coral sand at a depth of 20 to 36 inches. This soil is used for sugarcane. Small areas are used for pasture. (Foote et al. 1972:116)

Pulehu cobbly clay loam (0 to 3 percent slopes) (PtA) soils can be described as follows:

This soil is similar to Pulehu clay loam (0 to 3 percent slopes), except that it is cobbly. This soil is used for sugarcane. Small acreages are used for pasture. (Foote et al. 1972:116)

Quarry (QU) soils are described as follows:

This soil type is made up of areas that are 100 percent quarry.

Rock land (rRK) soils are described as follows:

Rock land is made up of areas where exposed rock covers 25 to 90 percent of the surface. It occurs on all five islands. The rock outcrops and very shallow soils are the main characteristics. The rock outcrops are mainly basalt and andesite. This land type is nearly level to very steep. Elevations range from nearly sea level to more than 6,000 feet. The annual rainfall amounts to 15 to 16 inches.

Rock land is used for pasture, wildlife habitat, and water supply. The natural vegetation at the lower elevations consists mainly of kiawe, klu, piligrass,

Japanese tea, and koa haole. Lantana, guava, Natal redtop, and molassesgrass are dominant at the higher elevations. This land type is also used for urban development. In many areas, especially on the island of O'ahu, the soil material associated with the rock outcrops is very sticky and very plastic. It also has high shrink-swell potential. Buildings on the steep slopes are susceptible to sliding when the soil is saturated. Foundations and retaining walls are susceptible to cracking. (Foote et al. 1972:119)

Rough broken land (rRR) is described as follows:

Rough broken land (rRR) consists of very steep land broken by numerous intermittent drainage channels. In most places, it is not stony. It occurs in gulches and on mountainsides on all the Islands except O'ahu. The slope is 40 to 70 percent. Elevations range from nearly sea level to about 8,000 feet. The local relief is generally between 25 and 500 feet. Runoff is rapid, and geologic erosion is active. The annual rainfall amounts to 25 to more than 200 inches.

These soils are variable. They are 20 to more than 60 inches deep over soft, weathered rock. In most places some weathered rock fragments are mixed with the soil material. Small areas of rock outcrop, stones, and soil slips are common. Included in mapping were areas of colluvium and alluvium along gulch bottoms.

This land type is used primarily for watershed and wildlife habitat. In places, it is used also for pasture and woodland. The dominant natural vegetation in the drier areas consists of guava, lantana, natal redtop, Bermuda grass, koa haole, and molasses grass. 'Ōhi'a, kukui, koa, and ferns are dominant in the wetter areas. Puakeawe, 'a'ali'i, and sweet vernal grass are common at the higher elevations. (Capability classification VIle, nonirrigated). (Foote et al. 1972:119)

Rough broken and stony land (rRS) soils are described as follows:

This type of soil consists of very steep, stony gulches. The local relief is generally between 25 and 500 feet. Runoff is rapid, and geologic erosion is active. Elevations range from nearly sea level to 3,000 feet. The annual rainfall amounts to 20 to 40 inches.

The soil material is generally less than 20 inches deep over saprolite or bedrock. About 3 to 25 percent of the surface is covered with stones, and there are a few rock outcrops. Included in mapping were small areas of colluvium and alluvium along the bottoms of gulches.

This land type is used for pasture, wildlife habitat, and watershed. The dominant natural vegetation consists of lantana, koa, haole, klu, feather fingergrass, Bermuda grass, and 'ilima. (Foote et al. 1972:119)



Waiakoa silty clay loam (3 to 7 percent slopes) (WeB) soils are described as follows:

This soil has a profile like that of Waiakoa very stony silty clay loam (3 to 7 percent slopes), except that it is nonstony. Included in mapping were small, nearly level areas. This soil is used for sugarcane. Small acreages are used for pasture and homesites. (Foote et al. 1972:127)

Waiakoa cobbly silty clay loam (7 to 15 percent slopes) (WeC) soils are described as follows:

This soil has a profile like that of Waiakoa very stony silty clay loam (3 to 7 percent slopes), except that it is nonstony. Runoff is slow to medium, and the erosion hazard is slight to moderate. Included in mapping were small, moderately steep areas and small areas where cobblestones are on the surface. This soil is used for sugarcane. (Foote et al. 1972:127)

Waiakoa cobbly silty clay loam (3 to 7 percent slopes) (WfB) soils is described as follows:

This soil is similar to Waiakoa very stony silty clay loam (3 to 7 percent slopes), except that it is cobbly on the surface. This soil is used for sugarcane. (Foote et al. 1972:127)

Waiakoa very stony silty clay loam (3 to 7 percent slopes) (WgB) soils are described as follows:

This soil is on smooth, low uplands. Included in mapping were small areas of Keahua and Keawakapu soils. Also included were small, nearly level areas.

In a representative profile the surface layer is dark reddish-brown silty clay loam about 2 inches thick. The subsoil, about 23 inches thick, is dark reddish-brown and very dark grayish-brown silty clay loam that has prismatic structure or is massive. The substratum is very dark brown silty clay loam and hard, basic igneous rock. The soil is neutral in the surface layer and slightly acid to neutral in the subsoil.

Permeability is moderate. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.5 inches per foot of soil. In places roots penetrate to bedrock. This soil is used for sugarcane, pasture, and wildlife habitat. (Foote et al. 1972:126)

Waiakoa very stony silty clay loam (7 to 15 percent slopes) (WgC) soils are described as follows:

On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:127)

Waiakoa extremely stony silty clay loam (3 to 7 percent slopes) (WhB) soils are described as follows:

This soil is similar to Waiakoa very stony silty clay loam (3 to 7 percent slopes), except that stones cover 3 to 15 percent of the surface. Included in mapping were small, nearly level areas.

Waiakoa extremely stony silty clay loam (7 to 15 percent slopes) (WhC) soils are described as follows:

This soil is similar to Waiakoa very stony silty clay loam (3 to 7 percent slopes), except that stones cover 3 to 15 percent of the surface. Runoff is slow to medium, and the erosion hazard is slight to moderate. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:127)

Waiakoa extremely stony silty clay loam (3 to 25 percent slopes) (WID2)

This soil is similar to Waiakoa very stony silty clay loam (3 to 7 percent slopes), except that it is eroded and stones cover 3 to 15 percent of the surface. In most areas about 50 percent of the surface layer has been removed by erosion. Runoff is medium, and the erosion hazard is severe. Included in mapping were small, steep areas. Also included were a few cinder cones. This soil is used for pasture and wildlife habitat. (Foote et al. 1972:127)

Water (W) soils are described as follows:

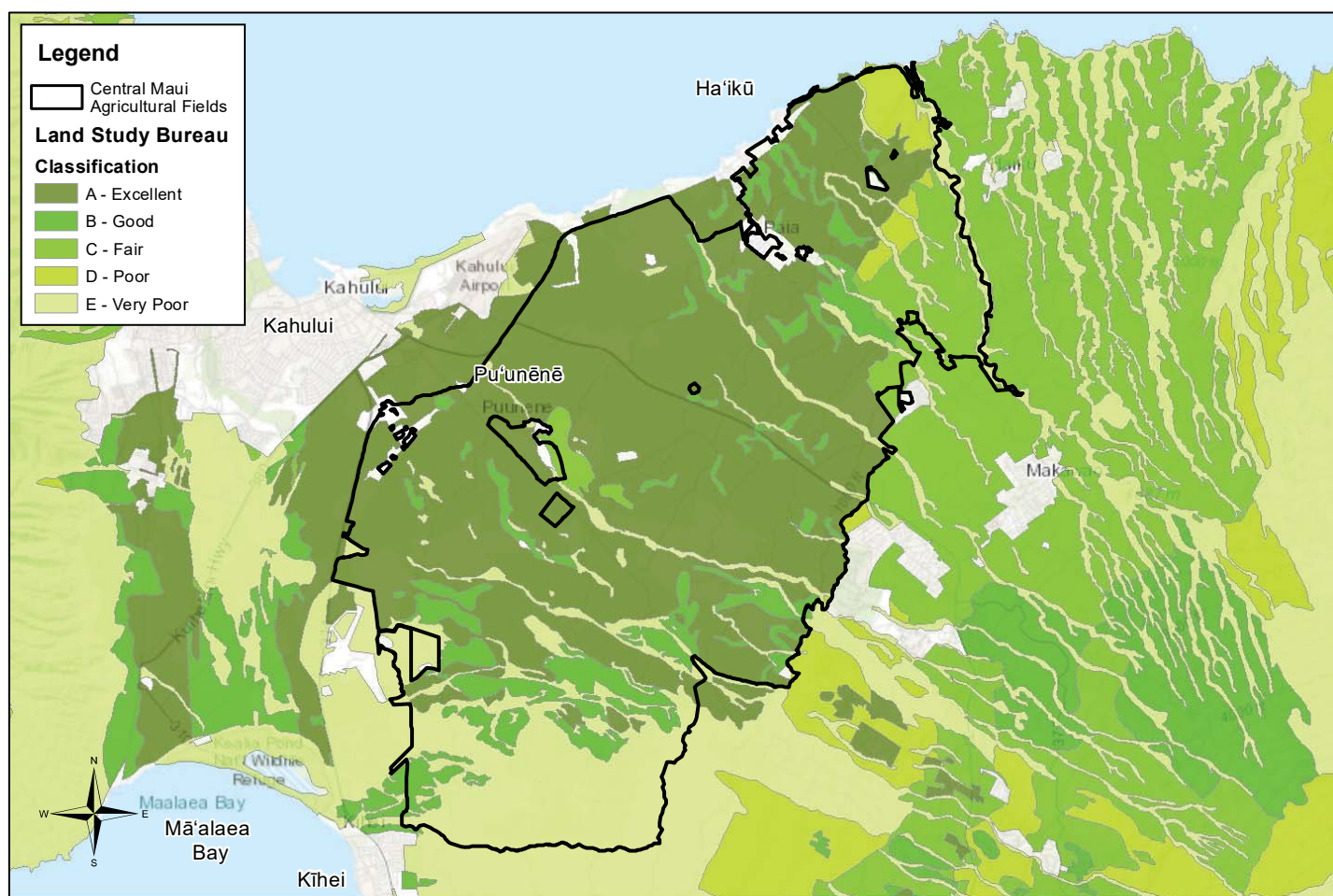
Soils are labeled "W" when over 40 acres of land is 100 percent water.

According to the LSB Detailed Land Classification, Island of Maui (1967), the agricultural fields of Central Maui that were previously cultivated in sugarcane have an overall productivity rating of A-Excellent (See Figure 4-15). The southern end of the agricultural fields, which is at the farthest reach of the Central Maui field irrigation system is largely rated E-Very Poor with patches of B-Good. The northeastern end of the agricultural fields west of Maliko Gulch includes land rated C-Fair and D-Poor.

According to the ALISH map, the agricultural fields of Central Maui are predominantly classified Prime Land (See Figure 4-16).

#### **Impacts and Mitigation Measures**

Under the Proposed Action, the agricultural fields in Central Maui will be converted to a diversified agricultural farming operation by Mahi Pono. The soils in Central Maui have already been disturbed from over a century of sugarcane cultivation in the region. Mahi Pono's diversified agricultural operation will include soil preparation to remove the remnants of sugarcane and other vegetation from the fields as needed. These preparations include the application of effective micronutrients, plastic removal, pH adjustments, and the application of organic matter. Soils will be gathered and replaced or moved into other field locations, as needed, and activities such as soil amendment will follow in preparation for planting. The overall topography will not be significantly



**WILSON OKAMOTO**  
CORPORATION

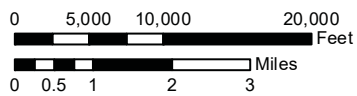
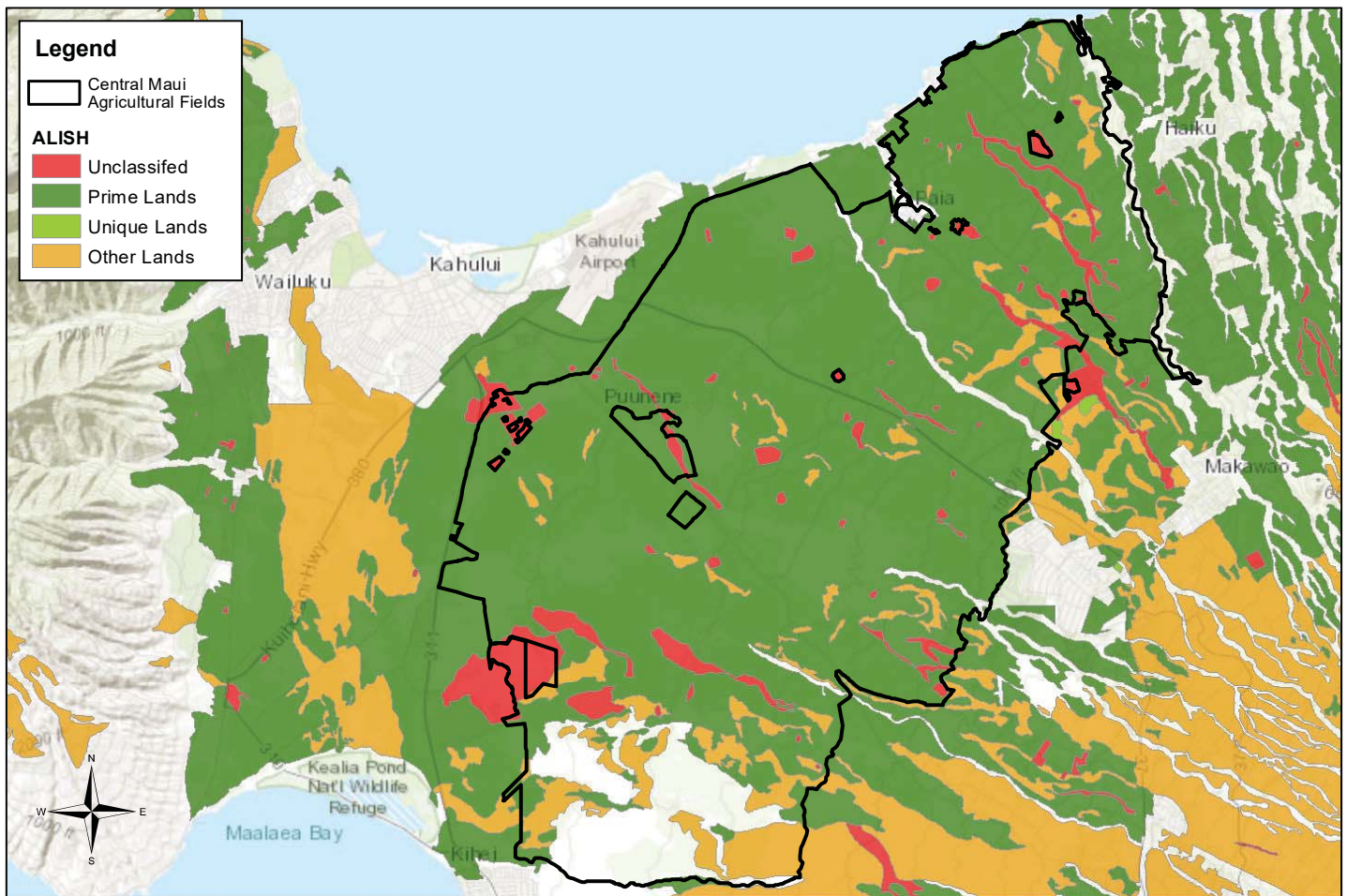
1 inch = 11,000 feet  
Source: ESRI, State OP, & Akinaka

FIGURE 4-15

## CENTRAL MAUI LSB MAP

*Proposed Lease for Nāhiku, Ke‘anae, Honomanū and Huelo License Areas*





1 inch = 10,000 feet  
Source: ESRI, State OP, & Akinaka

FIGURE 4-16

## CENTRAL MAUI ALISH MAP

*Proposed Lease for Nāhiku, Keʻanae, Honomanū and Huelo License Areas*

modified and the configuration of the fields to prevent surface runoff and soil loss will be retained.

Mahi Pono proposes to construct approximately 319,000 square feet of building space related to its agricultural operations such as washing and packing areas, storage, etc. The construction of these facilities will minimally disturb soils. If soil disturbance of one-acre or more for new construction is required, it would be subject to the National Pollutant Discharge Elimination System Permit for stormwater runoff. Any discharges related to project construction or operation activities will comply with applicable State Water Quality Standards as specified in HAR Chapters 11-54 and 11-55 Water Pollution Control, DOH. Excavation and grading activities will be regulated by applicable provisions of the County’s grading ordinance.

## **4.2 Hydrology**

### **4.2.1 Surface Waters**

#### **East Maui**

Surface waters within East Maui are predominantly characterized by the various streams, which are generally fed by abundant rainfall and groundwater discharge, flowing through the numerous valleys within the watersheds that comprise the region. The drainage pattern of the stream valleys on East Maui is radial from the summit of Haleakalā Volcano to the ocean. The streams within the License Area located within East Maui drain to the north. Regional valley development is in a relatively youthful stage as streams are eroding downward into the original volcano slope, forming steep-sided valleys and leaving nearly un-eroded upland areas (planezes) between the stream valleys. Streamflow consists of direct runoff and base flows which represent ground-water discharge to the stream.

Issuance of the proposed Water Lease involves the diversion of “government-owned” waters from several East Maui streams. To better understand the impact of the surface water diversion on native stream animals and their habitats, Trutta Environmental Solutions, LLC (Trutta) was contracted to develop a Hawaiian Stream Habitat Evaluation Procedure (HSHEP) model to assess impacts on 33 streams<sup>1</sup> associated with the proposed Water Lease. (Trutta, p. 11, 2019) (See Appendix A)

The HSHEP model was designed to quantify how various man-made changes affect native Hawaiian amphidromous stream animals and is based on statewide observations of these animals’ distribution and habitat. The HSHEP model considers the primary impacts of surface water diversion, which include loss of instream habitat from constriction or diversion of stream

---

<sup>1</sup> The CWRM D&O was used to identify the streams to be studied. The CWRM D&O identified 36 streams associated with the License Area. Two of these streams, Kualani and ‘Ōhi’a streams were not included in the HSHEP model as they were not diverted by the EMI Aqueduct System and another, Palauhulu Stream, is a tributary of Pi’ina’au Stream and thus was combined with Pi’ina’au Stream for purposes of this study. The DEIS identifies 37 streams associated with the License Area. It includes Puakea Stream which was not mentioned in the CWRM D&O and therefore was not assessed in the HSHEP model. This resulted in 33 distinct streams impacted by the EMI Aqueduct System.



flow, creation of barriers to stream animal upstream movement and entrainment of downstream drifting larvae. (Trutta, p. 11, 2019)

The HSHEP modeling approach was developed for, applied on, and critically reviewed for use in Hawaiian streams. The HSHEP model approach has been used extensively in Hawai'i, including, among others, for instream flow decisions made by the CWRM for East and West Maui streams. (Trutta, p. 12, 2019) Using the HSHEP model, data on water depth, habitat type, substrate, and stream width can be converted into suitability criteria and estimates of overall habitat area. In addition to habitat measures, stream discharge was measured upstream and downstream of diversions to help document the proportion of flow diverted. (Trutta, p. 15, 2019)

The HSHEP model assumes that habitat quality and quantity are related to the number of animals using a habitat over the long term. (Trutta, p. 23, 2019) Habitat quality and quantity determine overall Habitat Units (HU) within the area of concern, and the HSHEP model is designed to, among other things, provide impact assessments of the changes of HU within the study area under different management scenarios. (Trutta, p. 24, 2019)

Habitat suitability indices were developed for the typical group of native freshwater fish and macroinvertebrates found in Hawaiian streams, namely: 'O'opu nākea (*Awaous stamenius*); 'O'opu alamo'o (*Lentipes concolor*); 'O'opu naniha (*Stenogobius hawaiiensis*); 'O'opu nōpili (*Sicyopterus stimpsoni*); 'O'opu akupa (*Eliotris sandwicensis*); 'Ōpae kala'ole (*Atyoida bisulcata*); 'Ōpae 'oeha'a (*Macrobrachium grandimanus*); and Hīhīwai (*Neritina granosa*).

In addition to the species listed above, three native damselflies (*Megalagrion xanthomelas*, *Megalagrion pacificum*, and *Megalagrion nesiotes*) and an introduced mosquito (*Culex quinquefasciatus*) habitats were also modeled to see how the water diversions may impact their population sizes. (Trutta, p. 26, 2019) In general, restoration of stream flow should improve damselfly habitat and decrease mosquito habitat where these species use instream habitats. Restoration of baseflow, however, will likely also improve habitat conditions for a number of introduced predator and competitor species of the native damselflies and thus may not, in itself, increase damselfly populations. (Trutta, p. 58, 59, 60, 2019)

### **Baseline Condition – Natural Flow**

The EMI Aqueduct System has diverted water in its current configuration for nearly 100 years and baseline environmental condition studies (including the distribution and habitat of native stream animals) prior to its construction do not exist. Although there were no studies that describing East Maui stream biota conditions as they existed prior to the construction of the EMI Aqueduct System, the HSHEP model provides a means of estimating the naturally available habitat for stream species under natural conditions, i.e., no water diversions and no impacts on passage or entrainment of animals. (Trutta, p. 12, 2019) Trutta cautions, however, that suitable habitat (number of HU's), which is the focus of the HSHEP model, is not the only thing that may affect species populations. Other factors, such as pollution, disease, or competition with introduced species may also influence the distribution and densities of native animals. (Trutta, p. 66, 2019) This Natural Flow condition, while not, strictly speaking, a baseline condition in that it has not existed for at least 100 years, nevertheless sets the upper boundary for the HSHEP model. (Trutta, p. 41, 2019) In other words, the Natural Flow condition represents 100% of the HU in the 33 streams assessed. Trutta estimates a total of 1,982,176 HU for all the streams in the License Area. (Trutta, p. 57, 59, 60, 61, 2019)

### **Baseline Condition – Full Diversion**

The lower boundary for the HSHEP model was full diversion by the EMI Aqueduct System in its current configuration as existed under sugar cultivation, which was the prevailing conditions for nearly 100 years. (Trutta, p. 41, 2019) The Full Diversion scenario assumes that all the diversions in the EMI Aqueduct System are fully open or diverting 100% of available low flows, roughly analogous to the stream's baseflow. The diversions in the EMI Aqueduct System were built to capture 100% of normal low flows plus some small amount of storm runoff. Hawaiian streams are "flashy", meaning discharge rises quickly in response to rainfall and then quickly falls back to low flow conditions. When low flow conditions persist and water needs call for all the low flow to be diverted, the streams can be dewatered below the diversions resulting in negative impacts on species habitat and passage. Although the Full Diversion condition has not existed for more than ten years, it is identified as a baseline condition in that it was the prevailing condition for nearly 100 years when sugarcane was in full production. (Trutta, p. 55-56, 2019) Under Full Diversion conditions, approximately 46% of the total HU remained; or conversely, Full Diversion conditions reduced the number of HU by approximately 54%.

### **2018 CWRM D&O – Setting the IIFS**

This scenario represents the flow conditions as described in the CWRM D&O setting the IIFS, which included 24 streams and mandated restoration of flows in all but three streams. Four main types of flow restoration were mandated: Full-flow Restoration, Habitat-flow Restoration, Connectivity-flow Restoration, and No-Flow Restoration. The diversion amount was estimated as available flow after compliance with the CWRM D&O. (Trutta, p. 56, 2019)

The CWRM D&O ordered that flows in Makapipi, Waiohue, West Wailuāiki, Wailuānui, Waiokamilo, Pi'ina'au (and its tributary Palahulu), Hanehoi (Huelo/Puolua), and Honopou streams be fully restored. The primary reason for Full-flow Restoration is not the improvement of instream habitat for stream animals, but for the downstream passage of water for customary and traditional uses on these priority streams identified as such by Native Hawaiian communities during the IIFS proceedings. Nevertheless, Full-flow Restoration does provide significant instream habitat benefits for the native amphidromous stream animals. According to the HSHEP model, these streams contain about one-third of the potential HU (under natural flow conditions) within the entire License Area. After Full-flow Restoration as defined in the CWRM D&O, 96.7% of native stream animal HUs for these streams are estimated to exist. (Trutta, p. 57, 2019)

Additional flow restoration in the Habitat-flow Restoration streams and the Connectivity-flow Restoration streams further increases the HUs existing in the License Area. Under the Full Diversion scenario (diverting 100% of available low flows), less than half of the HUs remained in the License Area; whereas under the CWRM D&O standards, the number of remaining HUs increases to nearly 60%. (Trutta, p. 59-61, 2019)

The License Area also includes streams that were not the subject of the CWRM D&O, but are diverted into the EMI Aqueduct system. The majority of these 13 non-IIFS streams are located on the western side of the East Maui stream group. Most of the non-IIFS streams have diversions at four levels; on the Wailoa and New Hamakua Ditches at higher levels, and on two of the Spreckels, Center, and Lowrie of Haiku Ditches at the lower levels. (Trutta, p. 61, 2019) Inasmuch as the non-IIFS streams were not included in the CWRM D&O, the 2018 IIFS scenario assumes these streams will be at Full Diversion conditions. (Trutta, p. 61, 2019)

### **Impacts and Mitigation Measures**

Under the Proposed Action, it is assumed that the Water Lease would grant the right to collect government-owned waters from the License Area up to the maximum allowed under the CWRM D&O. Thus, under the Proposed Action, the number of HU within the entire License Area is decreased by approximately 40% from Natural Flow (no diversion) condition, but is increased by more than 10% over the Full Diversion condition. In other words, 60% of the total HU remains within the License Area. This ranges from 96.7% of the HU in the Full-flow Restoration streams to 15% remaining HU in the No-Flow Restoration streams (including the streams for which no IIFS was set in the 2018 CWRM D&O).

The HSHEP model results conclude that the Proposed Action would have a negative impact by reducing native stream animal habitat from Natural Flow (undiverted) conditions. However, in making decisions about instream flows, the CWRM must weigh the importance of the present or potential instream values with the importance of the present or potential uses of water for noninstream purposes, including the economic impact of restricting such uses. It is also its duty to establish IIFS that protect instream values to the extent practicable and to protect the public interest. The public interest includes not only protecting instream values but also preserving agricultural lands and assuring adequate water supplies for Maui. (CWRM D&O, p. 267, items b.-d.). Further explaining its decision-making process, the CWRM stated:

*The Commission first evaluated each stream individually, looking at their flow characteristics, instream uses, habitat restoration potential for fish and other stream animals, recreation opportunities, and scenic values. We then looked at all of the affect streams in an integrated manner with consideration for the overall ecological ramifications of our decision. We used those factors to align instream flow standards with our public trust responsibilities.*

The CWRM then considered offstream uses and weighed the importance of those uses against instream uses. In addition to the recognized public trust use for drinking water, the CWRM acknowledged the importance of diversified agriculture in Central Maui for both food sustainability and for ecological reasons. Expounding on its rationale the CWRM stated:

*For over 100 years, the East Maui watershed forests have provided water for offstream uses that meet our consumptive needs and enable economic opportunities. These benefits provide additional impetus for sustainable management of the watershed. Therefore, the Commission considered the economic impact of our decision upon offstream uses, with a specific focus on supporting public uses such as drinking water, as well as diversified agriculture. We also considered factors that contribute to the operational capacity of the existing ditch system to deliver those offstream uses. Where necessary, changes were made to our original estimates of instream flow standards to accommodate reasonable and beneficial offstream uses.*

(CWRM D&O at ii.)

*Yet, we believe it to be reasonable and beneficial to use a portion of East Maui stream water for the development of diversified agriculture on Maui’s central plains. Diversified agriculture has and should continue to provide economic benefits and can now make a larger contribution to Hawai‘i’s food sustainability. We are also concerned that leaving these lands in an un-cultivated state will increase wind-blown erosion that will damage Maui’s near shore marine environment, air quality, and tourism competitiveness. The Commission’s intent in this decision is to ensure that a sufficient amount of offstream water is available to support the cultivation of diversified agricultural crops on the lands designated as IAL in Central Maui.*

(CWRM D&O at vi.)

Even with stream flow restoration and creation of wetted pathways to the ocean, entrainment of larvae at the diversions remains an issue and contributes to the loss of HU. Additional HU may be gained for the native stream species by decreasing entrainment at the diversion locations. Any action or modification of the diversion to decrease entrainment would increase the total restored HU without any additional water released to the stream. (Trutta, p. 59, 2019)

### **Upcountry Maui**

Within Upcountry Maui there are no perennial streams (Draft Maui Island Water Use and Development Plan, March 2019). However, there are several intermittent streams such as Kailua Gulch, Waikapu Stream, Kulanihakoi Gulch, and Waipuilani Gulch.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM’s D&O and any reservations in favor of the DHHL. No significant impacts on surface waters in the region are anticipated as the Proposed Action does not involve any uses of or changes to any Upcountry Maui streams.

### **Central Maui**

Within the agricultural fields in Central Maui there are no perennial streams (Draft Maui Island Water Use and Development Plan, March 2019). However, there are 48 reservoirs throughout the agricultural fields that are used for water storage. These reservoirs are not lined and the water that is stored within the reservoirs seeps into the ground, recharging the Central Maui aquifers, as discussed more in Section 4.2.2 (Groundwater).

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in

compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on surface waters in the region are anticipated because there are no streams within Central Maui.

#### 4.2.2 Groundwater

##### **East Maui**

East Maui hydrologic resources are largely controlled by the ability of surface geology to absorb the relatively abundant rainfall that is typical of the region. The geologic surfaces of East Maui are comprised of highly permeable lava flow remnants of the Hāna Volcanic Series, which allows for rainwaters to easily penetrate and recharge groundwater bodies in the region.

Fresh ground water in the subject License Area is found in two main forms: (1) as perched high-level water held up by relatively low-permeability geologic layers, and (2) as a freshwater lens floating on denser, underlying saltwater. The rocks beneath the contact between the Kula Volcanic Series and the underlying Honomanū Basalt and above the freshwater lens appear to be unsaturated. This is based upon observations that: (a) streams are dry or losing water where they are incised into the Honomanū Basalt, (b) the hydraulic conductivity of the Honomanū Basalt is too high to support a thick ground-water lens given the estimated recharge to the area, and (c) wells that penetrate through the contact have encountered conditions of cascading water from above the contact and dry lava tubes in the Honomanū Basalt (Draft Maui Island Water Use & Development Plan, March 2019).

East Maui is within the MDWS's Ko'olau Aquifer Sector which includes four aquifer systems: Ha'ikū, Honopou, Waikamoi, and Ke'anae (See Figure 4-17).

The groundwater SY is the maximum rate that groundwater can be withdrawn without impairing the water source as determined by the CWRM. Generally, SY is conservatively set at the low end of the estimated range of predicted SY for an aquifer. Below are tables 4-1 and 4-2 that summarize each of the East Maui aquifer's SY and amount of groundwater pumped by MGD per use category.

While no groundwater is transferred from the Ko'olau Aquifer Sector, surface water is conveyed from the sector to the Central Aquifer Sector via the EMI Aqueduct System. Since surface and groundwater interchange depends on the underlying geology, the increase in surface flow since the cessation of sugar cultivation in 2016 also contributes to an increase in groundwater in East Maui.

**Table 4-1 Sustainable Yields for Ko'olau Aquifer System Areas**

| <b>Ko'olau aquifer system area</b> | <b>Aquifer code</b> | <b>Sustainable yield range (mgd)</b> |
|------------------------------------|---------------------|--------------------------------------|
| Ha'ikū                             | 60401               | 27                                   |
| Honopou                            | 60402               | 25-26                                |
| Waikamoi                           | 60403               | 40                                   |
| Ke'anae                            | 60404               | 83                                   |

*Source: Draft Maui Island Water Use & Development Plan, March 2019*



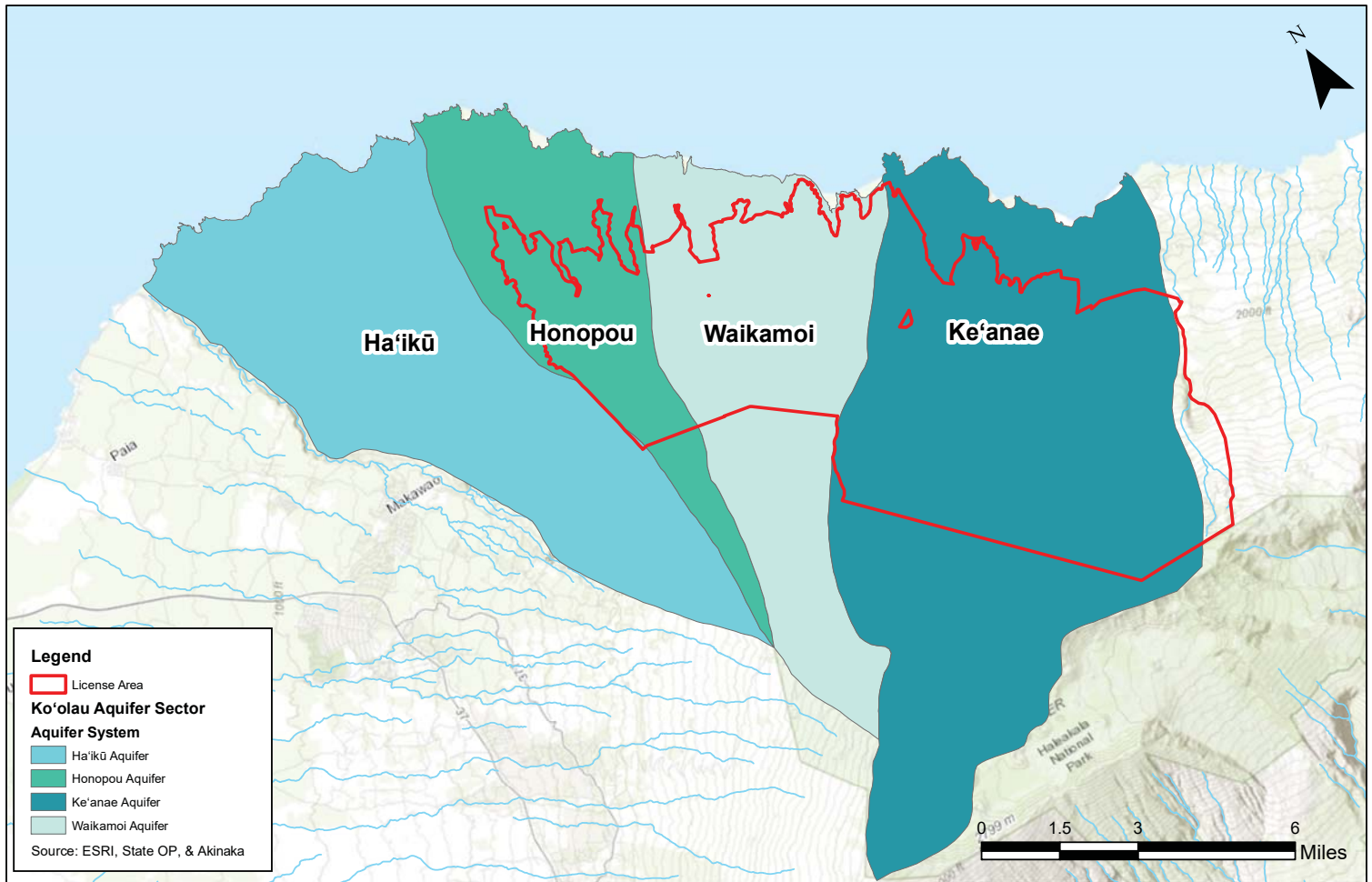


FIGURE 4-17

## East Maui Aquifer Sector Map

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



**Table 4-2 Pumpage in MGD by Well Type for Ko'olau Aquifer System Areas**

| Aquifer              | Domestic      | Industrial | Agriculture   | Irrigation    | Municipal county | Municipal private public | Municipal total | Total        |
|----------------------|---------------|------------|---------------|---------------|------------------|--------------------------|-----------------|--------------|
| Ha'ikū               | 0.007         | 0          | 0.0139        | 0.0017        | 0.811            | 0.005                    | 0.816           | 0.839        |
| e                    | 0.0007        | 0          | 0             | 0             |                  | 0.0097                   | 0.0097          | 0.0104       |
| Waikamo              | 0             | 0          | 0             | 0             | 0                | 0                        | 0               | 0            |
| i                    |               |            |               |               |                  |                          |                 |              |
| Ke'anae              | 0             | 0          | 0             | 0             | 0.066            | 0                        | 0.066           | 0.066        |
| <b>Ko'olau Total</b> | <b>0.0078</b> | <b>0</b>   | <b>0.0139</b> | <b>0.0017</b> | <b>0.877</b>     | <b>0.0149</b>            | <b>0.982</b>    | <b>0.916</b> |
| <b>% of Total</b>    | <b>0.85%</b>  | <b>0%</b>  | <b>1.52%</b>  | <b>0.19%</b>  | <b>95.81%</b>    | <b>1.63%</b>             | <b>97.44%</b>   | <b>100%</b>  |

Source: Draft Maui Island Water Use & Development Plan, March 2019

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on groundwater in the region are anticipated. Groundwater levels are expected to be greater than historic levels due to increased recharge from stream restoration actions under the CWRM D&O.

### **Upcountry Maui**

Upcountry Maui groundwater recharge replenishes aquifers and is fed mainly by precipitation and irrigation that infiltrates the ground surface and percolates beyond the root zone in the soil. Recharge is greatest in the inland mountainous regions.

Upcountry Maui is within the MDWS's Central Maui Aquifer Sector<sup>2</sup> which includes four aquifer systems: Pā'ia, Kahului, Kama'ole, and Makawao aquifers (See Figure 4-18). Below are tables 4-3 and 4-4 that summarize each aquifer's SY and amount of groundwater pumped per category.

**Table 4-3 Sustainable Yields for Central Aquifer System Areas**

| Aquifer system | Aquifer code | Sustainable yield range (mgd) | Sustainable yield (mgd) |
|----------------|--------------|-------------------------------|-------------------------|
| Kahului        | 60301        | 1                             | 1                       |
| Pā'ia          | 60302        | 7-8                           | 7                       |
| Makawao        | 60303        | 7-20                          | 7                       |
| Kama'ole       | 60304        | 11-16                         | 11                      |
| <b>Total</b>   |              |                               | <b>26</b>               |

Source: Draft Maui Island Water Use & Development Plan, March 2019

<sup>2</sup> Note that this aquifer sector is also the source for the irrigation wells serving the agricultural lands in Central Maui.

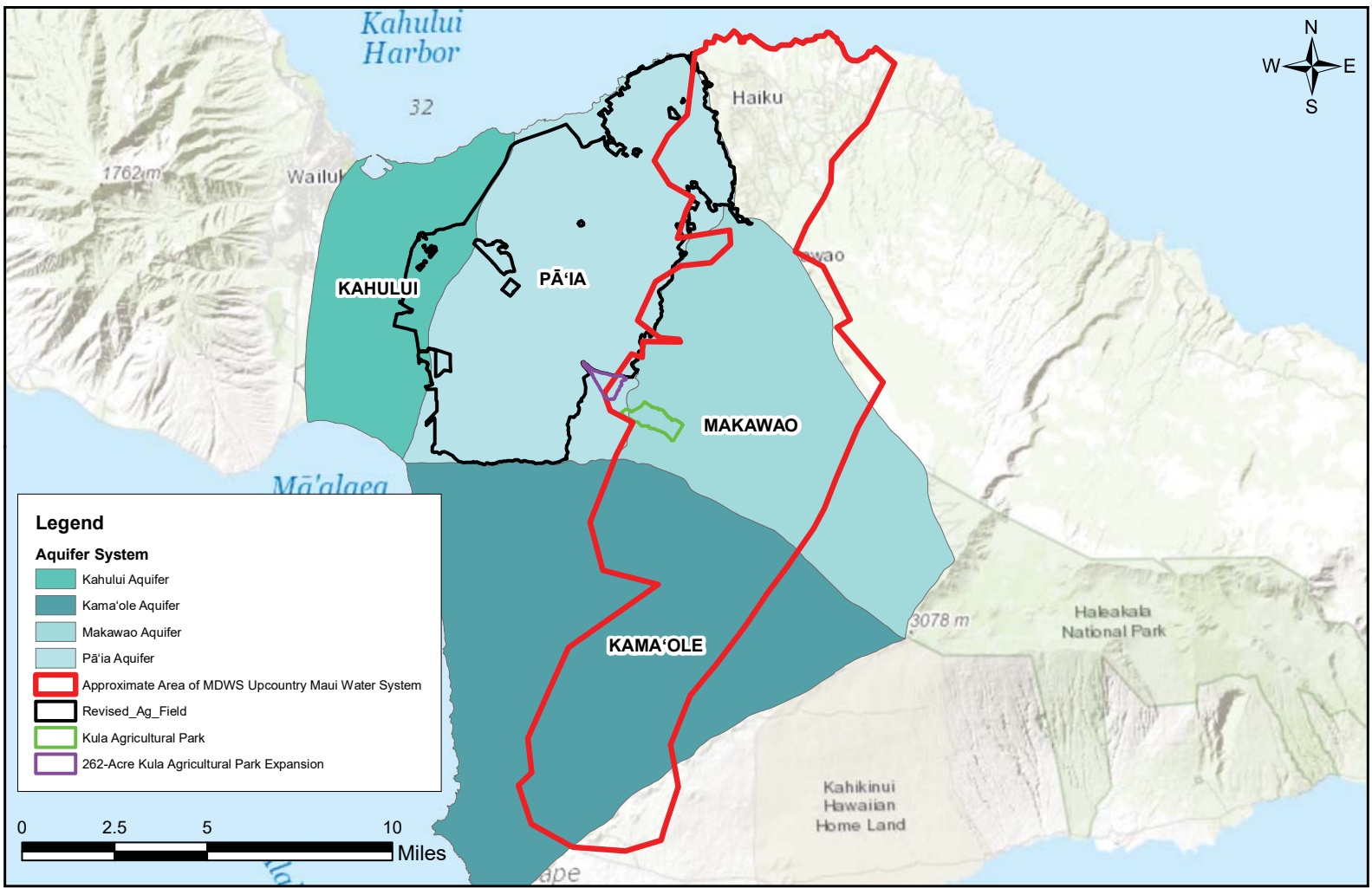


FIGURE 4-18

## Central Maui Aquifer Sector Map

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



**Table 4-4 Pumpage in MGD by Well Type for Central Aquifer System Areas**

| <b>Aquifer</b>                       | <b>Domestic</b> | <b>Industrial</b> | <b>Agriculture</b> | <b>Irrigation</b> | <b>Municipal</b> | <b>Military</b> | <b>Total</b>  |
|--------------------------------------|-----------------|-------------------|--------------------|-------------------|------------------|-----------------|---------------|
| Kahului                              | 0               | 0.208             | 28.222             | 0.476             | 1.093            | 0               | 29.999        |
| Pā'ia                                | 0               | 0                 | 29.097             | 0.161             | 0.248            | 0               | 29.506        |
| e                                    | 0               | 0                 | 0                  | 0.220             | 0.139            | 0               | 0.366         |
| Kama'ole                             | 0               | 0                 | 0                  | 2.826             | 0.027            | 0               | 2.853         |
| <b>Central<br/>Total<br/>Pumpage</b> | <b>0</b>        | <b>0.208</b>      | <b>57.319</b>      | <b>3.683</b>      | <b>1.507</b>     | <b>0</b>        | <b>62.724</b> |
| <b>% of<br/>Total<br/>Pumpage</b>    | <b>0%</b>       | <b>0.33%</b>      | <b>91.39%</b>      | <b>5.87%</b>      | <b>2.40%</b>     | <b>0%</b>       | <b>100%</b>   |

Source: Draft Maui Island Water Use & Development Plan, March 2019

10-20 percent of water delivered through the Upcountry Maui Water System comes from a series of basal aquifer wells: the Ha'ikū Well, Po'okela Well, and the two Kaupakalua wells. The rest comes from surfaced water sources. These four wells account for a total of 4.9 mgd of water delivered. In times of emergency, the Upcountry Maui Water System can draw up to 1.5 mgd from the Hāmākua Poko Wells (CWRM D&O, FOF 809). However, there is concern over this water due to the presence of pesticides from former pineapple production.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL.

In the Proposed Action, the amount of water that can be conveyed by the EMI Aqueduct System will be limited to the amount available after the CWRM D&O is implemented. The CWRM D&O requires full restoration of ten streams, allows diversion in five streams only after flows exceed 64% of median flow and requires connective flows for seven streams. These instream flow requirements will limit the amount of water that can be diverted, particularly when streams in the License Area are naturally running low during seasonally dry weather conditions. Hence, the amount of water that can be diverted during dry weather conditions would be substantially less than when sugar was being cultivated. As a result, dependence on groundwater resources to supply Upcountry Maui during such conditions may increase and/or water conservation measures may be required. Future climate change could also exacerbate the frequency and length of periods of low rainfall. However, the Proposed Action contemplates a continued supply of surface water to the MDWS to supply Upcountry Maui and therefore no significant effect to Upcountry Maui groundwater resources is expected, and the impacts of the Proposed Action may be beneficial as the Proposed Action will limit the MDWS's need to call upon existing groundwater resources to provide water to Upcountry Maui.

### **Central Maui**

Fresh groundwater in Central Maui occurs mainly in freshwater-lens systems and dike-impounded systems. A freshwater-lens system includes a lens-shaped freshwater body, an intermediate transition zone of brackish water, and underlying saltwater. The thickness of the transition zone depends on the extent of mixing between freshwater and saltwater. Within the study area, freshwater-lens systems are found in dike-free, high-permeability volcanic rocks and sedimentary deposits. A thick wedge of sedimentary deposits that forms a confining unit (caprock) over the high-permeability volcanic rocks near parts of the northeast coast of West Maui Mountain impedes the discharge of water from the freshwater-lens system. Where the coastal confining unit exists, water levels in the freshwater-lens system have exceeded 25 feet above sea level. Water levels in the freshwater-lens system in areas of West Maui that lack a coastal confining unit generally are lower than 5 feet above sea level, and those in the freshwater-lens system in the isthmus also are generally lower than 5 feet above sea level. The salinity of groundwater in the isthmus is determined primarily by irrigation and withdrawals for agricultural uses (USGS, 2007).

Dike-impounded groundwater systems occur near the caldera and rift zones of the volcanoes, where low-permeability dikes have intruded other rocks. Near-vertical dikes generally compartmentalize areas of more permeable volcanic rocks. Dikes impound water to thousands of feet above sea level in the interior of West Maui Mountain (USGS, 2007).

The agricultural fields within Central Maui are also within the MDWS's Central Maui Aquifer Sector which includes four aquifer systems: Pā'ia, Kahului, Kama'ole, and Makawao aquifers (See Figure 4-18). The Central Maui agricultural fields overlie the Pā'ia and Kahului aquifers. Table 4-3 above displays the SY for these four aquifer systems.

SY does not account for water transfers, including surface water conveyed to the Central Maui Aquifer Sector from the Ko'olau Aquifer Sector by the EMI Aqueduct System. Such imported water for irrigation flowing past the root zone of crops enters the aquifer from which it can be pumped and reused. According to the Draft Maui Island Water Use and Development Plan (March 2019), the "impact on 'available' groundwater that can be extracted from the Kahului and Pā'ia aquifers from irrigation return flow is highly uncertain since the cessation of sugarcane cultivation in 2016" (p. 18). The plan further notes that there are no monitoring wells in the Central Aquifer Sector to gage water level changes over time. Nevertheless a simulated scenario in a 2008 USGS study suggests that the complete removal of irrigation return recharge would decrease water levels and increase salinity in the Central Maui Aquifer Sector (Akinaka, 2019).

During sugarcane operation, HC&S pumped approximately 42.50 mgd of brackish groundwater to supplement surface water irrigation (Plasch, 2019). This is considerably more than the combined SY of 8 mgd the Pā'ia and for Kahului aquifers. More of the brackish water was used on the lower agricultural fields due to the cost of pumping groundwater to the higher-elevation agricultural fields.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action



continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL.

It is estimated that at full operation of diversified agriculture, approximately 85.22 mgd of water will be directed to the fields of Central Maui from near the MDWS's Kamole-Weir WTP. Of this amount, approximately 22.7% or approximately 19.34 mgd, is estimated to be lost through evaporation and seepage in unlined ditches and reservoirs located in the Central Maui agricultural fields. Some portion of this seepage would enter the Pā'ia and Kahului aquifers. The remaining 65.87 mgd would be used for irrigation and a portion of this amount would seep past the root zone and also enter the aquifers. It is estimated that 21.31 mgd of groundwater could be pumped out of the aquifers to supplement the surface water supply and that 22.7% of that amount, or 4.84 mgd, would also be lost to evaporation and seepage back into the aquifers. Additionally, a portion of the amount used for irrigation would also seep past the root zone and back into the aquifer.

Because so little is known about the relationship between system losses and irrigation return water and how much could be reused as groundwater, a definite statement about impacts on groundwater cannot be made. However, the use of East Maui surface water to irrigate the Central Maui fields has long supplemented the underlying aquifers, and a similar relationship will continue under the Proposed Action, essentially constituting a beneficial impact to the Central Maui aquifers, albeit at a smaller scale than when sugarcane was being cultivated.

#### **4.2.3 Coastal Waters**

##### **East Maui**

A stream and ocean water chemistry assessment was conducted by Sea Engineering, Inc. (SE) and Marine Research Consultants, Inc. (MRC) in 2018 (See Appendix B). Six representative streams systems along the coast of East Maui were investigated during different seasonal conditions, some presently having no diversion of water while others presently have diversion occurring. The study showed that streams on the coast of East Maui have a wide range of geographical/morphological characteristics. Flow in the streams is highly variable and dynamic, with much of the variability resulting from factors in the upland watershed, as well as diversion of stream water. The study concluded that the effects of stream water on marine waters is minor in these habitats, which is supported by the physical processes associated with relatively small input of stream water to the vastly larger ocean environment. The prevailing condition of extreme mixing by physical forces is the most important factor in diminishing the zone of influence of stream water in the marine setting.

Surface waters from the License Area discharge into coastal waters north of the License Area. The State DOH classifies these coastal waters as Class AA (See Figure 4-19). The stated objective of Class AA waters is, "that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions." (Water Quality Standards, Title 11, Chapter 54, HAR).

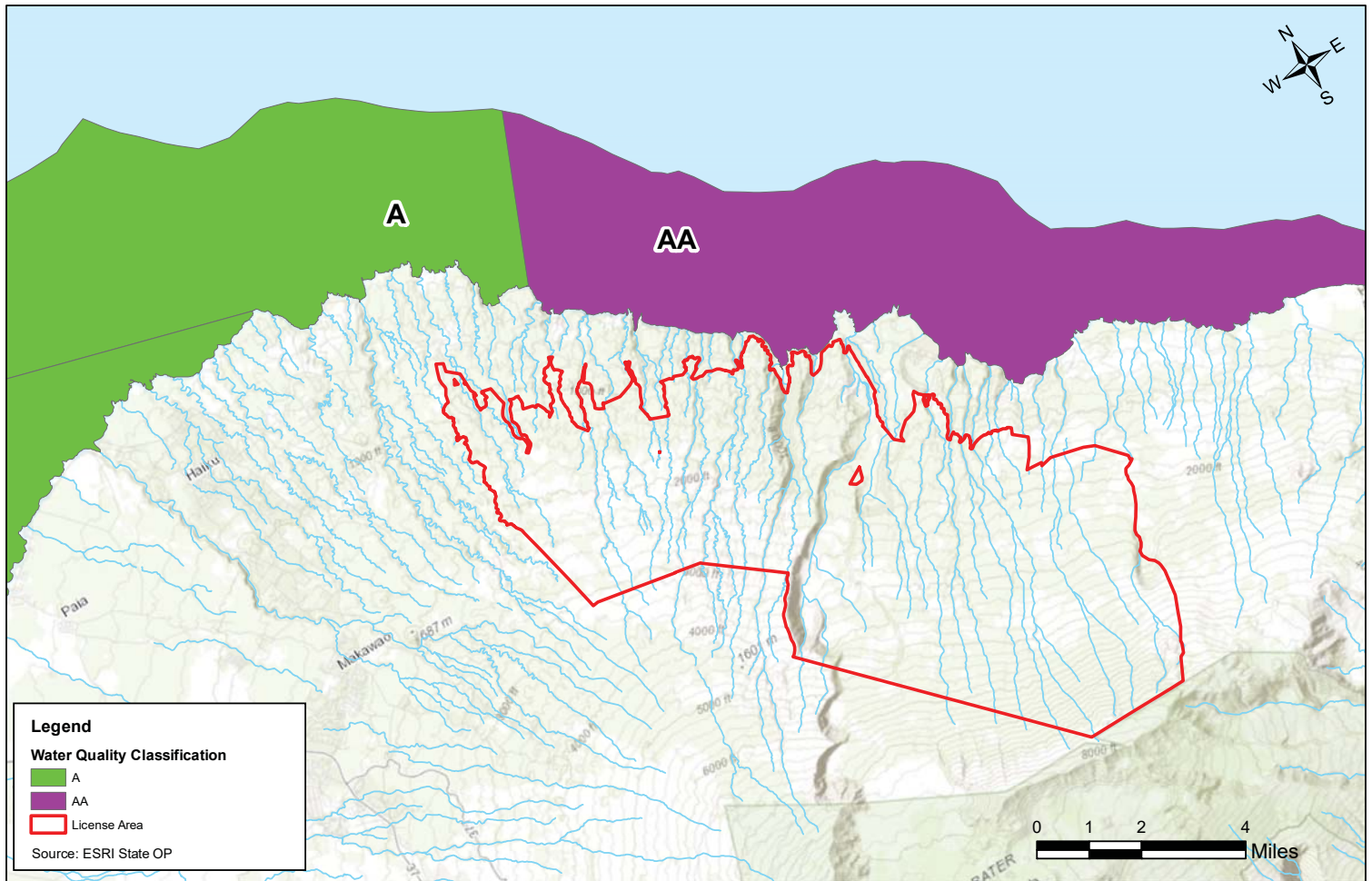


FIGURE 4-19



## EAST MAUI WATER QUALITY CLASSIFICATION MAP

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS

However, due to continual, intense, wave energy, nearshore areas in East Maui do not constitute important habitats for coral reef communities and associated marine species (SE & MRC, 2019).

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on coastal water in the region are anticipated. The resulting stream flow into the ocean under the Proposed Action is predicted to be greater than historic flows in the decades prior to the CWRM D&O. However, the amount of stream flow from the License Area into the marine environment, beyond the narrow transition zone, has a minimal influence owing to the naturally occurring rapid and intense mixing. These processes should not be affected by changes in stream flow under the Proposed Action.

#### **Upcountry Maui**

The area known as Upcountry Maui is roughly located between the 1,000 to 4,000-foot elevation and is bounded on the west by the agricultural fields in Central Maui and extends out to Kēōkea in the South. There are no coastal waters located within the Upcountry Maui area, however, the service area for the MDWS Upcountry Maui Water System extends to the coast at the community of Ha‘ikū.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on coastal waters are anticipated as a result of the continued water service to Upcountry Maui.

#### **Central Maui**

Portions of the agricultural fields are near, but not abutting, some of Maui’s coastal waters. This includes areas in the proximity of Maliko Bay, Ho‘okipa Beach Park, Pā‘ia Bay, and Ma‘alaea Bay.

The State DOH classified these coastal waters as Class A (See Figure 4-20). The stated objective of Class A waters is, “their use for recreational purposes and aesthetic enjoyment be protected. Any other use shall be permitted as long as it is compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters.” (Water Quality Standards, Title 11, Chapter 54, HAR).

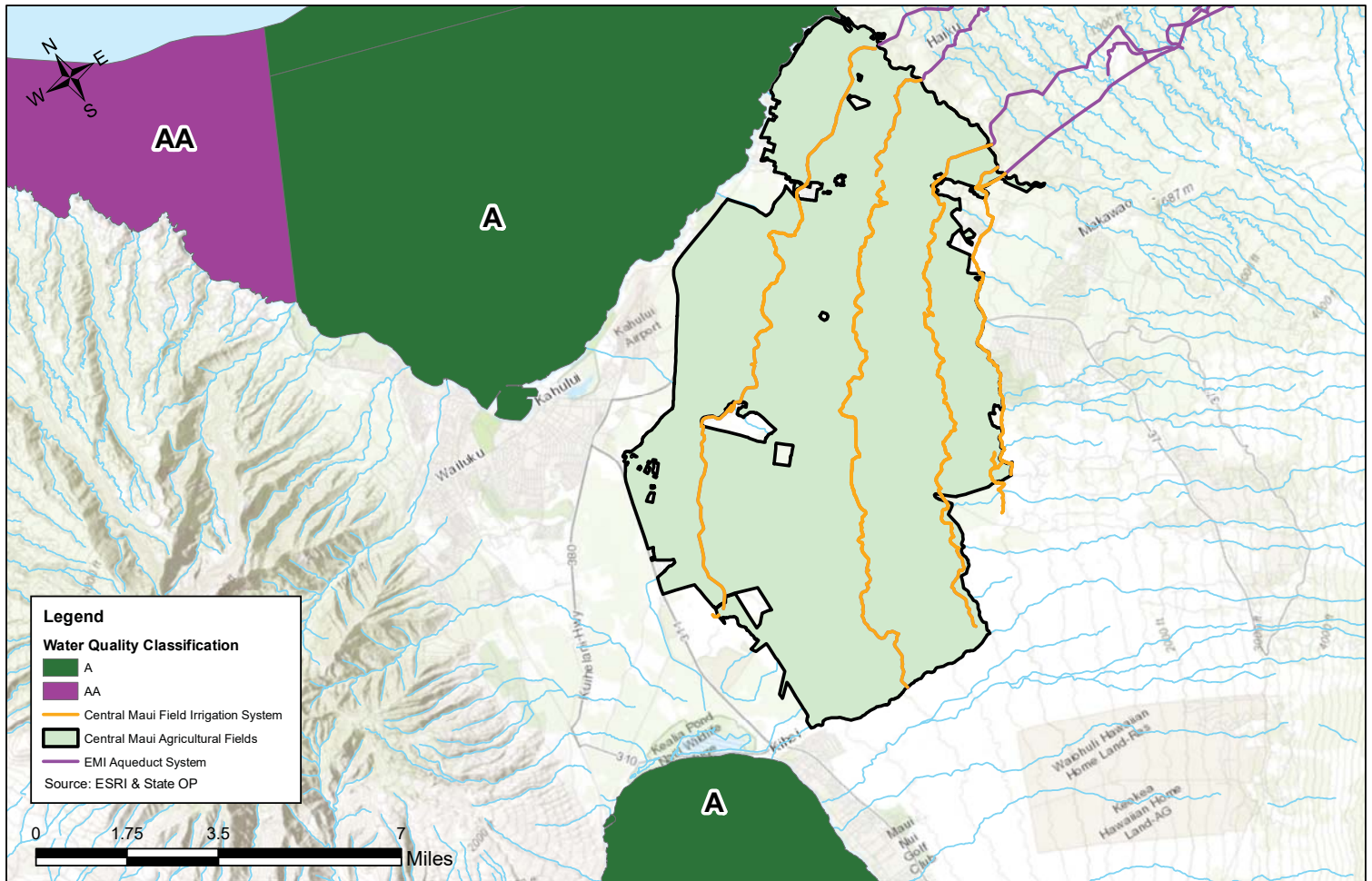


FIGURE 4-20

## CENTRAL MAUI WATER QUALITY CLASSIFICATION MAP

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS





### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century, including the use of water through the EMI Aqueduct System to supply irrigation water to the Central Maui agricultural fields. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on coastal waters in the region are anticipated as the Proposed Action will reduce wind-blown erosion that could occur if the Central Maui fields were not in cultivation, and which could damage nearshore environments.

Moreover, Mahi Pono will apply BMP to manage runoff from the agricultural fields that are near coastal waters. Any discharges related to the operation activities within the Central Maui agricultural fields will comply with applicable State Water Quality Standards as specified in HAR, Chapter 11-54 and 11-55 Water Pollution Control, DOH.

## **4.2.4 Drainage**

### **East Maui**

Rainfall in East Maui percolates into the ground and surface flows through naturally formed drainage ways. Surface flows and, in some areas, resurfacing groundwater, feed into streams and eventually discharge into the Pacific Ocean. For more than a century, however the EMI Aqueduct System has diverted flows from East Maui streams for off-stream uses through EMI Aqueduct System. The system has been used to collect and transport water to meet consumptive needs and enable economic opportunities. The EMI Aqueduct System consists of approximately 388 separate intakes, 24 miles of ditches, and 50 miles of tunnels, as well as numerous small dams, intakes, pipes, 13 inverted siphons and flumes. Water diverted from the streams reduces flows downstream. Hāna Highway and other improved roadways that are downstream of the EMI Aqueduct System, include bridges and culverts as well as gutters and inverts to accommodate drainage to prevent or minimize ponding or flooding of the roadways.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on drainage in the East Maui region are anticipated. Since the closure of sugar cultivation, the amount of water diverted has been reduced, increasing base flow in diverted streams. While implementation of the Proposed Action will reduce overall streamflow in License Area streams, flow will be greater than when sugar was being cultivated. Surface water hydrology in East Maui is discussed in Section 4.2.1. Drainage facilities, however, are impacted when storm runoff reach extremely high levels. The Proposed Action and the other alternatives will have no discernible impact on such storm flows and their impact on drainage facilities.



### **Upcountry Maui**

Rainfall in Upcountry Maui percolates into the ground so there are no perennial streams. During extremely wet weather conditions, storm runoff will surface flow through naturally formed drainage ways, including Kailua Gulch, Waikapu Stream, Kulanihakoi Gulch, and Waipuilani Gulch as intermittent streams. Improved roadways include drainage features to minimize ponding on road surfaces.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on drainage in the Upcountry Maui region are anticipated.

### **Central Maui**

The Central Maui agricultural fields are designed and operated to efficiently utilize irrigation water from the EMI Aqueduct System so there is no surface runoff. Drainage facilities along improved roadways capture rainfall runoff.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant changes to existing drainage patterns or systems within Central Maui are anticipated. Irrigation water would be applied at rates that will not cause surface runoff. Severe rainfall can result in localized runoff or ponding but would be unrelated to the amount of irrigation water made available through the EMI Aqueduct System.

## **4.3 Natural Hazards**

The Disaster Mitigation Act of 2000 (DMA 2000), 44 Code of Federal Regulations, Hazard Mitigation Planning, required states and counties to have approved hazard mitigation plans by November 1, 2004 to receive Pre-Disaster Mitigation funding. The development of State and local hazard mitigation plans is critical for maintaining eligibility for future Federal Emergency Management Agency (FEMA) mitigation and disaster recovery funding.

Given Hawai'i's vulnerability to natural hazards and history of disasters, the State has maintained and implemented a comprehensive, multi-hazard mitigation strategy to reduce loss of life and property damage. This strategy is embodied in the *State of Hawai'i Multi-Hazard Mitigation Plan, 2010 Update*. First adopted by Executive Order in 2004, the 2010 State of

Hawai‘i Multi-Hazard Mitigation Plan meets a mandatory three-year review and update of State, county and industry capabilities and plans to address natural and man-made hazards.

The County of Maui’s Multi-Hazard Mitigation Plan was formally approved in 2005, and updated in 2010 and 2015. The *2015 Multi-Hazard Mitigation Plan* provides an update to all sections of the County’s mitigation plan, including hazard identification, asset identification, risk and vulnerability assessments, current mitigation activities and capabilities, mitigation strategy, and plan maintenance to meet requirements set forth by the DMA 2000.

Information from the respective State and County Multi-Hazard Mitigation Plans are included in this section as relevant to the impacted regions of the Proposed Action.

#### **4.3.1 Climate and Climate Change**

The topography of the island of Maui and the location of the north Pacific anticyclone relative to Maui affects its climate which is characterized by mild and uniform temperatures ranging from 64 degrees Fahrenheit (F) to 85 degrees F with a mean relative humidity of 66-69%, seasonal variation in rainfall, and great geographic variation in rainfall. The summer season runs from May through September and is generally warm and dry with predominantly northeast trade winds that blow 80-95% of the time. In contrast, the winter season runs from October through April and is associated with lower temperatures, higher rainfall, and less prevalent trade winds that blow 50-80% of the time.

The variation in mean annual rainfall with altitude is extreme on Maui, with differences of more than 130 inches within one mile of Pu‘u Kukui in the West Maui Mountains, where average annual rainfall exceeds 355 inches per year. In contrast, mean annual rainfall at the coast in the dry leeward areas is less than 15 inches. At higher altitudes, precipitation is a combination of rainfall and fog drip where the montane forest canopy intercepts cloud water.

Regular trade winds are key in driving the Hawai‘i’s hydrological cycle, generating rainfall which helps maintain Maui’s water supply. However, a recent study showed that Hawai‘i’s trade winds have decreased in frequency by approximately 30% over the past 37 years, from 291 days per year in 1973, to 210 days per year in 2009 (Garza et. al, 2012). The decrease in the trade winds could have serious implications for the Hawaiian Islands, including adversely impacting local agriculture, native ecosystems and endangered species, and the State’s limited freshwater supply.

Overall, the State of Hawai‘i is experiencing region-specific impacts that have been attributed to climate change, such as chronic flooding during king tides, severe shoreline erosion, changes in rainfall patterns, severity of storms and coral die off. While there is little consensus about the exact nature, magnitude, and timing of these changes, evidence indicates that there has been a rise in air and sea surface temperatures, a decrease in the prevailing northeasterly trade winds, a decline in average rainfall resulting in a decline in stream base flow, an increase in ocean acidity, and sea level rise (SOEST, 2014).

Research indicates that two centuries of unabated greenhouse gas (GHG) emissions, which includes carbon dioxide, methane, nitrous oxide, and fluorinated gases, from anthropogenic

sources is responsible for increases in global atmospheric temperatures and ocean warming over the past century.

A slight variation of climate patterns are observable throughout Maui. The impacted regions from the Proposed Action are assessed under this DEIS. The following is a description of the climate within the three main geographic areas assessed within this document; East Maui, Upcountry Maui, and Central Maui.

### **East Maui**

The License Area is located along Maui’s Ko‘olau coastline. Mountains obstruct trade-wind air flow and create wetter climates on north and northeast facing mountain slopes. Persistent trade winds and orographic lifting of moist air result in recurrent clouds and frequent rainfall on windward slopes. When trade winds are present, the vertical development of clouds is restricted by the trade-wind inversion layer. The altitude of the inversion, however, varies over time and space and is affected by thermal circulation patterns, such as land and sea breezes. Most of Maui is usually immersed in the moist air layer below the inversion. On the windward slopes of Haleakalā, which includes the License Area, mean rainfall exceeds 200 inches per year. In the past, this region has experienced as much as 28 inches of rain in 24 hours. Monthly average rainfall is generally evenly distributed, and rainfall levels range from as much as 300 inches in the lands above Nāhiku, to a low of 75 inches found in regions above Ke‘anae. On average, USGS data indicates rainfall ranges from 101-454 inches per year, making this region one of the wettest places in the State of Hawai‘i.

Climate change trends suggest increased potential for East Maui, including the License Area, to experience periods of intense, episodic rainfall where several inches of rain can fall in a matter of a few hours. Such rainfall patterns increase the amount of stormwater runoff flowing through the region, including through the streams within the License Area that reach the shoreline. The expected climatic changes in precipitation patterns and streamflow will influence the quantities and concentration of stormwater runoff entering the nearshore environments and coastal waters, resulting in increased sedimentation, impacting coral reefs. However, because of the continuous wave energy in shore areas in East Maui, nearshore areas in East Maui do not constitute important habitats for coral reef communities and associated marine species. (SE & MRC, 2019).

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on climate in East Maui are anticipated as a result of the Proposed Action. Moreover, because the EMI Aqueduct System is a gravity fed system it is extremely energy efficient and does not rely on non-renewable sources of energy for its operation.

However, the exact nature of how the climate will change and impacts from any changes is unknown. As research into this area continues, there will be increased knowledge of the most effective ways to focus efforts toward adaptation strategies for climatic changes.

### **Upcountry Maui**

Upcountry Maui covers a large range of elevation and area. The average temperature varies at different elevations. As elevation increases, the average temperature decreases. The Leeward side of Upcountry Maui is mostly dry and sunny. The Windward Side of Upcountry Maui tends to be wetter than the Leeward Side. Average annual rainfall ranges from 16-20 inches per year on the Leeward Side to more than 240 inches per year on the Windward Side (Draft Maui Island Water Use and Development Plan, March 2019). The KAP receives an average amount of total rainfall of 15 to 25 inches per year.

Climate change trends may increase the potential for altered habitats and conditions. Warming air temperatures could cause ecosystems to shift upslope and decline in size. Changes in precipitation may affect Upcountry Maui's ecosystems and communities include flooding, erosion, drought, and fire. Changes vary from island to island, and even valley to valley. The overarching trend for the State has been a decrease in total rainfall. A decrease in total rainfall, without a reliable source of water delivery, would increase the demand for water in Upcountry Maui for both domestic and agricultural purposes. The demands of water could be potentially minimized through the implementation of water conservation measures, however, the extent to which such efforts would serve to counter reduced levels of water service is uncertain.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on climate in Upcountry Maui are anticipated.

However, the exact nature of how the climate will change and impacts from any changes is unknown. As research into this area continues, there will be increased knowledge of the most effective ways to focus efforts toward adaptation strategies to address climate change.

### **Central Maui**

Central Maui's climate is typical of Leeward coastal lowlands receiving little rainfall annually, and is relatively dry. The northeast areas receive more rain than the central and southern areas of Central Maui. The average annual rainfall ranges from less than 10 inches in the southern part of the isthmus to over 40 inches in the northeastern areas. Central Maui receives considerable amounts of sunshine, with average daily insolation ranging from slightly less than 450 calories per square centimeter per day in mauka areas to over 500 calories near Kahului.

Climate change trends may suggest an increased potential for the agricultural fields in Central Maui to experience longer, more intense, periods of drought. The overarching trend for the State has been a decrease in total rainfall. A decrease in rainfall would result in less water being conveyed to the agricultural fields. The water conveyed to the agricultural fields in Central Maui also plays a major role in the recharge of the Central Maui aquifer. Periods of prolonged and intense drought would further strain the aquifers in Central Maui that depend upon the water conveyed through the EMI Aqueduct System for recharge.

### **Impacts and Mitigation Measures**

The Proposed Action will allow for the continued conveyance of water through the EMI Aqueduct System to allow for the transition of the agricultural fields in Central Maui to a diversified agricultural operation. Various studies indicate that agricultural activities can be a source of GHGs that aggravate climate disruption. Agriculture creates both direct and indirect emissions. Direct emissions come from fertilized soils and livestock manure. While indirect emissions come from runoff and leaching of fertilizers, emissions from land-use changes, use of fossil fuels for mechanization, transport and agro-chemical and fertilizer productions. Various management practices in the agricultural land can lead to production and emission of GHGs, which range from fertilizer application to methods of irrigation, tillage and cattle and feedlots.

However, the agricultural sector has large potential to mitigate climate change. According to the Intergovernmental Panel on Climate Change (IPCC) (2013), mitigation is an intervention to reduce the emissions sources or enhance the GHG sinks. GHG emissions through energy conservation, lower levels of carbon-based inputs, lower use of synthetic fertilizer and other features that minimize GHG emissions and sequester carbon in the soil.

As Mahi Pono's farm plan becomes operational, GHG emissions from internal combustion engines in farming equipment, and transportation related to crop production and workers will increase over the current fallow conditions. When fully operational, the amount of GHG emissions compared to former sugarcane operations does not suggest that one would be significantly greater than the other. There will be seasonal differences in emissions with a sugar monocrop generating more emissions during seasonal harvests while diversified agriculture would likely be distributed due to differences in crop cycles. Sugar also involved burning but such emissions were not from fossil fuels. Sugar also involved transporting products overseas for processing and distribution while diversified agriculture could reduce the amount of food crops imported from overseas as it increases the amount of local food production.

Mahi Pono's farm plan proposes livestock operations on the agricultural fields in Central Maui. The livestock sector requires a significant amount of natural resources and has a role in GHG emissions, especially methane and nitrous oxide. Methane, mainly produced by enteric fermentation and manure storage, is a gas which has an effect on global warming 28 times higher than carbon dioxide. Nitrous oxide, arising from manure storage and the use of organic/inorganic fertilizers, is a molecule with a global warming potential 265 times higher than carbon dioxide (IPCC, 2013). However, in comparison to other livestock operations on the island, such as Ulupalakua Ranch, which operates on approximately 18,000 acres, Mahi Pono's livestock operation will be



negligible. Additionally, Mahi Pono's farm plan also includes a utility scale solar farm to supply power to the public power grid, and will also use power from two existing hydro-electric facilities to provide power to pumps and wells, and other infrastructure.

However, the exact nature of how the climate will change and impacts from any changes is unknown. As research into this area continues, there will be increased knowledge of the most effective ways to focus efforts toward adaptation strategies to address climate change.

#### 4.3.2 Sea Level Rise

The present rate of global mean SLC is  $+3.4 \pm 0.4$  mm/year (Sweet, 2017), where a positive number represents a rising sea level. SLC appears to be accelerating compared to the mean of the 20th Century. Factors contributing to the measured rise in sea level include decreasing global ice volume and warming of the ocean. Sea level, however, is highly variable. The mean historical rate of sea level change (RSLC) is  $+2.21 \pm 0.42$  mm/yr based on monthly data for the period 1947 to 2017 (SE & MRC, 2019).

In 2017, the National Oceanic and Atmospheric Administration (NOAA) revised its sea level change projections through 2100 (2017 NOAA Report) taking into account up-to-date scientific research and measurements NOAA is projecting that global sea level rise as shown by their "Extreme" scenario could be as high as about 8 feet by 2100. NOAA's recent report also identifies specific regions that are susceptible to a higher than average rise in sea level. Hawai'i has thus far experienced a rate of sea level rise that is less than the global average; however, this is expected to change. Hawai'i is in the "far field" of the effects of melting land ice. This means that those effects have been significantly less in Hawai'i compared to areas closer to the ice melt. Over the next few decades, this effect is predicted to spread to Hawai'i, which will then experience sea level rise greater than the global average.

While the projections are based on the most current scientific models and measurements, discretion is necessary in selecting the appropriate scenario. Selecting the appropriate sea level change projection is a function of many parameters, including topography, coastal setting, criticality of infrastructure, potential for resilience, budget, and function.

An important conclusion of the regional climate assessment is that NOAA's revised *Intermediate* rate is recommended for planning and design purposes in Hawai'i. The *Intermediate* rate projects that sea level in Hawai'i will rise 4.2 feet by 2100. Given the recent upwardly revised projections and the potential for future revisions, consideration may also be given to the *Intermediate-High* rate for planning and design purposes, which projects that sea level in Hawai'i will rise 6.3 feet by 2100.

Sea level rise has the potential to impact beaches and shorelines in Hawai'i. Impacts may include beach narrowing and beach loss, loss of land due to erosion, and infrastructure damage due to inundation and flooding. The impacts from anomalous sea level events (e.g., king tides, mesoscale eddies, storm surge) are also likely to increase. A 2015 study found that, due to increasing sea level rise, average shoreline recession (erosion) in Hawai'i is expected to be nearly twice the historical extrapolation by 2050, and nearly 2.5 times the historical extrapolation by 2100 (Anderson et al., 2015).

The State of Hawai'i recently published the *Sea Level Rise Vulnerability and Adaptation Report for Hawai'i* (Hawai'i Vulnerability Report), which discusses the anticipated impacts of projected future sea level rise on coastal hazards, and the potential physical, economic, social, environmental, and cultural impacts of sea level rise in Hawai'i (Hawai'i Climate Change Mitigation and Adaptation Commission, 2017). The University of Hawai'i conducted numerical modeling to estimate the potential impacts from sea level rises of 0.5 feet, 1.1 feet, 2.0 feet, and 3.2 feet on coastal hazards including passive flooding, annual high wave flooding, and coastal erosion. These sea level elevations were identified using the predictions associated with the United Nations Intergovernmental Panel on Climate Change's 2014 reports for time marks at 2030, 2050, 2075, and 2100, respectively. These same elevations are correlated to the more recent and comprehensive scientific predictions made in the 2017 NOAA report, using the *Intermediate* rate, for time marks at 2025, 2043, 2064, and 2085, respectively. In summary, the 2017 NOAA Report provides state-of-the-science predictions for rates of sea-level rise, while the Hawai'i Vulnerability Report estimates projected coastal impacts at key sea level elevations in Hawai'i.

The projected increase in sea level rise has the potential to increase risk of storm surge-related flooding along the coast, expand areas at risk of coastal flooding, increase vulnerability of energy facilities located in coastal areas, flood transportation and telecommunication facilities, and cause saltwater intrusion into some freshwater supplies near the coast. Sea level rise will lead to more frequent and extensive coastal flooding.

### **East Maui**

SE & MRC (2019) used the Pacific Islands Ocean Observing System (PacIOOS) data viewer to present the State sea level rise predictions for passive flooding impacts in East Maui. Presented below (Figure 4-21 through Figure 4-26) are the areas predicted to be passively flooded by a sea level rise of +3.2 ft. This sea level equates to the 2085 *Intermediate* rate sea level prediction by the 2017 NOAA report. Passive flooding assumes there are no changes to the existing surface of the land and sea floor, and elevated water levels are projected across existing elevations. The blue areas indicate existing dry land that would become submerged under +3.2 ft of sea level rise.

Additional impacts to the East Maui area from sea level rise include increased inundation from wave flooding and typically increased rates of coastal erosion, as discussed above. The State sea level rise vulnerability report did not assess impacts to the License Area related to wave inundation or coastal erosion. However, several results can be predicted for the region around the License Area based on existing conditions and empirical littoral response to progressively elevated water levels.

Typically, dynamic sediment coastlines, such as the cobble beaches and deltas at the East Maui stream mouths, respond to changes in water level, sediment supply, and wave energy in short time periods. Erosion or accretion along the shoreline becomes a function of the balance between these three primary factors. Rising seas, if all other factors are



**Figure 4-21. PacIOOS +3.2 ft sea level rise passive flooding projection Oopuola Stream**

Sea Engineering, Inc. & Marine Research Consultants, Inc provided map that depicts sea level rise within portions of East Maui.



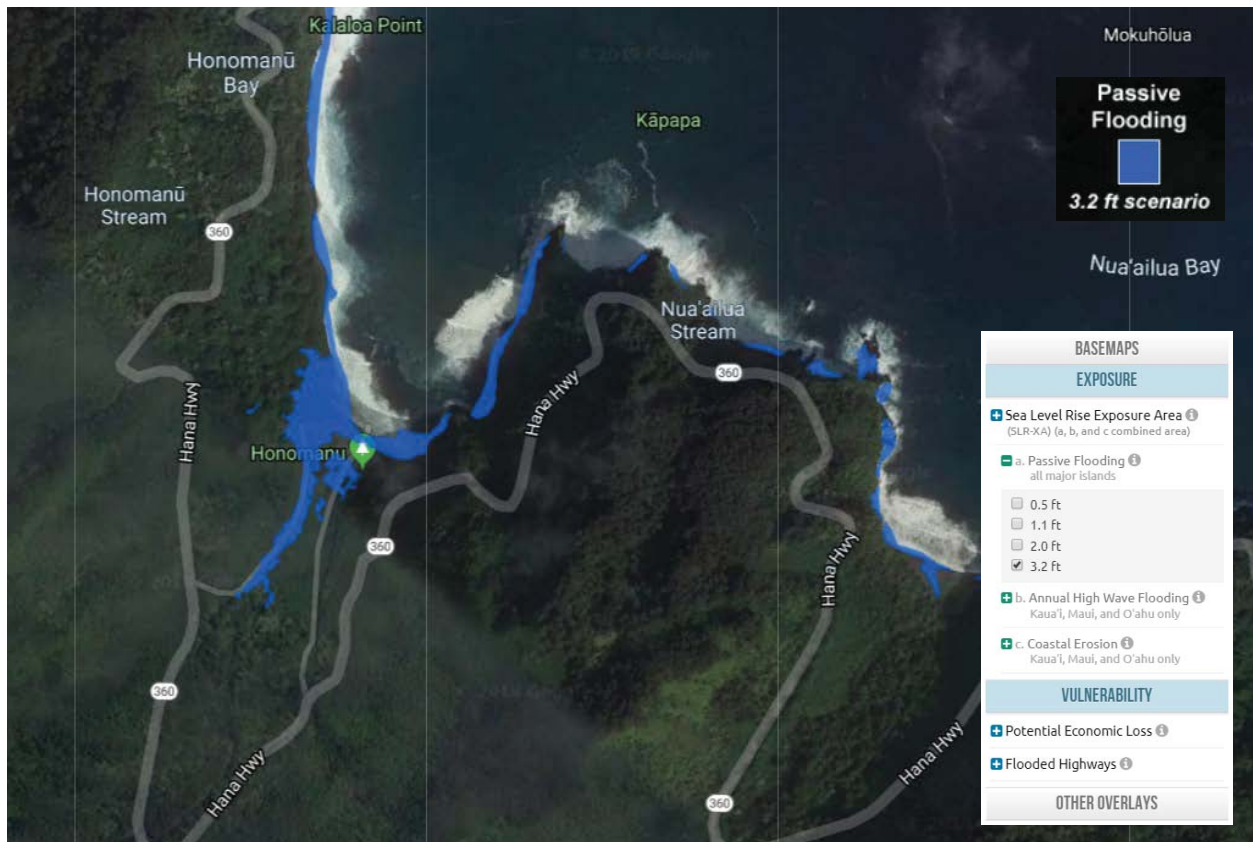


Figure 4-22. PacIOOS +3.2 ft sea level rise passive flooding projection Honomanu Stream

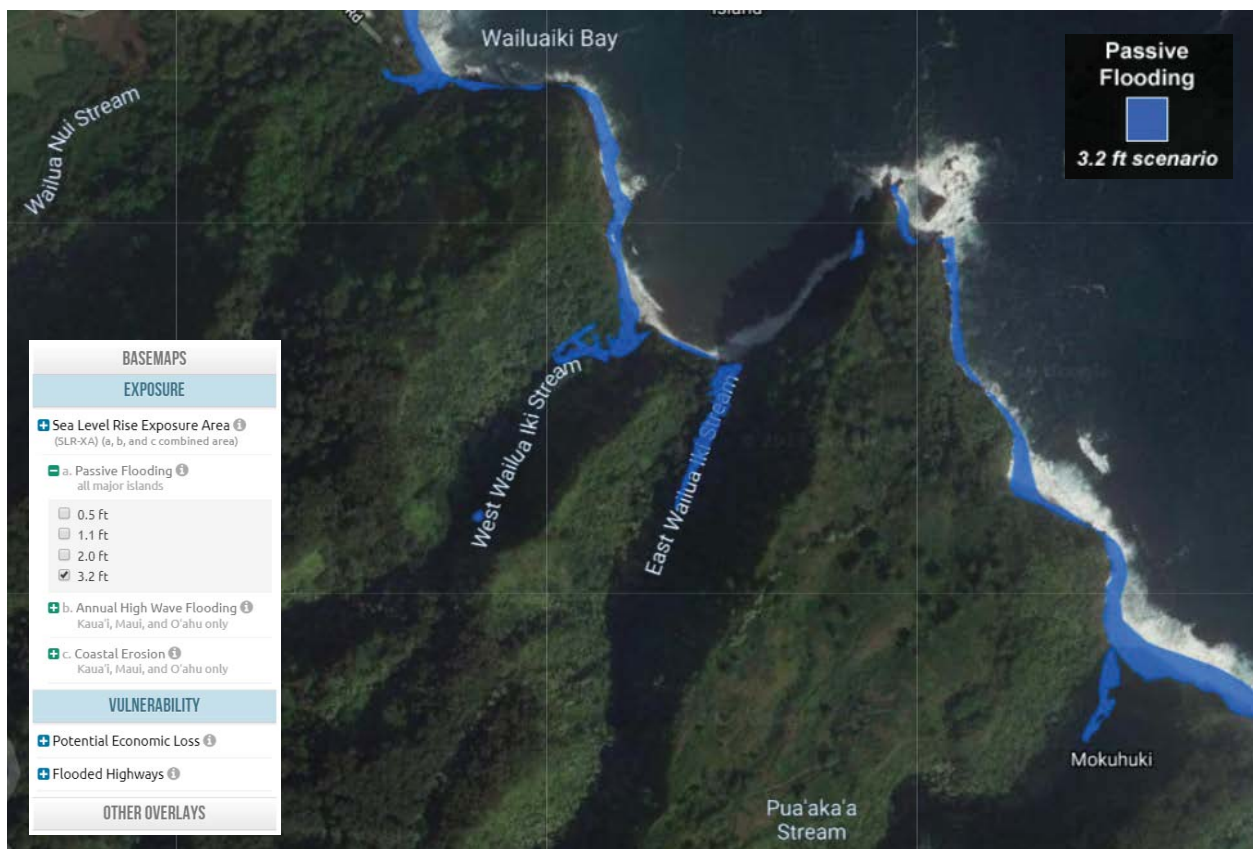


Figure 4-23. PacIOOS +3.2 ft sea level rise passive flooding projection East and West Wailua Iki streams

Sea Engineering, Inc. & Marine Research Consultants, Inc provided map that depicts sea level rise within portions of East Maui.

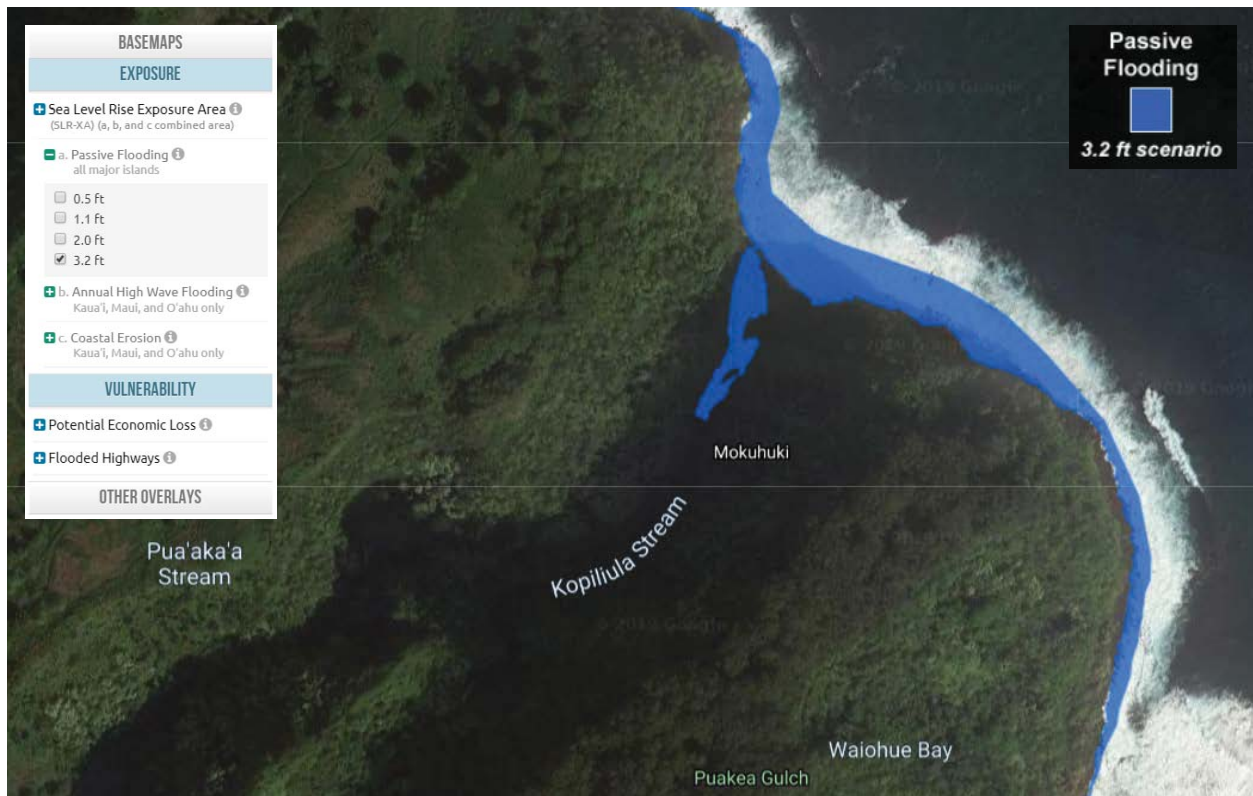


Figure 4-24. PacIOOS +3.2 ft sea level rise passive flooding projection Kopiliula Stream

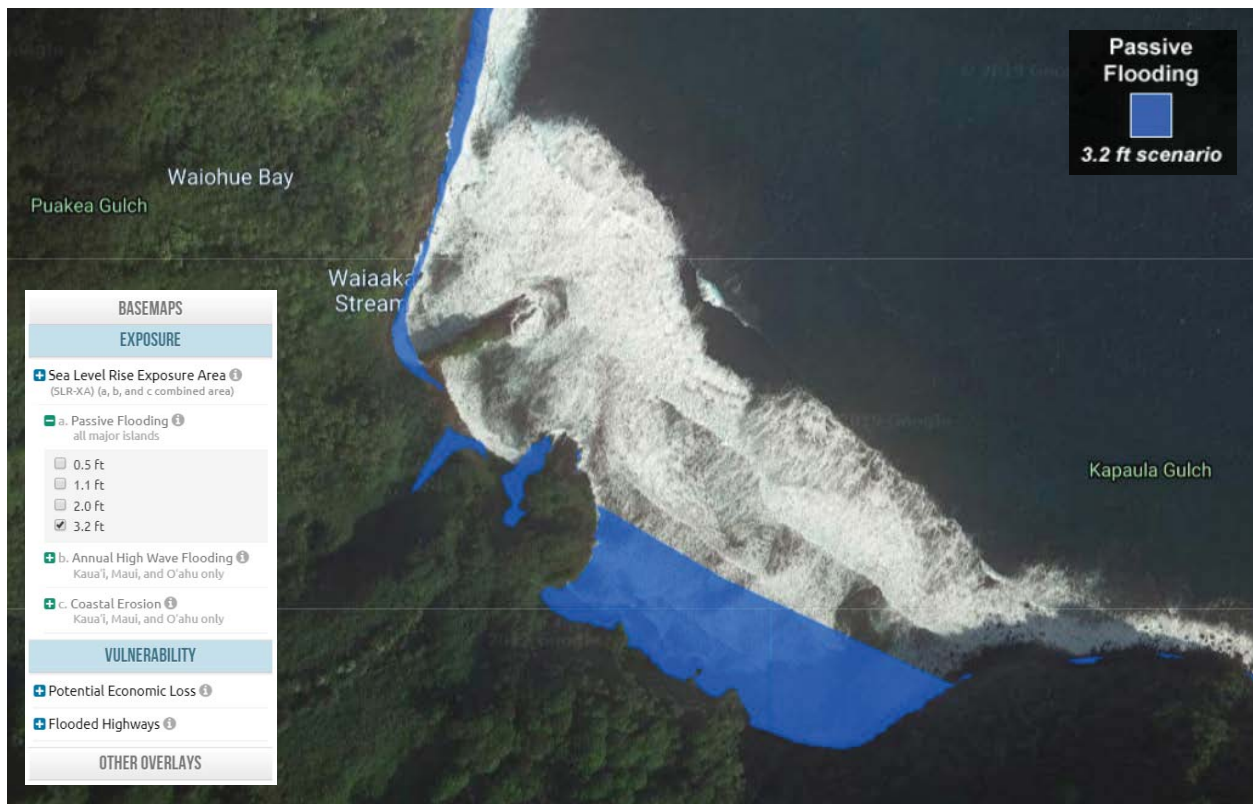
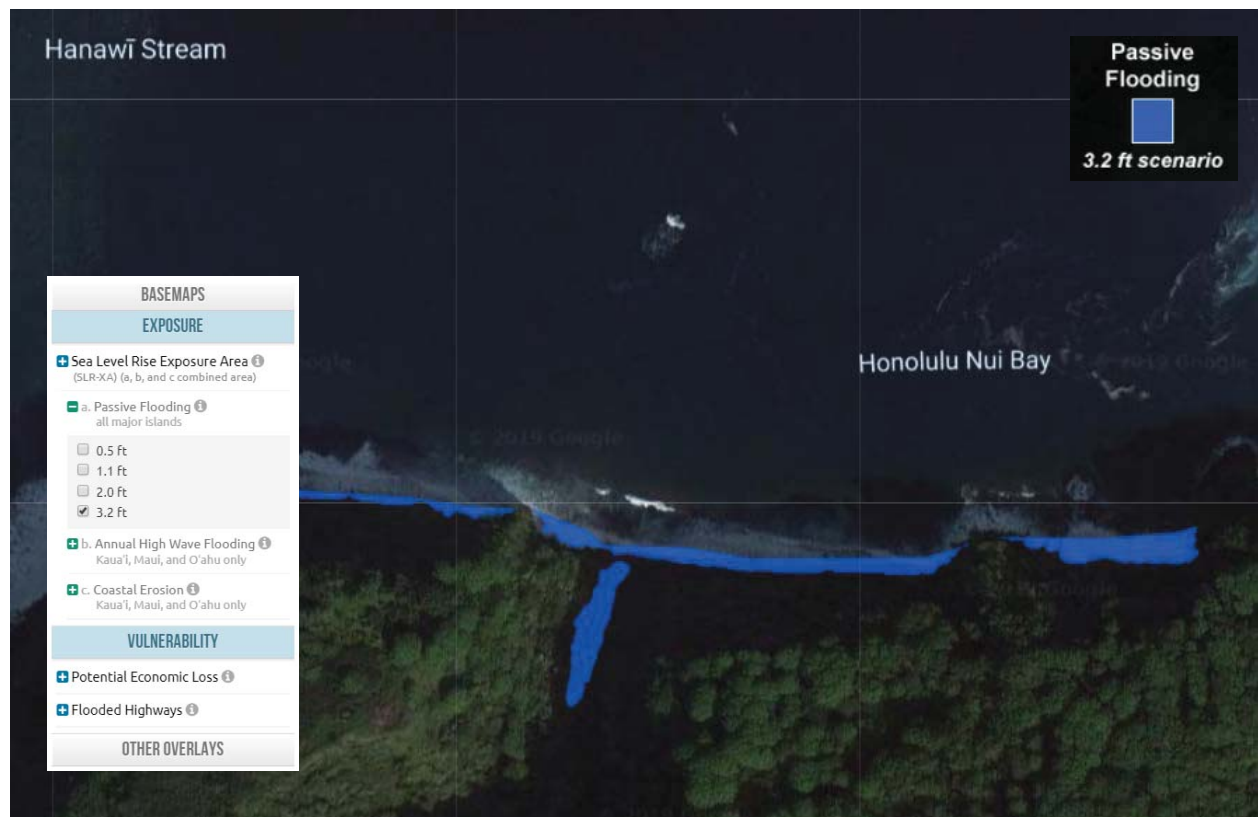


Figure 4-25. PacIOOS +3.2 ft sea level rise passive flooding projection Waiaaka Stream

Sea Engineering, Inc. & Marine Research Consultants, Inc provided map that depicts sea level rise within portions of East Maui.





**Figure 4-26. PacIOOS +3.2 ft sea level rise passive flooding projection Hanawi Stream**

Sea Engineering, Inc. & Marine Research Consultants, Inc provided map that depicts sea level rise within portions of East Maui.

static, will typically result in the coastal landform rising up and moving landward, as the makai portions of the active profile are eroded to provide the volume required to elevate the entire landform. Storm and seasonally high waves provide the energy required to reshape the landform, carrying sediment higher on the profile.

Rising seas will likely result in the deltaic beaches, bars, and storm berms at the East Maui streams to rise in elevation, while also migrating landward. Storm and seasonal waves, which are typically depth limited by their interaction with the seafloor near the stream mouths, will also likely increase in size and possibly frequency as sea level rises and climate changes. Storm and seasonal wave inundation will migrate inland with the dynamic landforms. The predicted increase in frequency of heavier rain events and flooding may counter the landward migration of these features to some degree, as additional sediment is provided to the deltaic features during flood events. The net change to the License Area stream mouths, beaches, bars, and storm berms, resulting from the estimated +3.2 ft of sea level rise is expected to be a landward regression of the landforms combined with an increase in elevation (SE & MRC, 2019).

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts from sea level rise in East Maui are anticipated as a result of the Proposed Action.

#### **Upcountry Maui**

Upcountry Maui is roughly located between the 1,000 to 4,000 foot elevation and is bounded in the west by the agricultural fields in Central Maui and extends out to Kēōkea in the South. There are no coastal waters located within the Upcountry Maui area. The service area for the MDWS Upcountry Maui Water System, however, extends to the coast at the community of Ha'ikū. But, the system itself does not extend to the shoreline so it will not be directly impacted by sea level rise.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant sea level rise impacts in Upcountry Maui are anticipated.

### **Central Maui**

The PacIOOS viewer shows areas predicted to be passively flooded by a sea level rise of +3.2 ft (See Figure 4-27). This sea level equates to the 2085 *Intermediate* rate sea level prediction by the 2017 NOAA report. Passive flooding assumes there are no changes to the existing surface of the land and sea floor, and elevated water levels are projected across existing elevations. The blue areas indicate existing dry land that would become submerged under +3.2 ft of sea level rise. The agricultural fields in Central Maui appear to not be impacted by sea level rise.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts from sea level rise in Central Maui are anticipated.

### **4.3.3 Flood and Tsunami Hazard**

Floods are caused by heavy rainfall associated with tropical rain storms. In Hawai'i, streams originate in steep mountains and flow relatively quickly to the ocean, often triggering flash floods in coastal areas. Coastal plains and stream flood plains in the vicinity of the License Area are susceptible to flooding, which can be exacerbated where development impedes or prevents infiltration of the water into the ground.

Tsunami are a series of very long waves triggered by a water-displacing disturbance of the seafloor, either resulting from an earthquake, volcanic eruption, or underwater landslide. These waves travel rapidly and can cause significant damage to coastal areas. Tsunami have such enormous energy that waves can reach far inland with great force.

### **East Maui**

According to the FEMA Flood Insurance Rate Maps (FIRM), the License Area is predominantly designated as Zone "X", "Areas determined to be outside the 0.2% annual chance floodplain." (See Figure 4-28) A number of adjacent parcels along the makai edge of the License Area lie in areas designated as Zone "A", "Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies." However, flooding in East Maui generally caused by freshets.

According the Tsunami Evacuation Zone maps for Maui, the entire License Area is outside of the tsunami evacuation zones (See Figure 4-29). There are area below the Ke'anae and Honomanū portions of the License Area that are within the tsunami evacuation and extreme tsunami evacuation zone.

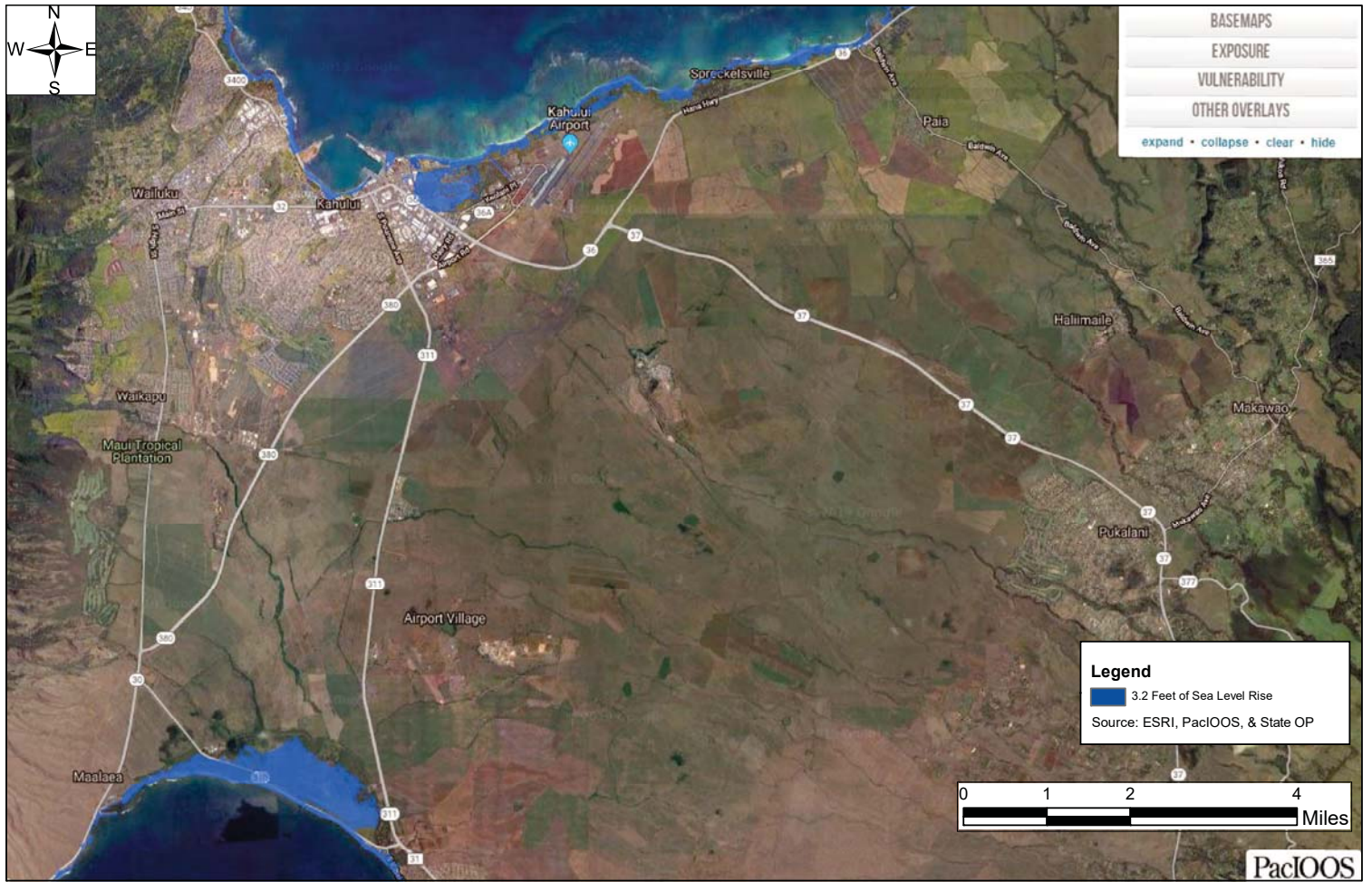


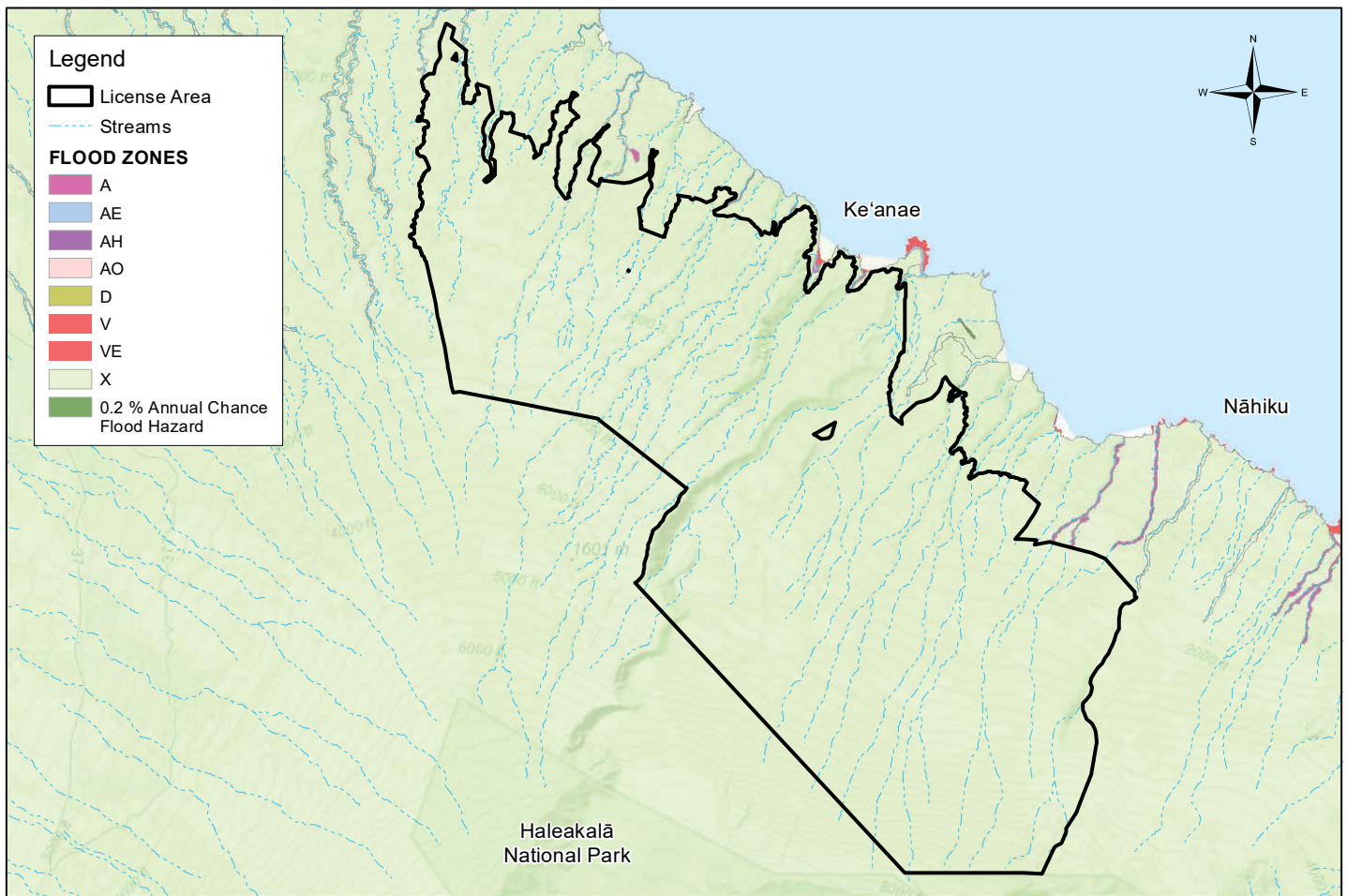
FIGURE 4-27

## CENTRAL MAUI 3.2 FEET OF SEA LEVEL RISE MAP

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS







1 inch = 11,000 feet  
Source: ESRI, State OP, & Akinaka

FIGURE 4-28

## EAST MAUI FLOOD INSURANCE RATE MAP

*Proposed Lease for Nāhiku, Ke'anae, Honomanū and Huelo License Areas*



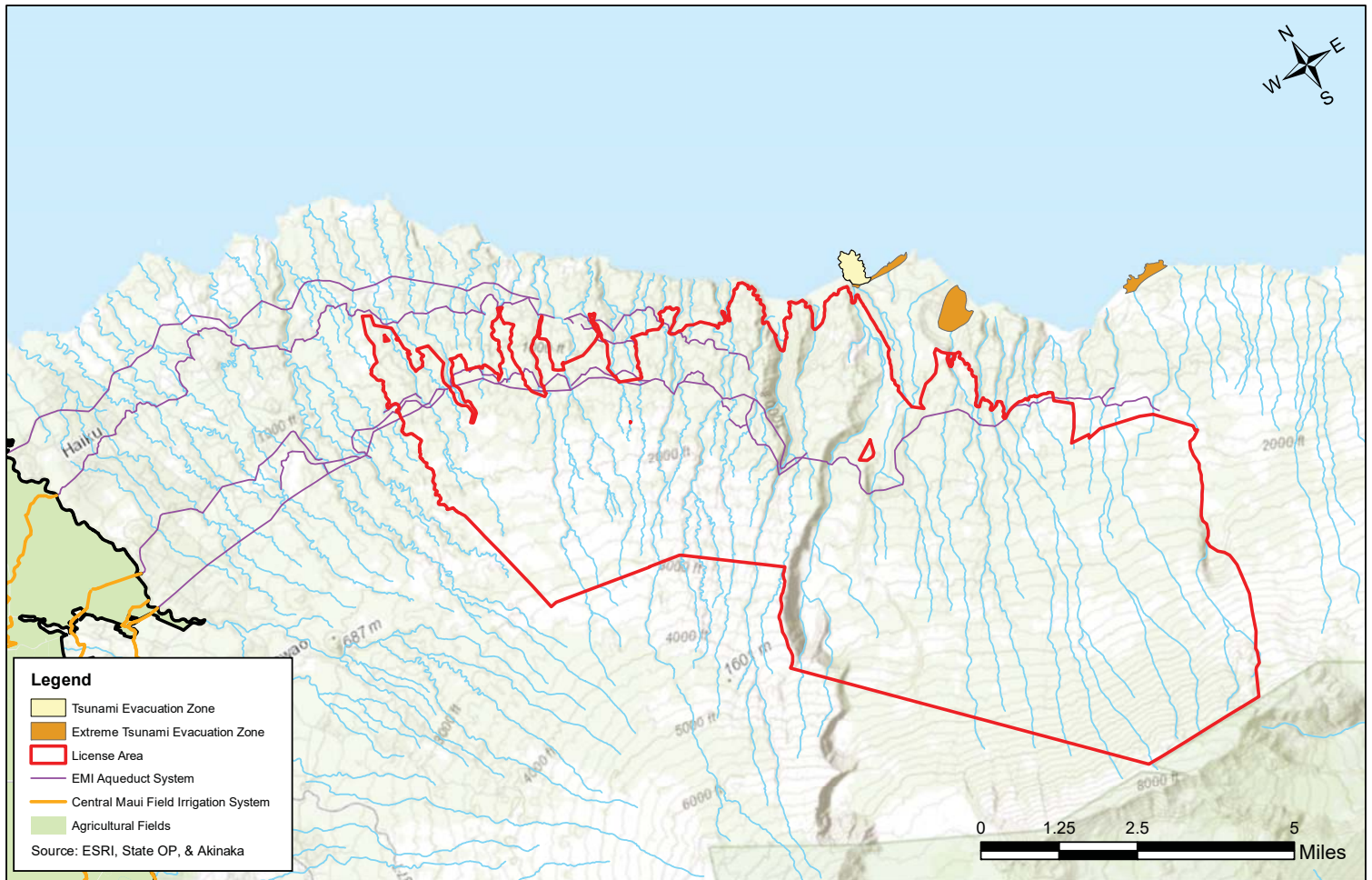


FIGURE 4-29

## EAST MAUI TSUNAMI EVACUATION MAP

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on flooding or tsunami in East Maui are anticipated.

### **Upcountry Maui**

According to the FEMA FIRM, Upcountry Maui is predominantly designated as Zone "X", "Areas determined to be outside the 0.2% annual chance floodplain." (See Figure 4-30). Moreover, according the Tsunami Evacuation Zone maps for Maui, Upcountry Maui is entirely outside of the tsunami evacuation zones (See Figure 4-31). A small portion of Maliko Bay within the MDWS Upcountry Maui Water System service area lies within the Tsunami Evacuation Zone.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on flooding or tsunami in Upcountry Maui are anticipated.

### **Central Maui**

According to the FEMA FIRM, Central Maui is predominantly designated as Zone "X", "Areas determined to be outside the 0.2% annual chance floodplain." (See Figure 4-32) A number of adjacent parcels along the makai edge of Central Maui lie in areas designated as Zone "AE", "Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies," and Zone "VE", "Areas subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action."

According the Tsunami Evacuation Zone maps for Maui, the majority of the agricultural fields in Central Maui are outside of the tsunami evacuation zone. However, there are portions of the agricultural fields in the vicinity of Kihei, Pā'ia and Kahului that are within the tsunami evacuation zone (See Figure 4-33).

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for

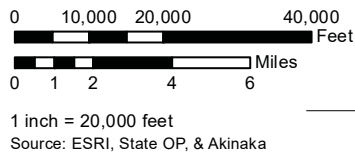
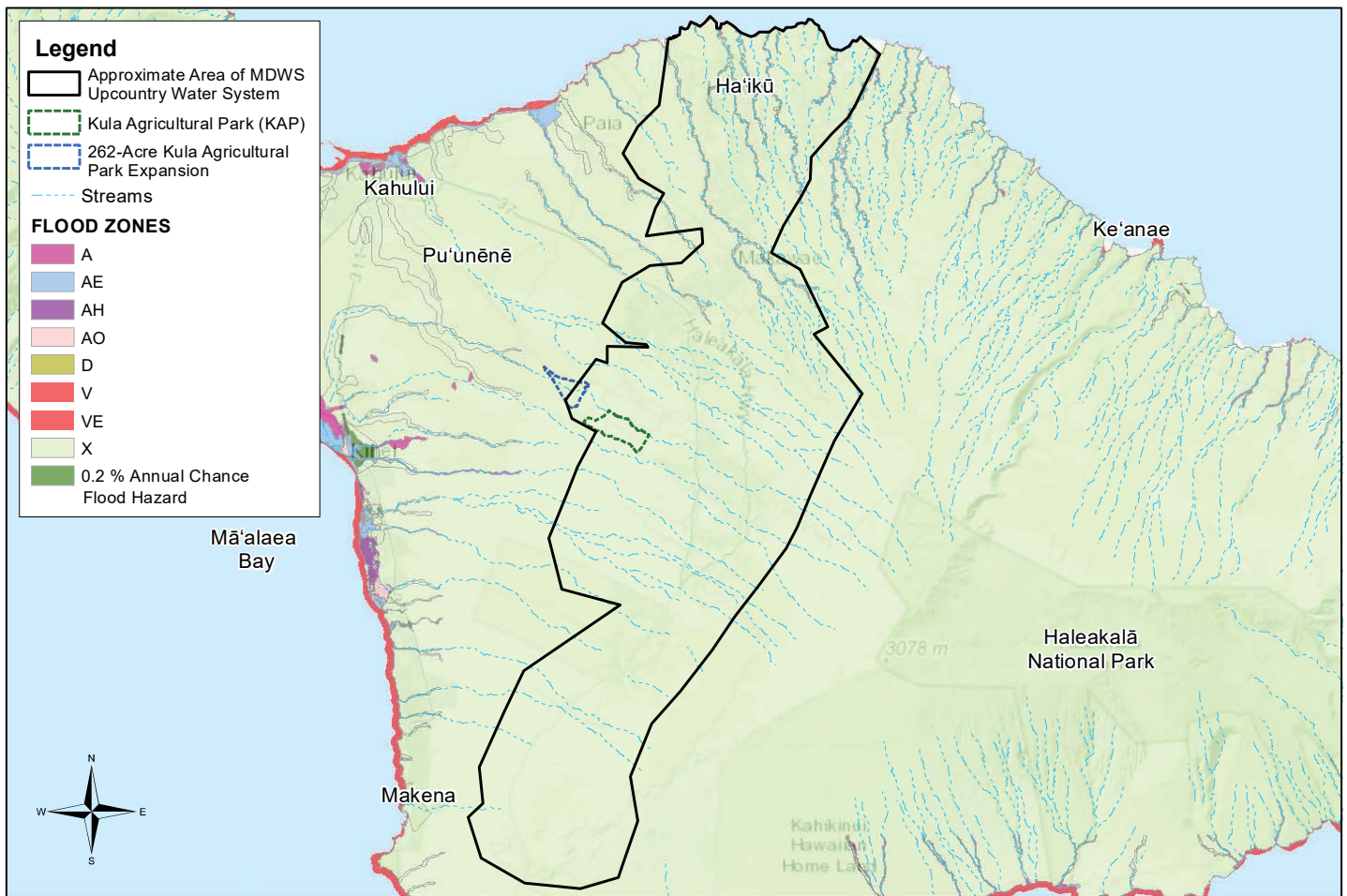


FIGURE 4-30

**UPCOUNTRY MAUI FLOOD INSURANCE RATE MAP**

*Proposed Lease for Nāhiku, Ke'anae, Honomanū and Huelo License Areas*

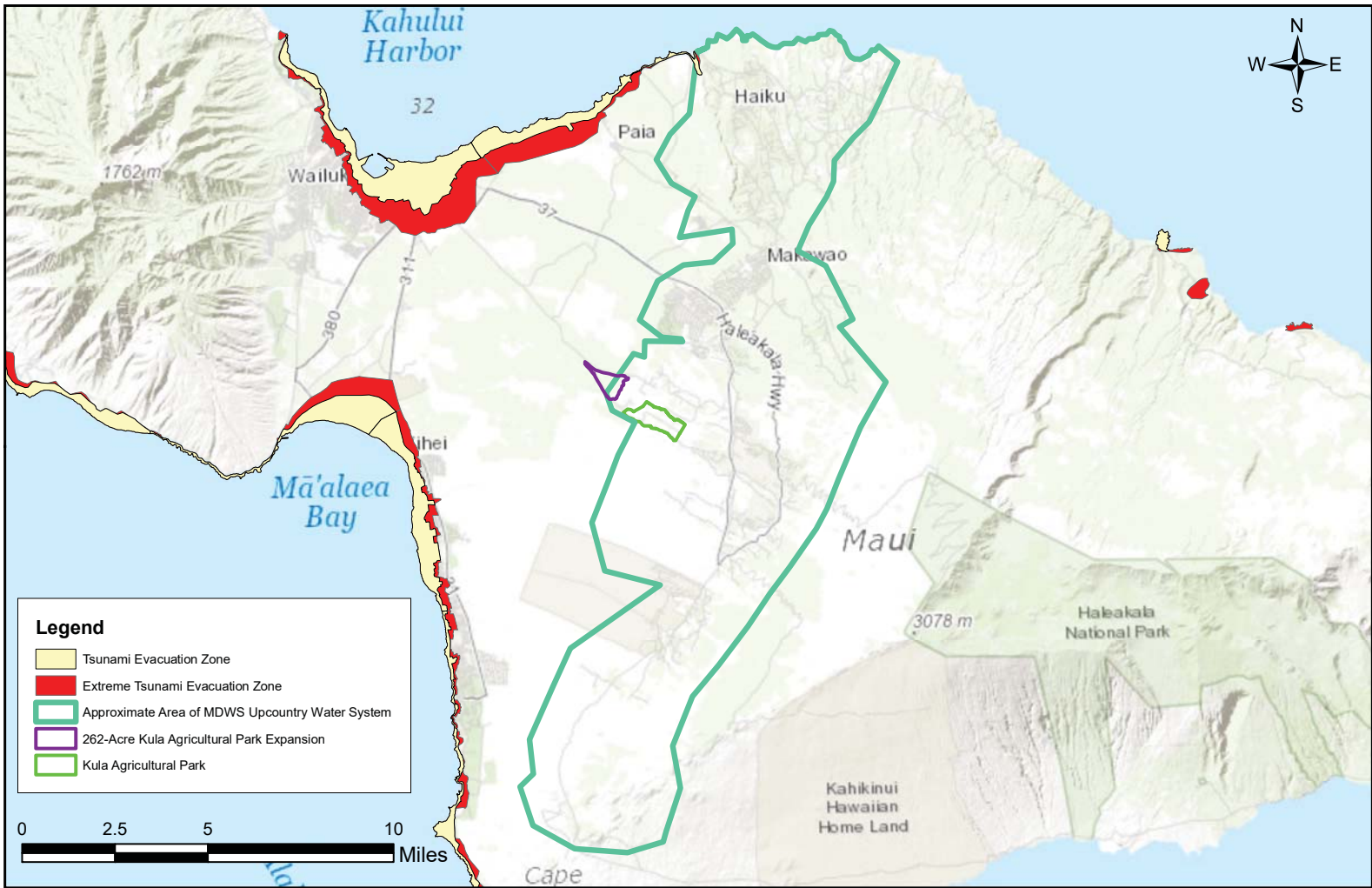


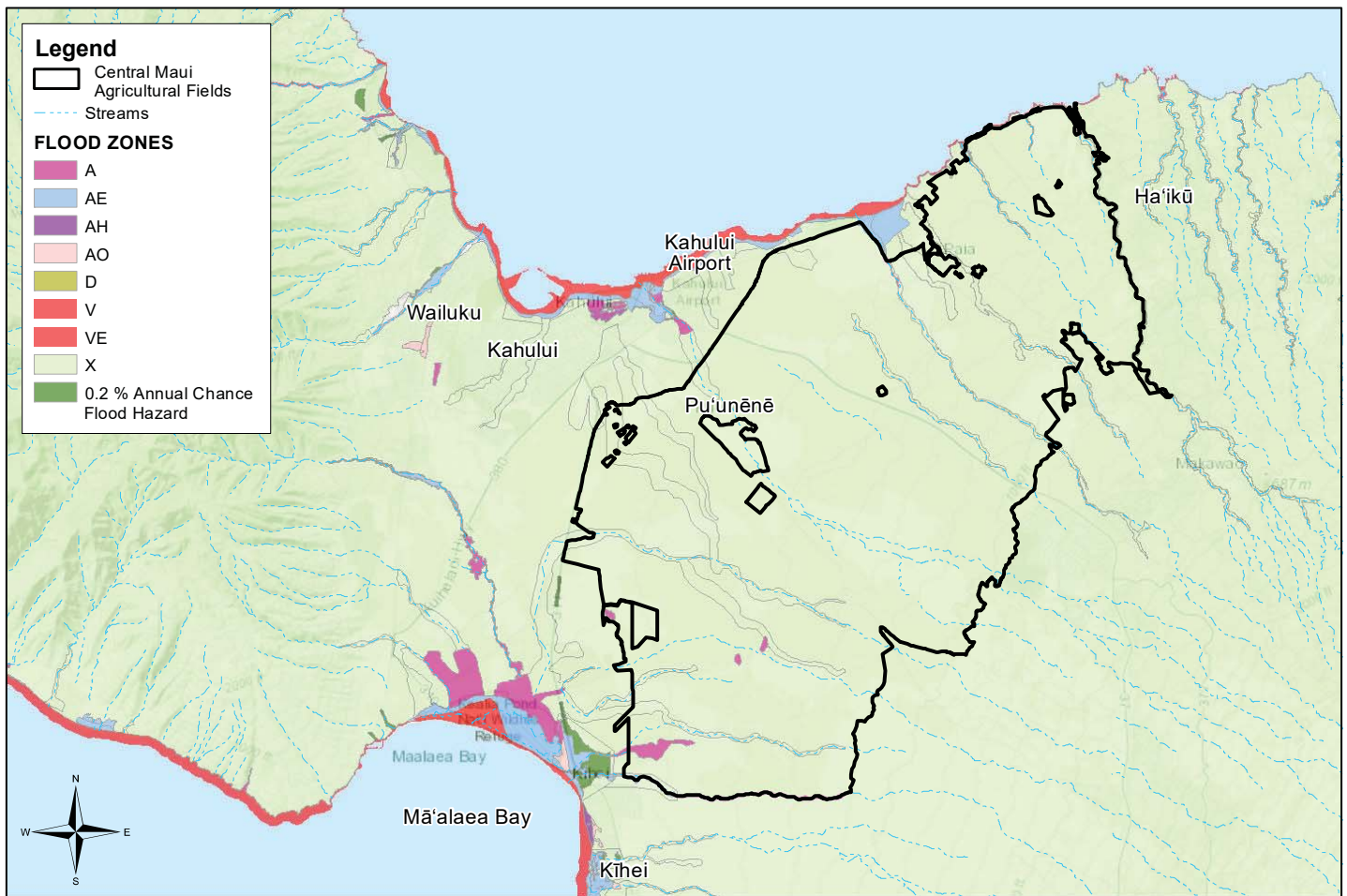
FIGURE 4-31

## UPCOUNTRY MAUI TSUNAMI EVACUATION MAP

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS







0 5,000 10,000 20,000 Feet  
 0 0.5 1 2 3 Miles  
 1 inch = 12,500 feet  
 Source: ESRI, State OP, & Akinaka

FIGURE 4-32

## CENTRAL MAUI FLOOD INSURANCE RATE MAP

*Proposed Lease for Nāhiku, Ke'anae, Honomanū and Huelo License Areas*



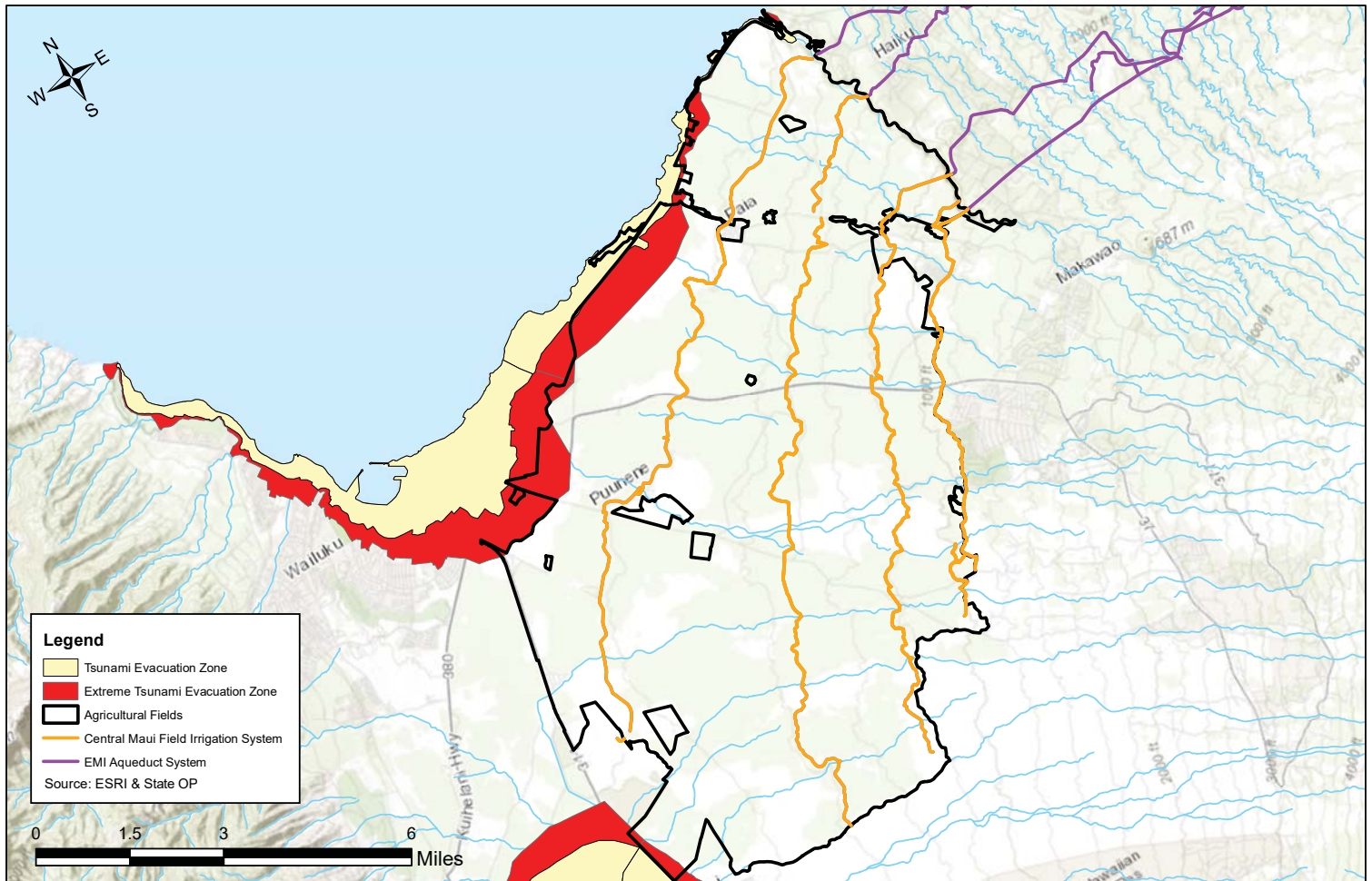


FIGURE 4-33

## CENTRAL MAUI TSUNAMI EVACUATION MAP

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on flooding or tsunami in Central Maui are anticipated.

#### **4.3.4 Hurricanes and Wind Hazard**

The island of Maui is exposed to hurricanes as result of its unique, varied topographic features and orientation. According to the *State of Hawai'i Hazard Mitigation Plan* (2018), eight hurricanes have affected the Hawaiian Islands and 12 others have posed a threat, since 1950.

About 90% of the deaths that occur along coastlines as a result of hurricanes are caused not by wind, but by storm surge. Storm surge flooding is water that is pushed up onto otherwise dry land by onshore winds. Friction between the water and the moving air creates drag that, depending upon the distance of water (fetch) and velocity of the wind, can pile water up to depths greater than 20 feet (6.1 m) from the shoreline inland. The storm surge is the most dangerous part of a hurricane as pounding waves create very hazardous flood currents. Worst-case scenarios occur when the storm surge occurs concurrently with high tide.

As a hurricane nears land, the surge of water, topped by battering waves, can move ashore along an area of the coastline into low lying coastal areas. Stream flooding is much worse inland during the storm surge because of backwater effects. Due to differences in atmospheric pressure, tidal stage, coastal topography, and location relative to the eye of the hurricane it is difficult to predict how hurricane-induced storm surge may impact a specific location.

Not all of identified hurricane and strong wind storm threats make landfall in Hawai'i, and actual hurricane strikes in Hawai'i are relatively rare in modern record. More commonly, near misses that generate large swell and moderately high winds causing varying degrees of damage are the hallmark of hurricanes passing close to the islands.

A tropical storm's strong winds and intense low pressure can generate storm surge along coastal communities. While not all tropical storms will have devastating impacts or create significant levels of storm surge, the surge index record shows a significant positive trend between warmer years and extreme events. Surge levels will vary because of situational factors, and projected changes in hurricane surge levels above the mean sea level in Hawai'i are more likely to increase than decrease with global warming (i.e., results range from a 10 percent reduction to 50 percent increase with a 2.8 degree Celsius temperature increase). In addition, Hawai'i is expected to see an additional increase from warmer temperatures, as the storm track may shift north toward the Central North Pacific. Warming ocean waters raise sea level through thermal expansion and have the potential to strengthen the most powerful tropical cyclones.

#### **East Maui**

##### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action

continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts from hurricanes and wind hazards are expected. The EMI Aqueduct System has been in place for nearly 100 years and has withstood wind impacts.

### **Upcountry Maui**

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. The Proposed Action does not include any construction in Upcountry Maui that would be at risk in the event of hurricanes and wind hazards.

### **Central Maui**

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. In Central Maui the Proposed Action largely entails diversified agriculture, which will not present a risk in the event of hurricanes or wind hazards. Construction related to the Mahi Pono farm plan (e.g. solar farm, agricultural processing facilities) is limited, and will be built to all appropriate standards to address risks related to hurricanes and wind hazards.

#### **4.3.5 Seismic Hazard**

Earthquakes in the Hawaiian Islands are associated with volcanic eruptions or tectonic movements. Volcanic hazards in the area are considered minimal due to the extinct status of former volcanoes.

Seismic hazards are those related to ground shaking. Landslides, ground cracks, rock falls and tsunamis are all seismic hazards. Engineers and other professionals have created a system of classifying seismic hazards on the basis of the expected strength of ground shaking and the probability of the shaking actually occurring within a specified time. The results are included in the Uniform Building Code (UBC) seismic provisions.

The UBC seismic provisions contain six seismic zones, ranging from 0 (no chance of severe ground shaking) to 4 (10% chance of severe shaking in a 50-year interval). The entire County of Maui is located within Zone 2B.

Volcanic hazards are not a concern on the island of Maui due to the dormant status of Haleakalā. In Hawaiʻi most earthquakes are linked to volcanic activity, unlike other areas where a shift in tectonic plates is the cause of an earthquake. Each year, thousands of earthquakes occur in Hawaiʻi, the vast majority of them so small they are detectable only with highly sensitive instruments. However, moderate and disastrous earthquakes have also occurred.

The 1938 Maui Earthquake, with a magnitude of 6.7-6.9 on the Richter scale and an epicenter six (6) miles north of Maui, created landslides and forced the closure of the road to Hāna.

Damaged water pipes and ground fractures also were reported in Lāhainā. More recently, on October 16, 2006, a 6.7 magnitude earthquake struck on the underwater segment of the major rift zone of the Hualalai volcano on the northwest side of the Island of Hawaiʻi. The earthquake caused rockslides and some damage to roadways on Maui.

### **East Maui, Upcountry Maui, and Central Maui**

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation, and the continued conveyance of water to the MDWS. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. For Upcountry Maui, the Proposed Action does not entail any new construction, and therefore maintains status quo with respect to seismic hazards. In Central Maui, the 30,000 acres of fields will be used for farming, as it has been for over a century, and the Proposed Action is not anticipated to present any new risks with respect to seismic hazards.

## **4.4 Natural Environment**

### **4.4.1 Flora**

A terrestrial flora and fauna biological survey was prepared by SWCA Environmental Consultants (SWCA) in 2019 included as Appendix C. Flora and fauna surveys were conducted by a combination of ground (automotive and pedestrian) and aerial (helicopter) surveys to determine whether vegetation types and species previously listed in past surveys and mapping efforts are still present within the License Area and the agricultural fields in Central Maui. The flora and fauna surveys were conducted from November 28, 2017, to December 1, 2017 (ground surveys) and on January 5, 2018 (aerial survey). Below is a summary of the report pertaining to the East Maui and Central Maui regions.

### **East Maui**

The License Area encompasses a major portion of the Ko'olau Forest Reserve. A transect of the forested region from Pōhaku Palaha at the upper boundary of the License Area at the 8,105 foot elevation to the Hāna Highway near Kailua would identify the following plant communities: high elevation grassland; mesic native shrubs; mesic 'ōhi'a forest; wet 'ōhi'a forest with native shrubs; tree ferns and matted ferns; wet sedge-rush-native shrubs with scattered ohia and other native trees; and mesic exotic trees with scattered planted stands of eucalyptus and paper bark (DLNR, 1986). The steeper valley slopes within the region are dominated by wet habitat matted ferns as well as native and exotic shrubs and scattered 'ōhi'a. Koa-'ōhi'a forests are found in two widely separated, mid-elevation locales, one above Honopou Stream, and the other adjacent to Hanawī Stream. A 7,500 acre portion of the Nāhiku License Area is part of the State of Hawai'i Natural Area Reserve System. This area does not encompass any portion of the EMI Aqueduct System. The U.S. Fish and Wildlife Service (USFWS) has identified 21 endangered or threatened plants with final designated Critical Habitat within or near the vicinity of the License Area (See Figure 4-34). None of these species were observed during ground or aerial surveys; however, it is very likely, given the size and range of vegetation cover types that occur in the License Area, that many of these species could or do exist in the area, particularly in higher elevations on steep cliffs and gulches inaccessible to grazing ungulates were observed during the field surveys.

The 18 species with designated critical habitat that fall within the License Area are: *Bidens campylotheca* spp. *waihoiensis* (ko'oko'olau, ko'olau, Endangered); *Clermontia samuelii* ('ōhā wai, 'ōhā, hāhā, Endangered); *Cyanea asplenifolia*, *Cyanea copelandii* spp. *haleakalaensis*, *Cyanea hamatiflora* spp. *hamatiflora*, *Cyanea kunthiana*, *Cyanea maritae*, *Cyanea mceldowneyi* (hāhā, Endangered); *Melicope balloui*, *Melicope ovalis* (alani, Alani kuahiwi, Endangered); *Huperzia mannii* (no Hawaiian name, Endangered) *Cyanea duvalliorum*, *Phyllostegia pilosa* (no Hawaiian name, Endangered); *Melicope balloui* (alani, alani kuahiwi, Endangered); *Cyanea horrida*, *Geranium hanaense*, *Geranium multiflorum* (nohoanu, hinahina, Endangered); *Wikstroemia villosa* ('ākia, kauhi, Endangered)

SWCA's survey found that the License Area comprises primarily open and closed 'ōhi'a (*Metrosideros polymorpha*) forest. This type of vegetation accounts for over 60% of the vegetation in the surveyed areas of East Maui. Open 'ōhi'a forests tended to have native species such as 'ōhi'a, pāpala kēpau (*Pisonia grandis*), and lapalapa (*Cheirodendron trigynum*) co-dominating with invasive species such as African tulip tree (*Spathodea campanulata*) and Formosa koa (*Acacia confusa*). The midstory was often a co-dominant mixture of native and non-native as well, with natives such as hāpu'u fern (*Cibotium* sp.) and koa (*Acacia koa*) blending with invasive species such as shoebutton ardisia, mule's foot fern (*Angiopteris invecta*), and strawberry guava. The understory frequently consisted of uluhe with a mixture of non-native herbaceous species along the margins, including glorybush (*Tibouchina herbacea*), white ginger (*Hedychium coronarium*), Koster's curse, Spanish needle, and Job's tears.

Non-native (Alien) Forest accounts for 23% of the vegetation in the License Area and includes *Eucalyptus*, *Casuarine*, *Falcataria*, *Araucaria*, *Fraxinus*, *Melaleuca*, *Psidium*, and *Grevillea* spp. Paperbark (*Melaleuca quinquenervia*) and eucalyptus (*Eucalyptus* spp.), likely



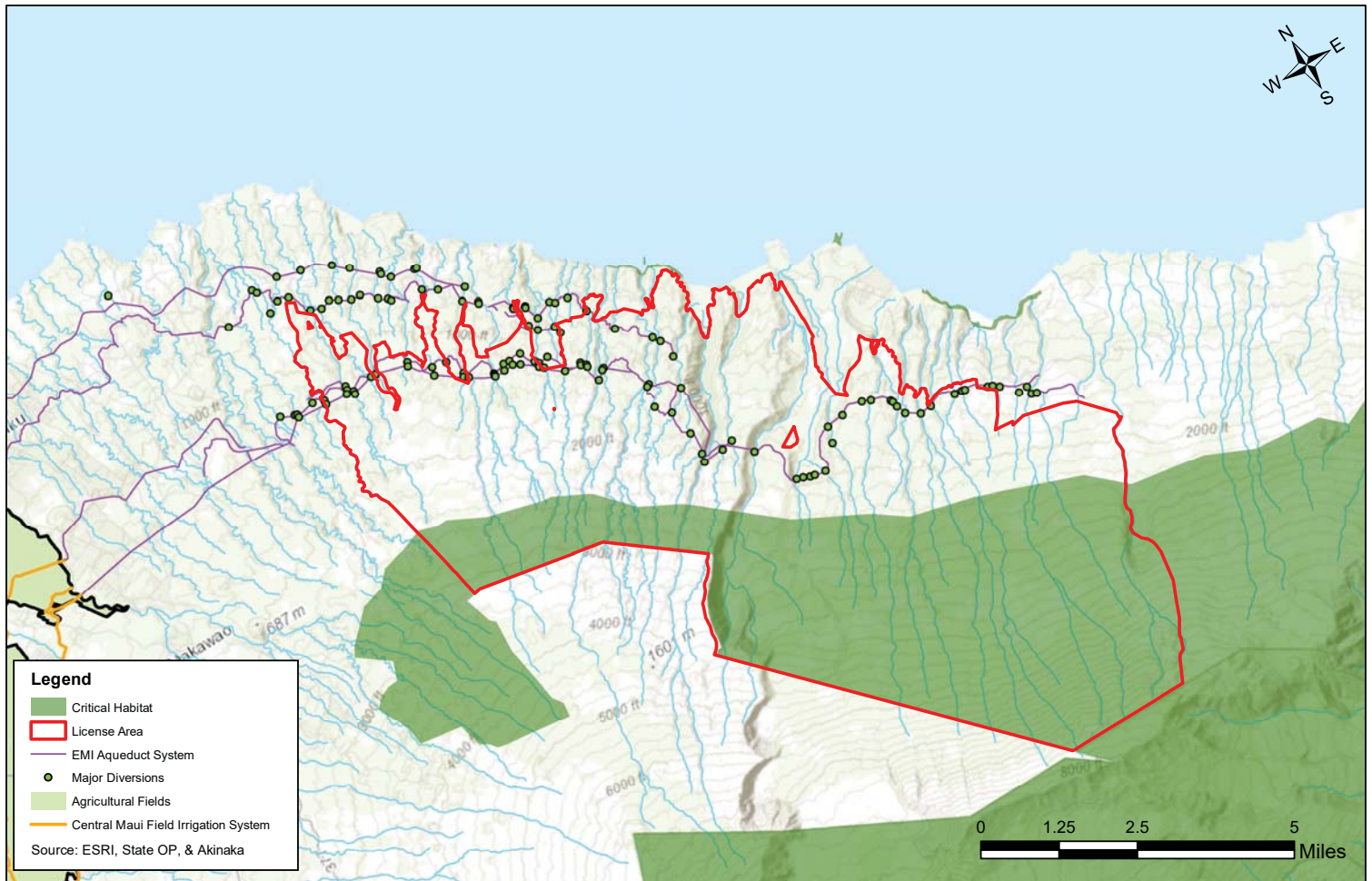


FIGURE 4-34

## CRITICAL HABITAT MAP

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



introduced as forestry species, were found during the ground surveys to be the predominant overstory species in this vegetation type. Shoe button ardisia (*Ardisia elliptica*) and strawberry guava (*Psidium cattleianum*) were common throughout the midstory, and understory species included a variety of non-native grass species such as basket grass (*Oplismenus hirtellus* spp. *Hirtellus*), Job's tears (*Coix lachrymal-jobi*), and bristly foxtail (*Setaria verticillata*), in addition to herbaceous species such as Koster's curse (*Clidemia hirta*), Spanish needle (*Bidens pilosa*), and tick trefoil (*Desmodium triflorum*). 'Ie'ie (*Freycinetia arborea*), a native liana, and laua'e haole (*Phlebodium aureum*), a non-native epiphytic fern, can occasionally be seen twining through the midstory in this vegetation type.

Uluhe-dominated slopes were seen on ground surveys occurring adjacent to 'ōhi'a forest on relatively steep slopes up and downhill from access roads. These areas were characterized by a generally monotypic understory layer of uluhe with the sporadic presence of native shrubs and trees, including 'ōhi'a, pāpala, kēpau, and lapalapa, but also the less commonly seen native species 'ōhā wai nui (*Clermontia arborescens* spp. *waihia*).

Wet cliff areas are less likely to be impacted by feral pigs or human activities due to their steepness, and thus are more likely to contain threatened or endangered plant species. However, no threatened, endangered, or candidate plants were seen in these areas during the ground surveys, but some less-commonly seen species were noted, including a *Cyrtandra* species (likely *Cyrtandra grayi*), and 'ōhā wai nui. Fern species tend to dominate these areas, most notably *Cyclosorus parasiticus*. *Machaerina*, a native sedge, was also frequently seen.

### **Impacts and Mitigation Measures**

In general, no impacts to flora resources in East Maui are anticipated from the Proposed Action. The Proposed Action does not require vegetation removal except for routine maintenance purposes, therefore the amount of each vegetation cover type currently present would remain substantially the same. The Proposed Action allows for the diversion of water by the existing EMI Aqueduct System for water delivery purposes, and this action in and of itself would have no impact on terrestrial flora or fauna resources. However, the presence of the EMI Aqueduct System and associated access roads increases fragmentation in otherwise continuous habitat patches, but because the Proposed Action involves the use of roads and a system that has been in place for over 90 years, no habitat fragmentation is expected from the Proposed Action.

However, to the extent that maintenance activities are undertaken within the License Area in pristine areas, such as on cliffsides, nears waterfalls, or in other native species dominated areas, the following avoidance and minimization measures are recommended:

- A qualified biological monitor should be on site to ensure that no listed or candidate species are impacted.
- The monitor should have familiarity with the plants of the area, including special-status species, familiarity with natural communities of the area, including special-status natural communities, experience conducting floristic field surveys, and experience with analyzing impacts of development on native plant species and natural communities

- To avoid the introduction or transport of new invasive plant species into more pristine portions of the License Area during EMI Aqueduct System maintenance activities, all equipment and vehicles arriving from outside the License Area should be washed and inspected prior to any maintenance activities on cliff sides, near waterfalls, and in other native species-dominated areas in the License Area. Such washing and inspecting should be done at a designated location.
- Construction materials arriving from outside Maui should also be washed and/or visually inspected (as appropriate) for excessive debris, plant materials, and invasive or harmful non-native species (plants, amphibians, reptiles, and insects). When possible, any raw materials used in maintenance activities should be purchased from a local supplier on Maui to avoid introducing non-native species not present on the island. Inspection and cleaning activities should be conducted at a designated location. The inspector must be a qualified botanist/entomologist able to identify invasive species that are of concern relevant to the point of origin of the equipment, vehicle, or material.

### **Upcountry Maui**

The areas in Upcountry Maui that are served by the MDWS using water obtained through the EMI Aqueduct System were not assessed by SWCA. These areas are highly altered urban and agricultural environments maintained by imported water.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on flora in the Upcountry Maui region are anticipated as a result of the Proposed Action.

### **Central Maui**

The vegetation located in Central Maui consists almost exclusively of the Agricultural vegetation type, with Alien Forest and Alien Grassland along the margins and Water features (with hydrophytic vegetation at their margins) spread throughout. No special-status plant species were found during ground surveys of Central Maui.

Agricultural vegetation type makes up 83% of the Central Maui area and consists almost entirely of fallow sugarcane (*Saccharum officinarum*) fields, some with sugarcane remaining and some where the sugarcane had been harvested at the time of SWCA's survey. Corn (*Zea mays*) and Sunn hemp (*Crotalaria juncea*) were also being cultivated in some fields. Weedy plants seen within the fields included castor bean (*Ricinus communis*), Mexican poppy (*Argemone mexicana*), *Sida rhombifolia*, cheeseweed (*Malva parviflora*) and golden crown-beard (*Verbesina encelioides*). The non-native ruderal vines little bell (*Ipomoea triloba*), bitter

melon (*Momordica charantia*), and *Macroptilium atropurpureum* can be seen twining throughout.

Non-native grasses such as swollen fingergrass (*Chloris barbata*), Guinea grass, and pitted beardgrass (*Bothriochloa pertusa*) were found on the margins of most agricultural fields in Central Maui. Mixed in with these grasses was a variety of ruderal herbaceous species, similar to those found within the agricultural fields.

Non-native species of Alien Forest vegetation include *Pittosporum pentandrum*, Koa haole (*Leucaena leucocephala*), Christmas berry (*Schinus terebinthifolius*), and kiawe (*Prosopis pallida*). This suite of species can be found in the Service Area around abandoned buildings, on the margins of fallow fields, and occasionally along ditches and other water features.

Holding ponds and irrigation ditches are found sporadically throughout the agricultural portions of Central Maui and provide habitat for a number of non-native hydrophytic plant species, including sourbush (*Pluchea carolinensis*), primrose willow (*Ludwigia octovalvis*), and California grass (*Urochloa mutica*). Koa haole, *Pittosporum pentandrum*, Christmas berry, Java plum (*Syzygium cumini*), and common ironwood (*Casuarina equisetifolia*) can be found on uphill slopes near these water features, with maunaloa vine (*Canavalia cathartica*) occasionally twining in the under- and mid-story.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. Some beneficial impacts on flora in the Central Maui region are anticipated. Central Maui had been in sugarcane production for many years. Production of a single crop over a large area, such as sugarcane, provides a monoculture environment for flora, leading to population increases of certain, often weedy and generalist, species. Increasing the diversity of crops, as is proposed with the Mahi Pono farm plan, increases the niches in which flora can establish and would therefore be beneficial to some flora because the agricultural lands would provide an increased diversity of foraging, breeding, and nesting resources. In general, increased diversity in croplands could lead to an increased diversity of flora.

#### **4.4.2 Fauna and Invertebrates**

Ground and aerial surveys were done by SWCA between November 2017 and January 2018, as set forth in the Terrestrial Flora and Fauna Technical Report prepared by SWCA (See Appendix C). Fauna surveys consisted of both ground and aerial surveys and consisted of visual observations (aided by 10 × 42–millimeter (mm) binoculars) and auditory vocalization identifications. All birds, mammals, reptiles, amphibians, fish, and invertebrate species seen or heard and any sign (scat or tracks) were noted. In the report, the term fauna, or wildlife, applies to any mammals, birds, reptiles, or amphibians with the potential to occur in the vicinity. Below is a summary of the report.



### **East Maui**

The vast majority of the License Area is in the Forest wildlife habitat type (approximately 29,626 acres), with 2,770 acres in the Shrubland wildlife habitat type, with smaller areas being in the Grassland, Cliff, Rocky, Developed/Agricultural (1 acre), or Stream habitat types.

Introduced mammals observed include cow (*Bos taurus*), feral pig (*Sus scrofa*), and feral cat (*Felis catus*). No other mammals were observed during the ground surveys, although rat (*Rattus* spp.), mongoose (*Herpestes javanicus*), and mouse (*Mus musculus*) could be expected to occur.

No terrestrial reptiles or amphibians are native to Hawai‘i. No terrestrial reptiles or amphibians were detected during the ground surveys.

The birds observed in the License Area are species commonly found in low- to mid-elevation mesic and wet forest areas on the northern slope of Haleakalā Volcano. In all, nine bird species were documented, six of which are protected by the Migratory Bird Treaty Act (MBTA). Of these, three species—‘apapane (*Himatione sanguinea*), Hawai‘i ‘amakihi (*Chlorodrepanis virens wilsoni*), and ‘i‘iwi (*Drepanis coccinea*)—are endemic to Hawai‘i; one is a migratory shorebird and two are non-native introductions. The ‘i‘iwi is the only federally and state-listed bird that was detected during ground surveys and was identified by vocalizations. In addition to ‘i‘iwi, the federally and state-listed Maui parrotbill (*Pseudonestor xanthophrys*) and crested honeycreeper (*Palmeria dolei*) are known to occur in mesic and wet forest above approximately 3,937 feet (1,200 meters [m]).

Twelve invertebrates were observed during the surveys, consisting of the Blackburn’s damselfly (*Megalagrion blackburni*), Hawaiian upland damselfly (*Megalagrion hawaiiense*), citrus swallowtail butterfly (*Papilio xuthus*), Monarch butterfly (*Danaus plexippus*), housefly (*Musca domestica*), smaller lantana butterfly (*Strymon bazochii*), mud dauber (*Sceliphron caementarium*), wandering glider (*Pantala flavescens*), green darner (*Anax junius*), Aedes mosquito (*Aedes* sp.), walking stick (*Sipyloidea sipylos*), and witch moth (*Ascalapha odorata*). All these invertebrates are common in East Maui.

In total, the species observed in the License Area, and the species that the USFWS lists as potentially occurring, and their status, are listed in Table 4-5.

**Table 4-5 East Maui Special Status Species**

| Species   | Status   | Observed / Potential for Occurrence |
|---|--|-------------------------------------|
| <b>Birds</b>  |  |                                     |
| ‘Apapane ( <i>Himatione sanguinea</i> )                   | Endemic<br>Protected under MBTA                                  | Observed in the License Area        |
| Hawai‘i ‘amakihi ( <i>Chlorodrepanis virens wilsoni</i> ) | Endemic<br>Protected under MBTA                                  | Observed in the License Area        |
| Chestnut munia ( <i>Lonchura atricapilla</i> )            | Non native   | Observed in the License Area        |
| ‘i‘iwi ( <i>Drepanis coccinea</i> )                       | Federally threatened<br>State threatened<br>Protected under MBTA | Observed in the License Area        |



|   |                                    |                                     |
|---|------------------------------------|-------------------------------------|
| Japanese white-eye ( <i>Zosterops japonicas</i> )                 | Non native                         | Observed in the License Area        |
| Melodious laughing thrush ( <i>Garrulax canorus</i> )             | Non native                         | Observed in the License Area        |
| House finch ( <i>Haemorhous mexicanus</i> )                       | Non native<br>Protected under MBTA | Observed in the License Area        |
| Northern cardinal ( <i>Cardinalis cardinalis</i> )                | Non native<br>Protected under MBTA | Observed in the License Area        |
| Pacific golden-plover ( <i>Pluvialis fulva</i> )                  | Migrant<br>Protected under MBTA    | Observed in the License Area        |
| Crested honeycreeper ( <i>Palmeria dolei</i> )                    | Endangered                         | Known to occur in the License Area. |
| Mauī parrotbill ( <i>Pseudonestor xanthophrys</i> )               | Endangered                         | Known to occur in the License Area. |
| Hawaiian duck ( <i>Anas wyvilliana</i> )                          | Endangered                         | May occur in License Area           |
| Hawaiian goose or nēnē ( <i>Branta sandvicensis</i> )             | Endangered                         | Known to occur in License Area      |
| Hawaiian petrel ( <i>Pterodroma sandwichensis</i> )               | Endangered                         | May occur in License Area           |
| Newell's shearwater ( <i>Puffinus auricularis newelli</i> )       | Threatened                         | May occur in License Area           |
| Band-rumped storm petrel ( <i>Oceanodroma castro</i> )            | Proposed endangered                | May occur in License Area           |
| <b>Mammals</b>  |                                    |                                     |
| Hawaiian hoary bat ( <i>Lasiurus cinereus semotus</i> )           | Endangered                         | Likely to occur in License Area     |
| <b>Reptiles</b>   |                                    |                                     |
| Green sea turtle ( <i>Chelonia mydas</i> )                        | Threatened                         | Unlikely to occur In License Area   |
| Hawksbill sea turtle ( <i>Eretmochelys imbricata</i> )            | Endangered                         | Unlikely to occur In License Area   |
| <b>Invertebrates</b>  |                                    |                                     |
| Flying earwig Hawaiian damselfly ( <i>Megalagrion nesiotis</i> )  | Endangered                         | Known to occur in License Area      |
| Orangeblack Hawaiian damselfly ( <i>Megalagrion xanthomelas</i> ) | Endangered                         | May occur in License Area           |
| Pacific Hawaiian damselfly ( <i>Megalagrion pacificum</i> )       | Endangered                         | Known to occur in License Area      |
| Yellow-faced bee ( <i>Hylaeus anthracinus</i> )                   | Endangered                         | Unlikely to occur in License Area   |

|   |            |                                   |
|---|------------|-----------------------------------|
| Yellow-faced bee ( <i>H. assimulans</i> ) | Endangered | Unlikely to occur in License Area |
| Yellow-faced bee ( <i>H. longiceps</i> )  | Endangered | Unlikely to occur in License Area |

### **Impacts and Mitigation Measures**

The Proposed Action is not anticipated to impact fauna or invertebrate species in the License Area. No activities other than some degree of maintenance of the EMI Aqueduct System or access roads, is planned for the area, and it is anticipated that maintenance activities would only take place sporadically. Therefore, while the presence of vehicles and humans for maintenance activities could disrupt the normal behavior of wildlife and temporarily displace individuals from roadside habitat, due to the very occasional maintenance activities, it is expected that wildlife would resume normal behavior shortly after the passage of the vehicle or completion of the maintenance activity. The Proposed Action would not increase human noise and activity above current levels. The presence of human noise and activity would have a negligible effect on wildlife in the East Maui License Area.

Nevertheless, to minimize potential impacts to fauna, the following measures should be implemented:

- Regular on-site staff should be trained to identify special-status species with the potential to occur on-site and should know the appropriate measures to be taken if they are present.
- If a downed tree must be removed from a road, trail, or other passageway, it will be inspected for the presence of active bird nests, specifically the nest of an MBTA-protected species that may have been present prior to the tree falling. If an active nest is found, it should be protected in place until the chicks fledge.
- If tree trimming occurs in the 'i'iwi, Maui parrotbill and crested honeycreeper range (as defined in Section 5.2.5) from November to June, a qualified biologist should survey the trees for active nests of these species.
- If a Hawaiian goose is observed in the area during construction activities, all activities within 100 feet (30 m) of the species should cease, and work should not continue until the species leaves the area on its own accord.
- If a Hawaiian goose nest is discovered, all activities within 150 feet (46 m) of the nest should cease, and the USFWS should be contacted. Work should not resume until directed by the USFWS.
- If tree removal occurs during the bat breeding season (June 1 to September 15), direct impacts could occur to juvenile bats that are too small to fly but too large to

be carried by a parent. To minimize this impact, no trees taller than 15 feet (4.6 m) should be trimmed or removed between June 1 and September 15.

- The use of barbless top-strand wire is recommended for all fence construction to avoid entanglement of Hawaiian hoary bat.
- A qualified biologist should work closely with the USFWS and monitor Endangered Species Act-listed damselflies to ensure activities do not have a negative impact.

#### INVERTEBRATES

No significant, direct, adverse impacts to invertebrate species (flying earwig Hawaiian damselfly, Pacific Hawaiian damselfly, and orange black Hawaiian damselfly (collectively Hawaiian damselflies)) are anticipated within the License Area under the Proposed Action. The Proposed Action involves use of surface water in compliance with the CWRM D&O. Under the CWRM D&O, habitat for Hawaiian damselflies would increase in 19 streams and decrease in three streams. An anticipated indirect effect, however, is that the restoration of flows in those streams will also improve habitat conditions for a number of introduced predator and competitor species of the Hawaiian damselflies, and therefore the population of Hawaiian damselflies may not increase under the Proposed Action (or any alternative that involves an increases in stream flows as required under the CWRM D&O).

Under the Proposed Action, habitat for the southern house mosquito (*Culex quinquefasciatus* [mosquito]) should decrease overall because increased streamflow will reduce standing water that provides breeding habitat for the species. A reduction in mosquito habitat is expected to be beneficial to the Hawaiian honeycreeper (*Passeriformes drepanididae*) because of a reduction in the likelihood, abundance, and potential for transmission of avian malaria, which is a vector-borne disease.

Nevertheless, to minimize potential impacts to invertebrate species, the following measures should be implemented:

- A survey for potential larval host plants for Blackburn's sphinx moth (particularly tree tobacco) should be conducted by biologists before construction/vegetation clearing. Results of the survey should be provided to the USFWS.
- If host plants are found, surveys for Blackburn's sphinx moth should be performed according to the most recent USFWS guidance, and preferably during the wet season (January to April), roughly 4 to 8 weeks following a significant rainfall event. Results of the survey should be provided to the USFWS. Any necessary follow-up actions should be coordinated with the USFWS.
- A qualified biologist should work closely with the USFWS and monitor Endangered Species Act-listed damselflies to ensure activities do not have a negative impact.

#### Upcountry Maui

The areas in Upcountry Maui that are served by the MDWS using water obtained through the EMI Aqueduct System were not assessed in the biological report by SWCA. These areas are

highly altered urban and agricultural environments and the Proposed Action would continue the ability for MDWS to receive surface water from the EMI Aqueduct System.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on fauna and invertebrate species in Upcountry Maui are anticipated.

### **Central Maui**

The birds observed in Central Maui are species commonly found in disturbed, low-elevation areas. 24 birds were documented, 13 of which are protected by the MBTA, three of which are also federally and state listed, two are endemic; two are migrant waterfowl; one is a migrant shorebird; one is an indigenous waterbird, and four are non-native introductions.

Mammals detected in Central Maui during the surveys include feral pig (*Sus scrofa*), and feral cat (*Felis catus*). No other mammals were observed during the ground surveys, although rat (*Rattus* spp.), mongoose (*Herpestes javanicus*), and mouse (*Mus musculus*) could be expected to occur.

Twelve invertebrates were observed during the surveys, consisting of the Blackburn's damselfly (*Megalagrion blackburni*), citrus swallowtail butterfly (*Papilio xuthus*), Monarch butterfly (*Danaus plexippus*), housefly (*Musca domestica*), smaller lantana butterfly (*Strymon bazochii*), mud dauber (*Sceliphron caementarium*), wandering glider (*Pantala flavescens*), green darner (*Anax junius*), Aedes mosquito (*Aedes* sp.), walking stick (*Sipyloidea sipylos*), and witch moth (*Ascalapha odorata*). All these invertebrates are common in Central Maui.

In total, the species observed in Central Maui, or that the USFWS lists as potentially occurring, is provided in Table 4-6.

**Table 4-6 Central Maui Special Status Species**

| Species   | Status                             | Observed / Potential for Occurrence |
|---|------------------------------------|-------------------------------------|
| <b>Birds</b>                                    |                                    |                                     |
| Black-crowned night-heron ( <i>Nycticorax</i> ) | Indigenous<br>Protected under MBTA | Observed in Central Maui            |
| Cattle egret ( <i>Bubulcus ibis</i> )           | Non native<br>Protected under MBTA | Observed in Central Maui            |
| Chestnut munia ( <i>Lonchura atricapilla</i> )  | Non native                         | Observed in Central Maui            |
| Chicken ( <i>Gallus domesticus</i> )            | Non native                         | Observed in Central Maui            |
| Common myna ( <i>Acridotheres tristis</i> )     | Non native                         | Observed in Central Maui            |

|   |  |  |
|---|--|--|
| Green-winged teal ( <i>Anas crecca</i> )                    | Migrant<br>Protected under MBTA        | Observed in Central Maui   |
| Grey francolin ( <i>Francolinus pondicerianus</i> )         | Non native                             | Observed in Central Maui   |
| Japanese white-eye ( <i>Zosterops japonicas</i> )           | Non native                             | Observed in Central Maui   |
| Mallard ( <i>Anas platyrhynchos</i> )                       | Migrant<br>Protected under MBTA        | Observed in Central Maui   |
| Mourning dove ( <i>Zenaida macroura</i> )                   | Non native<br>Protected under the MBTA | Observed in Central Maui   |
| Hawaiian coot ( <i>Fulica alai</i> )                        | Endangered<br>Protected under MBTA     | Observed in Central Maui   |
| Hawaiian stilt ( <i>Himantopus mexicanus knudseni</i> )     | Endangered<br>Protected under MBTA     | Observed in Central Maui   |
| House finch ( <i>Haemorhous mexicanus</i> )                 | Non native<br>Protected under MBTA     | Observed in Central Maui   |
| House sparrow ( <i>Passer domesticus</i> )                  | Non native                             | Observed in Central Maui   |
| Java sparrow ( <i>Lonchura oryzivora</i> )                  | Non native                             | Observed in Central Maui   |
| Pacific golden-plover ( <i>Pluvialis fulva</i> )            | Migrant                                | Observed in Central Maui   |
| Red-crested cardinal ( <i>Paroaria coronate</i> )           | Non native                             | Observed in Central Maui   |
| Spotted dove ( <i>Streptopelia chinensis</i> )              | Non native                             | Observed in Central Maui   |
| Zebra dove ( <i>Geopelia striata</i> )                      | Non native                             | Observed in Central Maui   |
| Hawaiian duck ( <i>Anas wyvilliana</i> )                    | Endangered                             | May occur in Central Maui  |
| Hawaiian goose or nēnē ( <i>Branta sandvicensis</i> )       | Endangered                             | Known to occur in Central Maui   |
| Hawaiian petrel ( <i>Pterodroma sandwichensis</i> )         | Endangered                             | May fly over Central Maui at night. Not likely to land or nest in Central Maui |
| Newell's shearwater ( <i>Puffinus auricularis newelli</i> ) | Threatened                             | May fly over Central Maui at night. Not likely to land or nest in Central Maui |
| Band-rumped storm petrel ( <i>Oceanodroma castro</i> )      | Proposed endangered                    | May fly over Central Maui at night. Not likely to land or nest in Central Maui |
| <b>Mammals</b>  |  |  |
| Hawaiian hoary bat ( <i>Lasiurus cinereus semotus</i> )     | Endangered                             | Likely to occur in Central Maui  |
| <b>Reptiles</b>   |  |  |



|  |            |                           |
|--|------------|---------------------------|
| Green sea turtle ( <i>Chelonia mydas</i> )             | Threatened | Not likely to occur       |
| Hawksbill sea turtle ( <i>Eretmochelys imbricata</i> ) | Endangered | Not likely to occur       |
| <b>Invertebrates</b>                                   |            |                           |
| Blackburn's sphinx moth ( <i>Manduca blackburni</i> )  | Endangered | May occur in Central Maui |
| Yellow-faced bee ( <i>Hylaeus anthracinus</i> )        | Endangered | Not likely to occur       |
| Yellow-faced bee ( <i>H. assimulans</i> )              | Endangered | Not likely to occur       |
| Yellow-faced bee ( <i>H. longiceps</i> )               | Endangered | Not likely to occur       |

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on fauna in the region are anticipated.

However, associated with the Proposed Action is the use of the surface water to supply the agricultural fields in Central Maui. For over a century the Central Maui fields largely produced a single crop (sugarcane) over a large area, providing a monoculture environment for flora and fauna, leading to population increases of certain, often weedy and generalist, species. Increasing the diversity of crops increases the niches in which fauna can establish and would be beneficial to some fauna because the agricultural lands would provide an increased diversity of foraging, breeding, and nesting resources. In general, increased diversity in croplands could lead to an increased diversity of and fauna (SWCA, 2019).

The extent of "development" that could impact fauna resources within Central Maui under the Proposed Action is largely limited to the planting of new crops and other farming activities. Under the Proposed Action, the Mahi Pono farm plan would require converting former sugarcane lands to about 15,950 acres of cropland, 4,700 acres of irrigated pasture, and 9,100 acres of unirrigated pasture. The conversion would require removing remaining sugarcane plants, adding amendments to enrich the soil, planting windbreaks around fields, modifying field irrigation systems, installing fencing, and planting crops. The farm plan also requires an estimated 319,000 square feet of building space related to its agricultural operations such as washing and packing areas, storage, and related uses accessory to agriculture. In addition, 37.5 mW solar farm within approximately 250 acres is planned.

- Regular on-site staff should be trained to identify special-status species with the potential to occur on-site and should know the appropriate measures to be taken if they are present.
- If a downed tree must be removed from a road, trail, or other passageway, it will be inspected for the presence of active bird nests, specifically the nest of an MBTA-protected species that may have been present prior to the tree falling. If an active nest is found, it should be protected in place until the chicks fledge.
- If a Hawaiian stilt or Hawaiian coot is observed in the area during construction activities, all activities within 100 feet (30 m) of the species should cease, and work should not continue until the species leaves the area on its own accord.
- If a Hawaiian goose nest is discovered, all activities within 150 feet (46 m) of the nest should cease, and the USFWS should be contacted. Work should not resume until directed by the USFWS.
- If felling of standing trees occurs during the bat breeding season, direct impacts could occur to juvenile bats that are too small to fly but too large to be carried by a parent. To minimize this impact, no trees taller than 15 feet (4.6 m) should be trimmed or removed between June 1 and September 15.
- The use of barbless top-strand wire is recommended for all fence construction to avoid entanglement of Hawaiian hoary bat.
- A survey for potential larval host plants for Blackburn's sphinx moth (particularly tree tobacco) should be conducted by biologists before construction/vegetation clearing. Results of the survey should be provided to the USFWS. If host plants are found, surveys for Blackburn's sphinx moth should be performed according to the most recent USFWS guidance, and preferably during the wet season (January to April), roughly 4 to 8 weeks following a significant rainfall event. Results of the survey should be provided to the USFWS. Any necessary follow-up actions should be coordinated with the USFWS.

To minimize potential impacts to seabirds, the following measures should be followed:

Construction activity should be restricted to daylight hours as much as practicable during the seabird peak fallout period (September 15 to December 15) to avoid the use of nighttime lighting that could attract seabirds.

- All outdoor lights should be shielded to prevent upward radiation. This has been shown to reduce the potential for seabird attraction. A selection of acceptable, seabird-friendly lights can be found online at the Kauai Seabird Habitat Conservation Program website: <http://www.kauai-seabirdhcp.info/lighting-homes-businesses/>
- Outside lights not needed for security and safety should be turned off from dusk through dawn during the fledgling fallout period (September 15 to December 15).

## **4.5 Historic and Archaeological Resources**

### **East Maui**

An HRS Section 6E-7 and Section 6E-42 historic preservation review letter dated January 25, 2017 (Log No. 2017.00026; Doc. No. 1701GC08) sent from the State Historic Preservation Division (SHPD) to the DLNR Land Division requested that, pursuant to HAR § 13-284-5(b)(5)(A) and (C), an archaeological inventory survey (AIS), as well as an architectural inventory survey, be required prior to the issuance of the Water Lease and that these surveys also be proceeded by inventory plans.

In response to those letters, additional information regarding the proposed Water Lease was provided to the SHPD with the understanding that the proposed Water Lease will not involve any construction or significant ground disturbance within undisturbed areas, and that the potential impact of flooding from the removal or modification of select diversions will not be greater than periodic naturally occurring flooding events due to freshets. A subsequent HRS § 6E-8 historic preservation review letter (Log No. 2017.00026; Doc. No. 1706MBF11) sent from the SHPD to the DLNR Land Division on October 6, 2017 updated the prior correspondence to no longer request the completion of an AIS plan or an AIS in the License Area in conjunction with the proposed Water Lease.

Mason Architects prepared a Historic Structure Assessment (HSA) in support of the EIS (See Appendix D). The objective of the HSA is to make an evaluation, and assist SHPD in making a determination on the potential impact to historic properties. Due to the immense size of the EMI Aqueduct System, the HSA only documents 20 aqueduct features, which includes 19 stream diversions that collect water, and one ditch water throw-out get that discharges water out of the ditch system. Within these features, there were also 31 individual sluice gates documented during the field survey.

The EMI Aqueduct System is comprised of approximately, 388 separate intakes, 24 miles of ditches, 50 miles of tunnels, various flumes, weirs, aqueducts, small dams, and stream diversion intakes. The aqueduct system was developed by Samuel T. Alexander and Henry P. Baldwin beginning in 1876, and started operating in 1878 with 17 miles of open ditch, transporting water to four plantations in Central Maui. The ditch continued to expand in the late 1800s into what it is currently, however, the ditch system has not significantly expanded since 1923.

Mason Architects documented 20 EMI Aqueduct System features during their May 2018 field survey and 31 sluice gate examples. Of these features, 19 were stream diversions, the most common of which (i.e. 14 of the 19 stream diversions surveyed) was "Type A Stream Diversion." The "Type A Stream Diversion" operates by using a dam across the stream bed equipped with a sluice gate to impound water. When the sluice gate is closed, water is impounded behind the dam, such that it can flow out of the impounded pool, and into the ditch system through the intake. When the sluice gate is open, water is able to flow through the dam and is not impounded to a level to reach the intake for the ditch system. A variation (Type A Variation Stream Diversion) of this feature was also documented in Mason Architects field study. This diversion operates with a stilling wall that separates the impounded pool from the intake. When the sluice gate is closed, water will flow overtop the stilling wall and into the intake of the ditch system. Some of the stilling walls have perforations to allow for water to flow

through the walls as well. Another variation is a sluice gate at the intake, and when the sluice gate is open, water can flow through the intake into the ditch system.

“Type B Stream Diversion”, accounted for three (3) out of the 19 stream diversion features. “Type B Stream Diversion” operates by using a weir across the stream bed to impound water to a level that will reach the intake. There are sluice gates at the intake, and when they are open, water is able to flow into the intake into the ditch system. When the sluice gates are closed, water is prevented from entering the intake, and flows over the weir, and continues downstream. There was an instance where the intake channel had an additional throw-out gate for the discharge of excess water that would make its way back into the stream.

“Type C Stream Diversion” accounted for two (2) out of the 19 stream diversion features documented. “Type C Stream Diversion” operates by using a weir across the stream bed to impound water that feeds into the intake. The feature does not have a sluice gate, and always open for water to flow into the intake. The intake channel has a throw-out sluice gate to control how much water is entering the ditch, and when it is open, water returns back to the stream.

Mason Architects also documented a throw-out sluice gate (“Type D Ditch Water Throw-out”) located in the ditch system that would discharge water into a gulch.

During the field survey, there were also various types of sluice gates documented such as ratchet, geared, threaded-shaft, and a board adjusted sluice gates. A sluice gate is a panel of metal, wood boards, or plastic boards that slides vertically in grooves that are set in the sides of the waterway channel. Four types of sluice gates were noted during the field work. Three types use various mechanisms, such as a ratchet, a gear, or a threaded shaft, to move a solid panel vertically in slots set in the channel, and one type is defined by a series of horizontal boards that are slid up and down vertically in slots in the channel. These are explained in more detail in the study (See Appendix D).

The main purpose of this study was to determine the historical significance of the EMI Aqueduct System. It was determined that the system is eligible to be place on the National Register of Historic Places (NRHP) under National Register Criterion A, for its role in supporting the development of the sugar industry on Maui, and Criterion C, as an extensive engineering design that exemplifies the characteristics, technology, and pattern of features common to irrigation ditch systems in Hawai'i. Because of their overall size, large, linear resources such as irrigation ditches like the EMI Aqueduct System are susceptible to cumulative impacts on integrity, such as those brought about by numerous repair modifications. Therefore, the EMI Aqueduct System's integrity was not assessed. However, analysis of the sluice gates, demonstrated that they tend to maintain their historic integrity. For example, they retain their original location in a natural and agricultural setting, and they also retain much of their historic materials (concrete and stone). Their overall original design and workmanship appear intact. Integrity of feeling and association are likewise retained. Some show weathering and corrosion from the wet conditions, while some show minor repairs made.

CSH prepared an archaeological literature review and field inspection (LRFI) report in December 2018 (See Appendix E). The LRFI was designed to determine the likelihood that historic properties (any building, structure, object, district, area, or site over 50 years old) may

be affected by the Proposed Action and, based on findings, consider cultural resource management recommendations.

CSH archaeologists completed a combined pedestrian and vehicular inspection of portions of the License Area between May 15 and May 18 of 2018. Fieldwork also included the inspection of License Area’s access road network by four-wheel drive vehicle followed by the pedestrian inspection of various ditch trails and the locations surrounding 21 sluice gates throughout the EMI Aqueduct System. The inspection was guided by EMI personnel who provided access through locked gates and navigation of the EMI Aqueduct System.

Documentation of the fieldwork included descriptions and photographs of any potential findings as well as descriptions of the natural and built environment observed throughout the License Area. No previous historic properties have been recorded in this area and no potential historic properties, apart from infrastructure related to the EMI Aqueduct System, were observed during the field inspection.

The LRFI also includes traditional background research including a review of place names, legendary accounts, and documentation of pre-Contact land use with Hāmākua Loa Moku and Ko‘olau Moku. Over 150 place names were documented and indicate an abundance of resources in the region and associations with past cultural practices and land use. The background research included a review of previous archaeological studies on file with SHPD; review of documents at Hamilton Library at the University of Hawai‘i, the Hawai‘i State Archives, the Mission Houses Museum Library, the Hawai‘i Public Library, and the Archives of the Bishop Museum; study of historic photographs at the Hawai‘i State Archives and the Archives of the Bishop Museum; study of historic maps at the Survey Office of the DLNR; and study of online historic newspaper databases. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona ‘Aina (2000) database.

The following is a brief discussion and summary of the CSH LRFI report and the archaeology-focused research within the context of the traditional background and history of the License Area in East Maui.

### **Traditional Background of the East Maui Region**

The License Area includes multiple ahupua‘a (land division usually extending from mountain to sea) in the modern judicial districts of Makawao and Hāna, and the traditional moku (district) of Hāmākua Loa and Ko‘olau (See Figure 4-35).

According to Mary Pukui et. al (1974), the literal translation Hāmākua Loa is “very long corner.” Within Hāmākua Loa, there are several place names in the various ahupua‘a that make up the moku that are recorded by Pukui et. al (1974). Majority of the historical and traditional information, however, is related to the adjacent moku of Ko‘olau. A literal translation of Ko‘olau is “windward” (Pukui et. al, 1974). The name Ko‘olau was applied to the districts located on the windward side of many of the Hawaiian Islands.



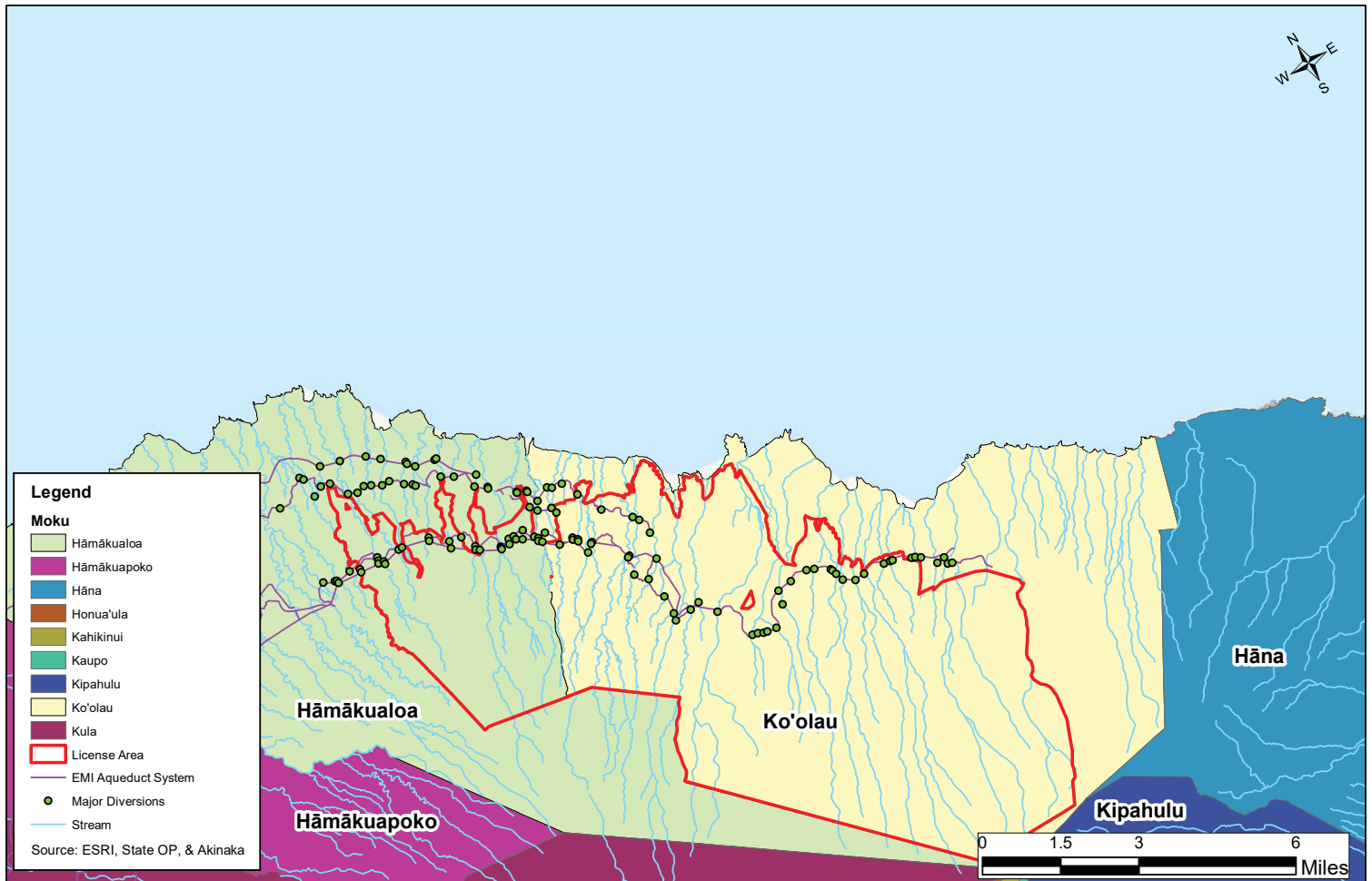


FIGURE 4-35

## TRADITIONAL MOKU MAP

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



Prior to the unification of the Hawaiian archipelago, Maui and Hawai'i were often engaged in warfare and there are storied accounts of the actions of passing armies in their disputes over control of the resources and region of East Maui. Even the neighboring ahupua'a in the region were warring over resources until Kiha-a-pi'ilani united the island with the help of 'Umi-a-līloa from Hawai'i Island.

There are legends of the gods Kāne and Kanaloa visiting the region causing fresh water to spring up, leaving their mark on the area. There is the myth of Kana, who is the son of the goddess Hina, who is said to have resided in East Maui. Kana along with his brother, Niheu, saved their mother Hina from Hā'upu, after she was abducted from Kapepe'ekauila. There is the story of 'Ai'ai receiving his fishing powers from his father, Kū'ula, and setting up new fishing grounds around the Hawaiian Islands, including the East Maui region. The demigod Maui made the Ko'olau region of Maui Island famous as this was the part of the island where Maui chose to ascend to the top of Haleakalā to snare the sun so that his mother Hina could dry her kapa (tapa). Many of the natural resources and natural phenomena, such as the flora and fauna, rain and lighting, were believed to be kinolau (physical manifestations) of gods, goddesses, and nature spirits of Hawaiian antiquity creating unique cultural landscapes. The famous shark god of Ko'olau, Hi'u, is said to reside in a cave near Ke'anae wharf.

Over 150 place names were documented throughout the East Maui region. The place names indicate the intimate relationship that Native Hawaiians had with the natural environment. The place names found throughout East Maui indicate that the lands were widely used for multiple purposes relevant to Native Hawaiian subsistence, habitation, and history. The land bears names associated with agriculture, domestic, and recreational uses of the local streams and pools. Sometimes these place names are references to the actions of historic individuals, and at other times to the deeds of legendary or mythological figure, but often are rich with symbolic associations to the point of encompassing a comprehensive history of a place that can combine all these elements. Tables within CSH's report contain the documented place names of Hāmākua Loa and Ko'olau Moku (See Appendix E).

In the East Maui region, 39 heiau (shrine/ceremonial structure) were recorded by Walker (1931) in the vicinity of the License Area (Walker sites 64-102) (See Figure 4-36). However, only 20 of the 39 were able to be identified by Walker, while the remaining 19 were presumably destroyed by the time Walker surveyed the area. The heiau structure itself was an architectural feature as well as social institution of Hawaiian society, and like many social institutions has served several functions over time. How heiau were used depended largely on the communities they served, the times during which they were actively built and used, and the types of subsistence practiced by the Native Hawaiians who used them. Today, within the modern Makawao District, containing the traditional moku of Hāmākua Loa, 10 heiau were identified. Six of the ten identified structures (Walker Sites 64, 67, 68, 74, 77, and 78) were observed to be largely intact, and generally larger in size compared to those located east towards Hāna. Within the modern district of Hāna, containing the traditional moku of Hāna and Ko'olau, five (5) of the 11 heiau were observed and largely still intact. The most renowned heiau of the 39 in East Maui may be Pi'ilanihale, built by Kiha-a-pi'ilani. The heiau was the tallest in the Hawaiian Islands and built to house the royal Pi'ilani bloodline.

Evidence from the abundance of land divisions, place names, and heiau are suggestive that the period of habitation in East Maui between initial establishment and western contact was

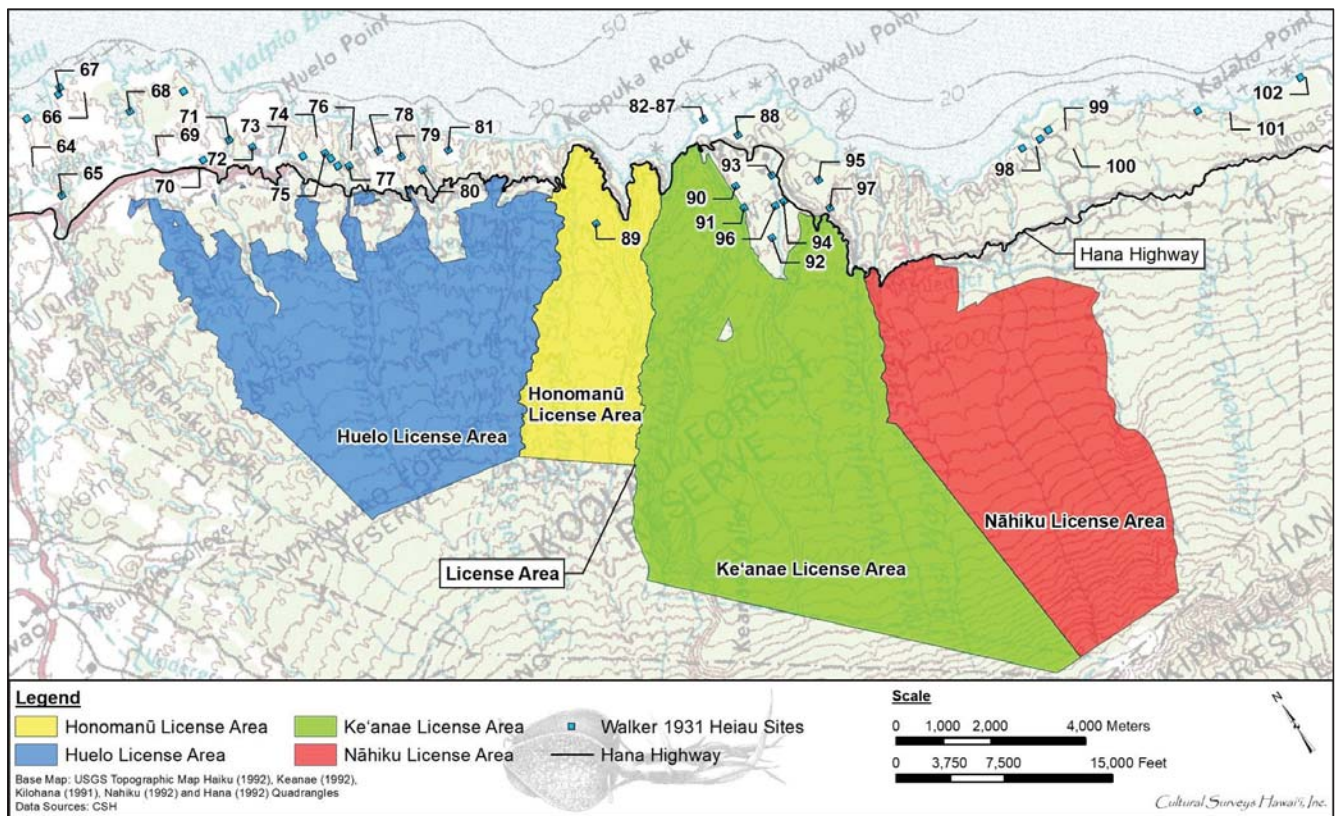


Figure 4-36 Portions of the 1992a Haiku, 1992c Keanae, 1991 Kilohana, 1992d Nāhiku, and 1992b Hana U.S. Geological Survey 7.5-minute topographic quadrangle series showing Walker *heiau* sites 64 through 102 with overlay of project License Areas (U.S. Geological Survey 1991, 1992a, b, c, d)

Cultural Surveys Hawai'i, Inc provided map that depicts Walker's 1931 Heiau Sites in the vicinity and within the License Area.

extensive. Evidence suggests that there were not many taro terraces throughout the region as the geography is not favorable due to the gulches and not many flats. However, where possible, especially in Ke‘anae, taro terraces were cultivated. There is evidence that many of the stream beds were lined with stream taro well into the uplands and dry agriculture was utilized above the coastal area. The East Maui region is extremely fertile, and with an abundance of water resources, it was productive and supported a large population.

### **Post-Contact History of East Maui**

Early historic background research within the report presented a regional perspective of the earliest Western accounts recorded in the East Maui region including Captain James Cook’s brief stop in Hāna in 1778, the arrival of the British ship, the *Iphigenia* at Hāna in 1788, the role of East Maui in the 1790 *Kaua o Kawa‘anui* (Battle of Great Canoes), and the arrival of the first missionaries to East Maui in the early 1800s.

One of the earliest impacts of European contact on the Native Hawaiians was the spread of Old World diseases into island populations. With the arrival of Captain Cook in the late 1770s came the initial introduction of venereal disease and possibly respiratory ailments (Kirch, 2012). The number of rampant diseases was to increase steadily alongside the number of traders, merchants, and visitors arriving from distant shores. Although there is serious debate about the Native Hawaiian population at first contact with Europeans, making an exact figure for the depopulation of Native Hawaiians by disease is difficult to grasp, the known effects of the introduction of foreign disease make a population reduction from 500,000 in 1779 to 130,000 fifty years later seem feasible (Kirch, 2012). There were several outbreaks of small pox, leprosy, tuberculosis, influenza, and cholera documented that ravaged the Native Hawaiian population, as well as the foreign population that was settling Hawai‘i.

The most significant change in land-use in the Hawaiian Islands came with the Māhele of 1848 which changed the communal land system to one of private ownership. The foundation for private land ownership set by the Māhele of 1848 began a marked pace of development across the entire island chain, and Maui was no exception to the age of Western development. The Māhele enabled many foreigners and foreign nationals to acquire land for the establishment of ranching and plantation operations, including the infrastructure projects that were aimed at supporting these land-intensive industries (aqueducts, roads, etc.). Within the Māhele records for the License Area there are over 85 claims for terrestrial agricultural features such as *lo‘i* (irrigated taro terraces), *pākanu* (garden, planting enclosure), *‘auwai* (artificial irrigation canals, used to feed *lo‘i*), *kula* (fields, open pasture), *pali* (cliff, precipice, or steep hill suitable for cultivation of select plants), *kīhāpai* (small cultivated patch or orchard), *mo‘o* (ridge for similar purpose as *pali*), and *pō‘alima* (small agricultural patches tended in traditional times solely for chiefly tribute) (Pukui and Elbert 1986). There are also *kuleana* claimed for their naturally occurring vegetation and the right of tenants to collect these resources, such as *‘ie* (aerial roots of the *‘ie‘ie* vine, used in plaiting, basketry, and wicker weaving), *olonā* (shrub with fibrous bark used in fishnets, baskets, and to construct *tī* leaf raincoats and capes), *wauke* (paper mulberry used in making *tapa* cloth), *hala* (pandanus tree) and wildy occurring *kalo* (taro) and sweet potato (Pukui and Elbert 1986:50,94,256,286). Lastly are the *kuleana* claims over aquatic resources such as off-shore fisheries (documented as “sea” in LCA awards) and *muliwai* (river mouth, freshwater pool behind a shoreline sand bar) that are naturally occurring and not man made (Pukui and Elbert 1986). The Māhele also marked a turning point in Hawai‘i’s history as



Western commercial interests and travelers began their influence on the remote region of East Maui and elsewhere.

By 1850, lands belonging to Hawaiian ali'i were sold to help pay commutation fees owed by their awardees and for simple cash profits from selling so-called unused land. Maka'āinana (commoners) that had historically lived on and cultivated these lands were inadvertently dispossessed of their homes and arable plots that lied within the sold portions of land. In acknowledgement of this dispossession, the Board of Commissioners passed resolutions authored by the Privy Council through the legislature in 1850 that aided in the protection of the rights of tenant farmers whose homes and plots were essentially owned by overarching Land Commission Award (LCA) awardees.

The earliest records of Western industry in East Maui included L. L. Torbert's potato plantation at Honua'ula and the beginning of the construction of ditches, tunnels, and siphons to transport the waters of East Maui to the central isthmus for commercial sugarcane agriculture. The Hawaiian Islands attracted a new generation of managers, professionals, and entrepreneurs who would reshape the landscape for western enterprises and pursuits. Samuel T. Alexander and Henry P. Baldwin were prominent in this movement. With the ratification of the Treaty of Reciprocity with the United States in 1876, the future success of sugar in the Hawaiian Islands seemed assured. At that time, several small plantations in the districts east of Wailuku and Kahului and north of Makawao developed new plans to expand the growing of sugar. On September 30, 1876, the government of Hawai'i gave permission to the plantations of Maui to take water from the principal six streams of the region and convey the water by ditch to their fields, for an annual rental of \$100 (Kuykendall 1967:64). The project of the system by which mountain water was brought from East Maui was completed on schedule and, in July 1877, the first water began flowing through the ditch to the Ha'ikū Plantation. The transfer of water sparked the rise of the commercial sugar industry on Maui and prompted the expansion of the aqueduct system to include a present-day estimate of 50 miles of tunnels, 24 miles of ditches, 13 inverted siphons, approximately 400 intakes, eight reservoirs, 62 miles of private roads, and a solar-powered radio telemetry system to monitor ditch flows (ASCE 2001).

Rubber plantations in portions of East Maui soon followed sugar with the start of the Nāhiku Rubber Company, Ko'olau Rubber Company, American-Hawaiian Rubber Company, and the planting of rubber by the Nāhiku Sugar Company throughout the early 1900s. Ultimately a decline in the price of rubber doomed the Maui rubber industry.

Additional research into the history of East Maui included a summary of the development of the community of Ke'anae, the construction of the Hāna Belt Road and subsequent designation of the corridor as an historic district, and a review of modern land use in the region focused on the activities of the more than 700,000 tourists that travel annually throughout this region.

Previous archaeological research included a summary of approximately 45 archaeological studies conducted in the vicinity of the current License Area including early island-wide surveys, studies specific to the Hāna Highway, and studies conducted in the vicinity of each license area. In general, these studies document the rich archaeological landscape along the coast of the region and extending upward into many of the stream valleys. Findings include agricultural complexes, habitation areas, heiau, trails, walls, historic structures and remnants,



WWII-era structures, and other associated artifacts and deposits. Few of these previous studies are within or overlap with the CSH's LRFI.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the continued operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on historic and archeological resources in the region are anticipated as the Proposed Action does not involve any significant new ground disturbance. The Proposed Action does not entail partial or total destruction or alteration of historic properties, or detrimental alteration of the surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, nor does it propose increasing public access within the License Area, which could bring about resulting damage to the EMI Aqueduct System. Nor does the Proposed Action involve the deterioration or destruction of the EMI Aqueduct System.

However, due to the CWRM D&O, some of the sluice gates must be removed from the stream diversion of particular streams, regardless of whether the Water Lease is issued or not. The effect of the removal of the sluice gates is minimal, as they do not drastically alter the overall physical appearance of the historic EMI Aqueduct System. Documentation of the sluice gates with photos and location sketch plans conforming to the Historic American Engineering Survey (HAER) standards where sluice gates are to be removed or altered is proposed. Many of the sluice gates are unique to a particular stream, and documentation will ensure that nothing is lost over time.

#### **Upcountry Maui**

CSH LRFI only surveyed portions of the License Area within East Maui. The EMI Aqueduct System conveys water to Upcountry Maui to the MDWS to meet domestic and agricultural water demands. Upcountry Maui is a highly altered urban environment and the Proposed Action does not propose any new actions in Upcountry Maui.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on historic and archeological resources in Upcountry Maui are anticipated as the Proposed Action does not involve any construction or any ground disturbance.

### **Central Maui**

Central Maui has been in agricultural production well over 100 years. The EMI Aqueduct System conveys water to the agricultural fields to Central Maui and has done so for over 100 years to support agricultural operations.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on historic and archeological in Central Maui are anticipated as the agricultural fields in Maui have been subject to agricultural activities for over a century.

## **4.6 Cultural Resources and Practices**

### **East Maui**

CSH prepared a Cultural Impact Assessment (CIA) for the Proposed Action dated June 2019 (See Appendix F). The CIA was prepared in conjunction with CSH's LRFI discussed in Section 4.5.<sup>3</sup> The purpose of the CIA is to comply with the State of Hawai'i's environmental review process under HRS Chapter 343, which requires consideration of the Proposed Action's potential effect on cultural beliefs, practices and resources. The CIA also aids in supporting the Proposed Action's historic preservation review under HRS Chapter 6E and HAR Title 13, Chapters 275 and 284.

The CIA included examination of cultural and historical resources, including Land Commission documents, historic maps, and previous research reports with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal, and other resources, accessing religious sites, or agricultural pursuits as may be indicated in the historic record. The CIA reviewed previous archaeological work at and near the License Area that may be relevant to reconstructions of traditional land use activities; and to the identification and description of cultural resources, practices, and beliefs associated with the parcel. Consultation and interviews with knowledgeable parties regarding cultural and natural resources and practices at or in the vicinity of the License Area; present and past uses of the License Area; and/or other practices, uses, or traditions associated with the License Area and environs.

Cultural documents, primary and secondary cultural and historical sources, previous archaeological reports, historic maps, and photographs were reviewed for information pertaining to the study area. Research was primarily conducted at the CSH library. Other archives and libraries including the Hawai'i State Archives, the Bishop Museum archives, the University of Hawai'i at Mānoa's Hamilton Library, Ulukau, The Hawaiian Electronic Library (Ulukau.org 2004), the SHPD library, the State of Hawai'i Land Survey Division, the Hawaiian Historical Society, and the Hawaiian Mission Houses Historic Site and Archives are also

---

<sup>3</sup> Information and discussions presented from CSH's LRFI in Section 4.5 was not repeated in this discussion to avoid repetition.

repositories where CSH cultural researchers gather information. Information on Land Commission Awards (LCAs) were accessed via the Waihona 'Aina (2000) Māhele database, the Office of Hawaiian Affairs (OHA) (2015) Papakilo Database, and the Ava Konohiki (2015) Ancestral Visions of 'Āina website.

CSH's consultation efforts utilized previous contact lists, in-house database of kūpuna (elders), kama'āina (native born), cultural practitioners, lineal and cultural descendants, Native Hawaiian Organizations (NHO; includes Hawaiian Civic Clubs and those listed on the Department of Interior's NHO list), and community groups. CSH also contacted agencies such as SHPD, OHA, and the appropriate Island Burial Council regarding the License Area located for their response to identify lineal and cultural descendants, individuals, and or NHO with cultural expertise and or knowledge of the License Area.

CSH contacted a total of 136 parties including the County of Maui, other agencies, the DHHL beneficiaries, NHOs such as Aha Moku o Maui, Inc., Kuloloia Lineage-I Ke Kai o Kulolia, Waiehu Kou Phase 3 Association and knowledgeable community members. NHOs consulted included: Aha Moku o Maui, Inc. (Ke'eaumoku Kapu and Kyle Nakanelua); Kuloloi'a Lineage – I Ke Kai o Kuloloi'a (Les Kuloloi'a); Waiehu Kou Phase 3 Association (Roy Oliveira); Moku o Kaupō (Jade Alohalani Smith); and Aha Moku o Kahikinui (Donna Sterling).

Of the 136 parties consulted, a total of 15 people/agencies responded to the consultation letter. Three people participated in formal interviews. CSH initiated its outreach effort in November 2017 which included letters, phone calls, emails, and in-person interviews. Below is a list of individuals and agencies who shared their mana'o (thoughts, opinions) and 'ike (knowledge) about the License Area:

1. Dr. Kamana'opono Crabbe, Ka Pouhana – OHA
2. Pomaika'i Crozier. Conservation Manager – Pu'u Kukui Watershed Preserve
3. Skippy Hau, Kama'āina (native born) and Aquatic Biologist – Division of Aquatic Resources – State of Hawai'i
4. Garrett Hew, Kama'āina, Upcountry Maui farmer, and former East Maui Irrigation (EMI) employee
5. Robert Hobdy, Retired naturalist and forester
6. Roslyn Lightfoot, Director – Alexander & Baldwin Sugar Museum
7. Kyle Nakanelua, Kama'āina, Aha Moku o Maui, and kalo (taro; *Colocasia esculenta*) farmer
8. Jerry Sakugawa, Upcountry Maui farmer
9. Sandy Takeshita, Upcountry Maui farmer
10. Mahealani Wendt, Member of Nā Moku Aupuni o Ko'olau Hui
11. Mavis Oliveira-Medeiros, Kama'āina of Hāna
12. Dawn Lono, Long-time resident of Hāna
13. Shane Sinenci, holds the County Council seat for the East Maui residency area
14. Dorothy "Auntie Dottie/Kumu Kamalu" Kaho'okele and 'Ohana Kama'āina of Nāhiku
15. Moses "Mokey Boy" Bergau, Kama'āina of Nāhiku

In addition, CSH asked permission to use declarations made by members of the community and of Nā Moku Aupuni o Ko'olau that were given to the CWRM in late 2014, a couple of years prior to the issuance of the CWRM D&O, which was issued on June 20, 2018. Although the

declarations are part of the public domain, CSH nevertheless attempted to contact each individual to obtain approval to include these declarations in the CIA. Below is a list of individuals who approved use of their declaration as part of the CIA:

1. Dan Clark
2. Jonah Jacintho
3. Lezley Jacintho
4. Kauai L. Kanaka'ole
5. Pualani Kimokeo
6. Davianna McGregor, Ph.D.
7. Lurlyn Scott
8. Earl Smith, Sr.
9. Ty Kāwika Tengan
10. Edward Wendt
11. Emily Wendt

The following is a brief discussion and summary of CSH's CIA report within the context of the License Area in East Maui, as well as information gathered from the community consultation and declarations, participants voiced and framed the following concerns in a cultural context.

In summary the background research of the CIA yielded the following results, in approximate chronological order:

1. The License Area encompass the following ahupua'a: Honopou, Mokupapa, Waipi'oiki, Waipi'onui, Hanehoi, West Hanawana, East Hanawana, Pu'uomālie, Pāpa'a'ea, West Makaīwa, East Makaīwa, Honomanū, Ke'anae, Wailuānui, Wailuāiki, Ko'olau, and Pa'akea.
2. Makapipi, Hanawī, and Kapā'ula in the Nāhiku License Area; Waia'aka, Pa'akea, Puakea, Waiohue, Kopili'ula, Pua'aka'a Tributary, East Wailuāiku, West Wailuāiki, Wailuānui (Waikani Waterfall), Kualani (or Hāmau), Waiokamilo, 'Ōhi'a (or Waianu), Palauhulu (Hauoli Wahine and Kano Tributaries), Pi'ina'au in the Ke'anae License Area; Nua'ailua, Honomanū, Punala'u (Kōlea and Ulunui Tributaries), Ha'ipua'ena in the Honomanū License Area; and Puohokamoa, Wahinepe'e, Waikamoi (Alo Tributary), Kōlea, Punalu'u, Ka'aiea, 'O'opuola (Makanali Tributary), Puehu, Nā'ili'ilihale, Kailua, Hanahana (Ohanui Tributary or Hanawana or Hanauna), Hoalua, Hanehoi, Huelo (Puolua Tributary), Waipi'o, Mokupapa, Ho'olawa (Ho'olawa ili and Ho'olawa nui Tributaries), and Honopou (Puniawa Tributary) in the Huelo License Area.
3. According to mo'olelo, in "The Epic Tale of Hi'iakaikapoliopole," retold by Ho'oulumāhiehie, Hi'iaka and her friend Wahine'ōma'o sail to Maui and travel to the windward side of the island. They stop in Wailua Iki Ahupua'a where they encounter a group of people celebrating the hula. The hālau was filled with men, women, and children (Ho'oulumāhiehie 2008:199). Hi'iaka sees her cousin Kapokūlani (Kapo) in hopes of being invited in to eat and rest. Hi'iaka offers a chant and this is when Kapo notices her 'ohana. It should be noted that Kapo is a goddess of sorcery on Maui where she acts as an akua noho.

4. Kihapi'ilani is the son of the ali'i nui Pi'ilani. Kihapi'ilani is known for his lelekawa skills and for building a stone paved road around the island of Maui (Beckwith 1970). According to legend, Kihapi'ilani fled from his brother and took up residence in Makawao but kept his identity a secret. He left Makawao after he was accused of being lazy and stayed in Kalua'ama in Ha'ikū to obtain sweet potato growing skills. He later took his skill set to Kalaniwai and Wailuku.
5. In the legend of Kāne and Kanaloa, the two demi-gods are in search for water to accompany their appetite for 'awa. One of the first places the pair travel to is in the mountains of Ke'anae where Kāne thrusts his kauila wood staff into the ground and a spring appears. According to author, Martha Beckwith, two holes can be seen across from 'Ōhia Gulch (1970:65).
6. 'Ai'ai, son of Ku'ula the Fish God, instructed his friends to venture into the deep waters off of Wailua Nui Ahupua'a and kill the giant he'e that lived there. Canoes were drawn and people came down ready. 'Ai'ai brought the hokeo and leho that his father gave him. The canoes and people sailed out. It was here that Ku'ula and Hina were called upon for their assistance and the hokeo and leho were taken out and lowered into the ocean. The he'e was attracted by the radiance the leho brought out but due to its overwhelming size, scared the people. 'Ai'ai's friend brought a stone with him and at the right time, shoved the stone into the head of the squid. The weight of the stone sunk the he'e and one of the men cut off one of the tentacles of the squid. When the he'e died it turned into stone and a formation resembling a squid can be seen just outside of Wailua Nui (Thrum 1907:234-235).
7. Of the 230 structures that Walker (1931) surveyed on Maui, 39 of the recorded heiau (Walker Sites 64 through 102) were documented in this portion of East Maui. Of the 39 documented heiau sites, only one lies within the License Area. This heiau is named Pu'u o Koholā and was presumed to be located within the current Honomanū License Area. Pu'u o Koholā was listed as "destroyed/not found" by Walker (1931).
8. The Alaloa (Long Road) of Kihapiilani or the Kihapiilani Highway, was constructed during the sixteenth century during the reign of Kihapi'ilani. The chief is credited with completed the paved road from Hāna to Wailuku, which was initiated by his father, Pi'ilani (Fleming 1933). The road provided a means of trade, commerce, and war time protection.
9. Honomanū Valley was once the site of a large Hawaiian community. The residents of this area utilized the bay for canoe fishing and the uplands for agricultural terracing and house sites (Handy and Handy 1978). Another account states that many burials can be found in the upper reaches of the valley (Sterling 1998:109).
10. Ke'anae Peninsula is a lava plain that extends a mile into the ocean from Ke'anae Valley. This area is known for lo'i cultivation and still continues to celebrate a traditional Native Hawaiian lifestyle today (Handy 1940).
11. The earliest estimation of occupation along the coastal region of East Maui is approximately AD 1200. The abundance of traditional land divisions and place names



between Hāmākua Loa and Hāna suggest habitation was extensive after initial establishment.

12. Documentation regarding Native Hawaiian tenancy reveal that ocean resources were just as important as products of the land for sustenance. The preferred method of fishing was open ocean fishing for the people who lived along the coast of East Maui. In waters of ten or more fathoms deep, the favored technique was kākā or kūkaula.
13. It has been noted that there was some rivalry between the ahupua‘a of Ke‘anae and neighboring Wailua Nui. This rivalry gave way to larger political battles concerning rule of Maui Island between the sons of Pi‘ilani (Kamakau 1992:22-29) and later the consolidation of power and unification of the Hawaiian Islands under Kamehameha (Group 70 International Inc. et al. 1995).
14. In 1778, after Captain James Cook’s ships returned from their North American explorations, the crew stopped in Hāna and encountered Hawaiians for the first time on board their ships (Cordy 2000:294).
15. Prior to the establishment of the Hāna protestant mission in 1837, missionaries would visit East Maui once or twice a year. Hāna was considered to be “one of the most isolated places in these islands, remote and difficult to access”. The journey was made by horseback to Ke‘anae then traveled by canoe for the remainder of the trip.
16. Māhele documentation exhibits that occupancy was dense in East Maui, especially in the Honopou, Mokupapa, and Ke‘anae regions. According to records, the land was used for traditional crops including lo‘i kalo, kula, potato growing, olonā, ‘ie, wauke, koa, ‘ulu, and ‘ōhi‘a. In addition, many streams, ‘auwai, and loko i‘a were claimed as well. A unique trait to this area was that specific areas including the sea shore, pali, government roads, and streams that contained ‘ōpae and ‘o‘opu were also claimed.
17. The Māhele of 1848 set the precedence of private land ownership across the entire Hawaiian Island chain and Maui was no exception to the age of Western development. The Māhele enabled foreigners and foreign nationals to acquire land for the establishment of ranching and plantation operations, including any infrastructure projects that were to support these land intensive industries.
18. With the decline of the whaling industry in the mid- to late-1800s, the Hawaiian Islands attracted a new generation of entrepreneurs. Samuel T. Alexander and Henry Perrine Baldwin were prominent in this movement. Alexander was credited with using irrigation for improving sugarcane and banana yields, while Baldwin’s father had been granted 2,675-acres of land in northwest Maui.
19. In 1867, Samuel T. Alexander proposed a massive construction project to bring mountain water from the streams of East Maui to the Central Maui isthmus, where many sugar crops were experiencing drought. This would later be known as the EMI Aqueduct System.

20. The digging of the irrigation ditch from East Maui to Central Maui was a great feat. Hundreds of men were employed at a time with food, shelter, and tools supplied to them. The work required brute strength as heavy timber for flumes would need to be transported from the main road to the upper reaches of the forest (Thrum 1877:39-42). The crew dealt with torrential rains and landslides. Sometimes workers hacked their way through the thick forests and were required to descend sheer cliffs by way of rope.
21. In July of 1877, the first water began to flow through the ditch and reached Haiku Plantation 24 hours later. Approximately 60 million gallons of water per day ran through the ditch system. The system cost \$80,000, which was paid for by Castle & Cooke.
22. The EMI Aqueduct System has been in use for over 134 years and continues to collect water today for private and municipal entities. The EMI Aqueduct System contains 50 miles of tunnels, 24 miles of open ditches, inverted siphons and flumes, 388 intakes, eight reservoirs, and a solar powered radio telemetry system to monitor ditch flow. The catchment begins at roughly 1,300 ft. elevation and delivers water to Central Maui at an elevation of 1,150 ft., covering 18 miles from its western to eastern extent (ASCE 2001).

In summary, the information gathered from the community consultation, participants voiced the following concerns not related to the cultural context:

1. Community participant Skippy Hau noted that “not all lands belong to the State” and recommends that private lands should and need to be identified by signs and safe parking areas. In addition, many visitors and tour groups assume that most lands belong to the State resulting in illegal trespassing. Also noted that rental cars regularly block Hāna Highway creating and blocking traffic.
2. Mr. Hau states that the EMI Aqueduct System requires mapping that shows the 388 intakes, ditches, dams, pipes, and flumes. Each diversion should be located and identified accurately with GPS coordinates. Elevations should also be recorded. The amount of water moving through the system should be measured at specific locations within the EMI Aqueduct System as well.
3. In addition, Mr. Hau relayed via email that he recommends a five-year lease with constant updates due to the fact that the project description lacks information on the amount of water flowing through the EMI Aqueduct System and the actual amount of water collected at each diversion and/or ditch without the factor of climate change accounted for.
4. Participant Kyle Nakanelua’s recommendations for this project was simply, “Follow the law! Support the law! File for your permit. There’s a policy and there’s procedures. Adhere to the policy and follow the procedures. And stop trying to circumvent it [the law] because you smart. You know, just be honest, be transparent.”

In summary, the information gathered from the community consultation, participants voiced the following concerns related to the cultural context:

1. Mr. Hau states that native gathering rights should be addressed. The gathering of 'ōpae (general name for shrimp), 'o'opu (general name for fishes included in the families Eleotridae, Gobiidae, and Blennidae), and hīhīwai (endemic grainy snail; Neritina graposa) continue throughout East Maui streams that are being diverted.
2. Mr. Hau adds that State lands should be open to the public for hunting and gathering. The general public should have access for recreational activities such as hiking, scenic viewing, and swimming at waterfalls.
3. Mr. Robert Hobdy voiced his concerns, which include that the EIS study should:
  - a. Provide adequate stream flow to support diversified agriculture in the Hamakualoa and Ko'olau region.
  - b. Provide adequate stream flow to support indigenous fish, shrimp, and mollusk species in the Hamakualoa and Ko'olau region.
4. Participant Kyle Nakanelua is concerned with the act of diverting water. He explicitly states that "when those places dry up that adversely impacts the way of life, the cultural practice if you will" and it "adversely impacts the people's way of life that live there."
  - a. To support this claim, Mr. Nakanelua states that 'ōpae was once prevalent in the streams that flowed through their family property named Lakini. He relates that when he began to regularly clean the property his grandmother would still catch 'ōpae. He adds that today there is no 'ōpae but there are prawns. When CSH asked if 'ōpae was being overpicked, he replied "no" because "we were the only one there." He also does not think the introduction of prawns is to blame but believes "that the flow of water is impactful" and has seen the water decline since 1989.
5. A 2014 declaration provided by Dan Clark from Ke'anae stated he needs cool, fast running water for optimal kalo production. Due to low stream flow results, there has been an increase in disease to his kalo, which decreases production.
6. Jonah Jacintho states in his 2014 declaration that due to a lack of stream flow, fish populations have decreased therefore he cannot fish as much. To increase the population of ocean fish, fresh water is integral for spawning and nutrients. He also added that more water in stream beds would also increase 'o'opu, prawn, and hīhīwai populations.
7. In Lezley Jacintho's 2014 declaration, she states that due to lack of stream flows, her kalo production has declined due to root rot and other diseases. She adds that stream flow output is also important in the spawning of different species of fish. The lack of stream flow affects her gathering rights as a Native Hawaiian and her 'ohana (family). Native species such as 'o'opu needs fresh water to travel back upstream, which compromises their reproduction. Fish, hīhīwai, 'ōpae, and 'o'opu populations are also scarce and many families cannot gather these resources causing them to move away. Another concern Ms. Jacintho voiced is stagnate water, which causes leptospirosis and other bacteria.

8. Kau‘i Kanaka‘ole voices in her 2014 declaration the Papaku Makawalu framework, which incorporates traditional Hawaiian knowledge and mo‘olelo (stories) and connects it with wahi (place). Papaku Makawalu consists of three Papa or houses of knowledge (earth, atmospheric, and the living). In this case, Ms. Kanaka‘ole points out that without water, all three Papa could not exist. She shares mo‘olelo on O‘opuola Stream, Makapīpī Stream, Ka‘aiea Stream, and ‘Ōhi‘a Stream. She points out that ‘Ōhi‘a Stream was known for its healing powers and that the people of this area understood that this water was “special, sacred, kapu (taboo) and only to be used in unique circumstances.”
9. Pualani Kimokeo states in her 2014 declaration that due to a lack of stream flow there is an increase in pocket rot and “guava seed,” which she describes as a growth on the taro. There are also apple snails in her lo‘i kalo, which she states like the warm water. She points out that farmers in Ke‘anae have to compete for water.
10. In Earl Smith, Sr.’s 2014 declaration, he states that he recalls gathering ‘ōpae, hīhīwai, and ‘o‘opu from Hanawī, Makapīpī, and One‘o Streams. He can only find these species in Hanawī Stream. Near the coast, he would fish for moi (threadfish; *Polydactylus sexfilis*), aholehole (Hawaiian flagtail; *Kuhlia sandvicensis*), manini (reef surgeonfish; *Acanthurus triostegus*), and enenue (chub; *Kyphosus bigibbus*) but has noticed a depletion of fish. He attributes this to a lack of stream flow that empties in the ocean.
11. In Edward Wendt’s 2014 declaration, he states that he gathers and fishes in the streams to provide a protein source for his family, neighbors, and kūpuna (elders) who may be unable to gather for themselves. He also enjoys teaching traditional fishing practices and values to students. However, due to the lack of adequate stream flow, Mr. Wendt is unable to teach students how to mālama (to take care of) streams, fish, and gather. The diminished stream flow has negatively impacted the muliwai, fisheries, and his lo‘i kalo. Invasive species such as the apple snail and African tulip tree have infringed his lo‘i kalo.

Based on information gathered from the cultural and historical background, and the community consultation, significant cultural resources were identified within the License Area, as well as outside of the License Area. It should be acknowledged that although some of the impacted cultural resources exist outside of the License Area, what takes place within the License Area directly affects these cultural practices and resources. At present, there is documentation and testimony indicating traditional and customary Native Hawaiian rights are currently being exercised within the License Area. Cultural resources, practices, and beliefs were identified as currently existing within the License Area. In addition, East Maui, which includes the License Area and beyond the License Area, maintains a rich subsistence and cultural history.

The earliest initial occupation in East Maui is estimated at 1200 AD (Haun et al. 2004). The abundance of traditional land divisions and wahi pana spanning from Hāmākua Loa to Hāna suggest that habitation continued to increase after initial establishment. Xamanek Researches conducted an AIS in 2000 of a parcel near the muliwai of Hanawana Stream. A charcoal sample from the study yielded a radiocarbon date of AD 1425 to 1665. In conjunction with mo‘olelo and ka‘ao, such material evidence indexes the importance of East Maui and its natural resources in supporting early inhabitants and traditional practices. Throughout this

analysis, an effort is made to ground physical evidence within traditional cultural frameworks or knowledge systems. That is, understandings of East Maui’s ecological processes and anthropogenic activities have been informed by various traditional sources, including mo‘olelo, mele, or oli. As pointed out by anthropologist Laura Nader and reiterated by Dr. Kathleen Kawelu, “science is not free of culture; rather, it is full of it” (Kawelu 2015:6; Nader 1996: xiii). Several mo‘olelo, unique to East Maui, do indeed provide key insights into the socio-cultural and socio-economic realities of pre-Contact life. Ka Mo‘olelo o Hi‘iakaikapoliopole relates how Hi‘iaka stopped in Wailua Iki and stumbled upon a crowd celebrating hula in a hālau filled with men, women, and children. This mo‘olelo exhibits the popularity of hula in this area as well as a burgeoning population in East Maui.

Pi‘ilani, Mō‘ī of Maui, ordered to have a hand-fitted, basalt block road constructed, which connected Wailuku to Hāna. This road served as a trail for residents and was also accessed during times of war. During the last half of the eighteenth century, war occurred frequently. The road, along with canoe landings and inhabited places, were common sites for robbery and death for maka‘āinana. After Pi‘ilani’s death, his son Kihapi‘ilani continued the construction of the road, extending through Kaupō and across Haleakalā. It was called the Alaloa of Kihapi‘ilani, also known as the King’s Road. The amount of labor that went into the Alaloa suggests that there was a large population of able-bodied men to complete the trail. The caloric demands of such a workforce would have no doubt been significant, suggesting that a large amount of food also was available to sustain the workers.

East Maui was and still is an ideal place to cultivate kalo based on the rich soils and the amount of rain that occurs per year. The License Area contains various tributaries. Wet patches were and still exist in the makai regions, while dryland kalo was planted in the mauka areas. Ke‘anae and Wailua Nui continue to be thriving regions within the License Area that still practice traditional taro farming.

‘Ōlelo no‘eau, mele, and oli all attest to the abundance of water, in addition to the resources available from the ocean and uplands. However, documents such as LCAs and associated maps exhibit the expansive population of East Maui during The Māhele. Although most of the LCAs are outside of the License Area, it is important to point out that the water that runs through the License Area leads to these kuleana parcels, many of which are still kuleana properties held by the same families today. Land use was inventoried during The Māhele. Common uses and kuleana include residence, farming (lo‘i, kula, kīhāpai, pō‘alima, specific patches for olonā and hala), associated farm structures (pig pens), water ways (‘auwai, fishponds, streams, beaches, and the sea), forests, and infrastructure (government road, trails, foot paths). Land use records indicate that almost every property had at least one lo‘i kalo with some of the highest concentrations in the Huelo and Ke‘anae license areas, the latter still being an active community that continues the practice. Although quantity of water matters for the community, it is also about velocity. Mr. Kyle Nakanelua relates the importance of having “a really crisp and vigorous flow” to the water because “that’s what keeps everything stimulated and alive” which contributes to having a healthy stream and flow. Having water that is cold and constantly running are vital components of farming wet land kalo.

In addition to kalo, pohole or the fiddlehead fern is also a staple in the diet for residents of East Maui along with watercress, ‘ulu, bananas, lū‘au, etc. Traditional subsistence is important to those who live in this remote area of East Maui as it not only is a reliable food source but



ensures a healthy diet. Plants such as pohole and watercress are aquatic plants, which need an abundant amount of fresh, running water for optimal growth. Pohole is a wild plant that needs to be foraged and is widespread throughout the License Area. Pohole that is growing in or adjacent to tributaries that have limited and/or diverted water are most likely impacted gathering grounds.

The water source for the East Maui streams came from the backside of Haleakalā, which supplies the streams with fresh water, providing an ecosystem for aquatic life. Fresh, brackish, and ocean resources were and continue to be an important food source for Native Hawaiians (McGregor 2007:109). Habitation patterns model settlement near the ocean, which alludes that Native Hawaiians settled close to their food sources such as the ocean and in areas that were viable for kalo growth. Native Hawaiian author and historian Samuel Kamakau relates that the people of Ko'olau worshipped sharks "in order to be saved from being eaten by a shark when they went fishing" (Kamakau 1991:78). The favored method of fishing off of East Maui was the kākā and kūkaula methods. The kākā method required a hook and line and was utilized at a depth of 200 fathoms. The kūkaula method also used hook and line but was employed at 50+ fathoms. Through interviews, informal discussions with community members, and CWRM declarations, it is evident that residents within and in the vicinity of the License Area rely heavily on fresh and salt water resources as a food source.

Many community members stated that they formerly utilized stream fauna as a food source, however, due to the stream water being limited and/or diverted in conjunction with invasive species, it is now deemed an unreliable food source. 'O'opu, 'ōpae, and hīhīwai were staples to East Maui resident's diets. Kūpuna who lived near the streams in the 1920s and 1930s also caught and ate 'ōhua and hinana, which were prevalent in tributaries. East Maui residents and those who intimately know the mauka regions of East Maui know where to gather these limited aquaculture resources. For example, State of Hawai'i Aquatic Biologist, Skippy Hau, shared that at one time 'ōpae could be found in streams spanning from mauka to makai. Today 'ōpae can be found only in the mountain areas where stream water is cooler but have mostly adapted to inconsistent stream flows. Mr. Hau also shared that hīhīwai, one of the slowest migrating animals, utilize heavy rains and flash flooding to transport larvae into the ocean, so they can migrate upstream again over a period of time. However, fresh water is also needed to assist in this process. Although, "the natural environment has a built-in capacity to respond and adapt to traumas and shocks (system resilience)," this is not infinite. Diverted streams, whereby the mauka-makai connection is severed, strain the resiliency of the stream's ecosystem by inhibiting reproduction rates of freshwater animals as well as growth patterns.

In addition, salt water resources are also being compromised by limited fresh water being emptied into the ocean, which is a vital component for propagation. Mr. Earl Smith, Sr. would fish for moi, aholehole, manini, and enenue but has since observed a considerable decline in populations and relates this to the lack of fresh water entering the ocean. Mr. Jonah Jacintho also related that a lack of stream flow inhibits nutrients from mauka traveling makai, which creates warmer waters and an unfavorable ecosystem for fish, mollusks, and other ocean life to replenish. Although the License Area is not adjacent to the ocean, the ocean is directly affected because the fresh water that runs throughout the License Area is limited and/or being diverted. Modifications to flow, such as diversion, invariably result in a dramatic decline in ocean life by restricting nutrients that are carried via tributaries and emptied into the ocean, which are needed for healthy conditions and growth patterns.

However, the SE & MRC report (2019) provided some important information regarding the interactions of streams and the ocean in East Maui contrasting the statements made above. Of particular significance is that the effects of stream water on marine waters must be considered minor in these habitats. This result is supported by the physical processes associated with relatively small input of stream water to the vastly larger ocean environment. The prevailing conditions of extreme mixing by physical forces is the most important factor in diminishing the zone of influence of stream water in the marine setting. In all cases where it was possible to sample across the boundary where streams flowed to the ocean, there were sharp gradients reflecting the intense mixing of stream water to background ocean levels. Observations of the habitats in these transition zones indicated that they were composed primarily of sand and barren rock. Owing to continual, intense wave energy, these nearshore areas do not constitute important habitats for coral reef communities and associated marine species. Beyond the narrow transition zone, the influence of stream water is minimal owing to rapid and intense mixing. These processes should not be affected by changes in stream flow related to seasonal variation or diversions.

Based on the cultural and historical background presented above, in conjunction with archaeological evidence, oral histories, declarations, and interviews throughout East Maui, the CIA determined that there are specific valued natural and cultural resources within the License Area. There is evidence of identified traditional and customary cultural practices associated with natural and cultural resources that are regularly exercised within the License Area, which includes the following activities and resources:

1. Foraging, traditional, and generational gathering of freshwater species for personal consumption. These species include but are not limited to 'ōpae, 'o'opu, pūpūlo'i (also known as pūpū Pākē or Chinese snail), crayfish, prawns, and hīhīwai.
2. Foraging, traditional, and generational gathering of plants that may be in or adjacent to tributaries for personal consumption. These species include but are not limited to pohole and watercress.
3. Traditional and generational gathering of introduced plants that can be cultivated or foraged. These species include but are not limited to 'ulu, bananas, wild kalo, wild lū'au, guava, 'uala, 'awapuhi, tī, oranges, hāhā, avocado, puakenikenī, and medicinal plants for lā'au lapa'au.
4. Traditional and generational gathering of plants that can only be foraged. This includes but is not limited to pepeiao, various types of ferns (ornamental), and hau.
5. Traditional and generational gathering of rocks that are used for traditional food preparation. These activities include but are not limited to imu and the production of stone tools for traditional food preparation (i.e., pōhaku ku'i 'ai).
6. Traditional and generational fishing and gathering methods utilized for the shoreline and offshore. Species gathered include but are not limited to limu (seaweed), 'opihi (limpets), lobster, enenue, kole, ulua, moi, aholehole, 'anae, kumu, tako, moanakali,

‘ōmilu, ‘ū‘ū/menpachi (soldierfish; Holocentridae), ‘āweoweo (Bulleye; Priacanthus meeki), pāpio, pa‘ananu, ‘ō‘io, uhu, lae, kala, black crab, hā‘uke‘uke, and kūpipi.

It should be noted that the information gathered from the consultation process was gathered prior to the issuance of the CWRM D&O, and much of the information was taken from declarations that were submitted to CWRM several years ago in support of setting the IIFS.

### **Impacts and Mitigation Measures**

Based on information gathered from the cultural and historical background, and the community consultation, significant cultural resources were identified within the License Area, well as outside of the License Area. It should be acknowledged that although some of the impacted cultural resources exist outside of the License Area, what takes place within the License Area directly affects these cultural practices and resources. At present, there is documentation and testimony indicating traditional and customary Native Hawaiian rights are currently being exercised within the License Area. Cultural resources, practices, and beliefs were identified as currently existing within the License Area.

CSH has identified potential impacts and made the following recommendations.

1. **Impact:** Participants expressed their concern for clarification on stream flow, water diversion, and climate statistics with the following questions:
  - How much water is being diverted at each location of intakes, ditches, dams, pipes, and flumes?
  - How much water is being diverted from East Maui to Central Maui?
  - Is climate change accounted for?

**CSH Recommendation:** It is recommended that these questions be addressed by qualified professionals who possess an understanding of stream flow mechanics, water diversion, and climate statistics within the License Area.

For the purposes of this DEIS, diversion quantities from the CWRM D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. Water that is being diverted out of the License Area is measured at Honopou Stream (refer to Section 2.1.2 for more details). Climate change is addressed in Section 4.3.1.

2. **Impact:** Several community participants voiced their concern regarding indigenous freshwater species that may be impacted by the act of diverting water. These species include but are not limited to ‘ōpae, ‘o‘opu, pūpūlo‘i (also known as pūpū Pākē, or Chinese snail), crayfish, prawns, and hīhīwai (endemic grainy snail; Neritina graposa), which are still gathered regularly by residents for personal consumption. Furthermore, community participants shared their concern of water not exiting stream beds and flowing into the ocean. This estuary environment creates an ecosystem where freshwater and saltwater species spawn and travel back upstream (such as e) or continue to grow in the ocean. Specific streams mentioned by community participants where this impact is identified include: Wahinepe‘e, Puohokamoa, Ha‘ipua‘ena, Honopou (Puniawa Tributary), Punala‘u (Kōlea and Ulunui Tributaries), Honomanū,

Nua'ailua, Pi'ina'au, Waiokamilo, Wailuānui (Waikani Waterfall), Kopili'ula, Pa'akea, Kapā'ula, Hanawī, Makapipi, Waiohue, Waikamoi (Alo Tributary), Hanehoi, Palauhulu (Hauoli Wahine and Kano Tributaries), 'Ōhi'a (or Waianu), Kualani (or Hāmau), East Wailuāiki, West Wailuāiki, Pua'aka'a Tributary, and Waia'aka. It is understood that these streams were subject to the CWRM D&O decision.

CSH Recommendation: It is recommended that a biologist or similar qualified professional provide an assessment of the impacts of water diversion to indigenous freshwater species ('ōpae, 'o'opu, and hīhīwai) within the License Area. The application of the CWRM D&O has the potential to reduce or eliminate this cultural impact. Nine of the streams mentioned by community participants where this impact is identified have been fully restored in accordance with the CWRM D&O. These include Honopou (Puniawa Tributary), Pi'ina'au, Waiokamilo, Wailuānui (Waikani Waterfall), Makapipi, Waiohue, Hanehoi, Palauhulu (Hauoli Wahine and Kano Tributaries), and West Wailuāiki Streams.

Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. Moreover, the two reports are appended to the DEIS (See Appendix A and Appendix C).

3. Impact: A majority of participants who are taro farmers voiced their concern of the lack of water needed to maintain a healthy and productive lo'i kalo or taro patch. A cold, vigorous flow of water is needed for the production of kalo. Without an ample amount of water continuously flowing, many taro crops have been subject to invasive species such as the apple snail, root rot, and growths. Many taro farmers are unable to continue their traditional and generational cultural practice. Specific streams mentioned by community participants where this impact is identified include: Honopou (Puniawa Tributary), Waikamoi (Alo Tributary), Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u (Kōlea and Ulunui Tributaries), Honomanū, Nua'ailua, Pi'ina'au, Palauhulu (Hauoli Wahine and Kano Tributaries), 'Ōhi'a (or Waianu), Waiokamilo, Kualani (or Hāmau), Wailuānui (Waikani Waterfall), West Wailuāiki, East Wailuāiki, Kopili'ula, Pua'aka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapipi, and Waiohue. However, these streams were subject to the CWRM D&O decision.

Recommendation: It is recommended that a botanist, ethnobotanist, or similar qualified professional provide an assessment of the ideal conditions of water flow and water temperature needed for kalo growth in comparison to the current water flow and water temperature of impacted areas in order to understand and address the stated impact. The application of the CWRM D&O has the potential to reduce or eliminate this cultural impact. Eight of the streams mentioned by community participants where this impact is identified have been fully restored in accordance with the CWRM D&O. Honopou (Puniawa Tributary), Pi'ina'au, Palauhulu (Hauoli Wahine and Kano Tributaries), Waiokamilo, Wailuānui (Waikani Waterfall), West Wailuāiki, Makapipi, and Waiohue.

The CWRM's approach does not automatically set precedents for other areas, but provides a model of water use that integrates traditional culture with modern natural resource management (CWRM COL 138-145, 2018).

4. Impact: While no human burials have been identified by previous archaeological studies within or immediately adjacent to the License Area, historical research indicates that Honomanū Valley and other areas throughout East Maui once held a sizable population. LCA documentation indicates that there were settlements along the coast, however, a pedestrian survey was also conducted where there was evidence of habitation in the higher reaches of the valley (E. M. Fredericksen and Fredericksen 1998b).

Recommendation: It is recommended that any personnel involved in access, maintenance, or any other related activities within the License Area be informed of the possibility of inadvertent cultural finds, including human remains. In the event that any potential historic properties are inadvertently discovered within the License Area, these discoveries should be reported immediately to the SHPD. In the event that iwi kūpuna and/or cultural finds are encountered, consultation with lineal and cultural descendants of the area is also recommended.

### **Upcountry Maui**

No changes to Upcountry Maui are planned as part of the Proposed Action. The EMI Aqueduct System conveys water to Upcountry Maui to the MDWS to meet domestic and agricultural water demands. Upcountry Maui is a highly altered urban environment.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on cultural resources and practices in Upcountry Maui are anticipated.

### **Central Maui**

CSH's CIA only assessed the License Area within the greater East Maui region. The EMI Aqueduct System conveys water to the agricultural fields to Central Maui and has done so for over 100 years to support agricultural operations. The agricultural fields have been cultivated for over a century to grow sugarcane and there are no known cultural practices that occur or cultural resources within the agricultural fields in Central Maui.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action will allow the continued use of Central Maui for agricultural production, with a



significant change in that the prior monocrop sugarcane will be replaced by diversified agriculture. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on cultural resources and practices in Central Maui are anticipated.

## 4.7 Socio-Economic Characteristics

### 4.7.1 Population / Demographics

The County of Maui consists of three major islands, Maui the “Valley Island”, Moloka'i the “Friendly Island”, and Lana'i, the “Pineapple Island”. Demographic and other information pertaining to the License Area within East Maui was reviewed from the U.S. Census 2010 for Maui County and is shown in Table 4-6.

The resident population of the County of Maui has demonstrated a substantial increase over the last two decades with the 1995 resident population of 117,895 increasing to 151,300 persons in 2010. Forecasts for 2020 reflect an island-wide population of 174,450 persons.

The proportion of Native Hawaiians and Pacific Islanders (25.8 percent) in Ke'anae, Wailuānui, and Nāhiku is significantly high in comparison to the Makawao District (8.3 percent) and Maui Island (9.5 percent). These communities also had the third highest proportion of White residents in the project area at 42.8 percent, while 45.9 percent of the Makawao District was White, compared to the 35.1 percent island-wide. The proportion of Asians (2.1 percent) in Ke'ane, Wailuānui, and Nāhiku is significantly low compared to Makawao District's 15.8 percent and Maui Island's 29.7 percent.

The Olinda census-designated place (CDP) had the highest proportion of workforce (ages 25 to 64) with a combined 63 percent, followed by the Ha'ikū-Pa'uwela CDP workforce at 61 percent, and Kula CDP at 60 percent. Kēōkea had the highest proportions of children under 18 years of age (26.2 percent) followed by Makawao, Pukulani, and Hāli'imaile (24 percent).

**Table 4-7**  
**Demographic Characteristics**

| Subject                                 | Ke'anae<br>Wailuānui<br>Nāhiku | Makawao District (Partial) CDPs |             |        |       |         |        |          | Total Maui<br>Island |
|---|--------------------------------|---------------------------------|-------------|--------|-------|---------|--------|----------|----------------------|
|   |                                | Ha'ikū-<br>Pa'uwela             | Hāli'imaile | Kēōkea | Kula  | Makawao | Olinda | Pukulani |                      |
| <b>RACE</b>                             |                                |                                 |             |        |       |         |        |          |                      |
| Native Hawaiian and<br>Pacific Islander | 25.8%                          | 7.1%                            | 11.8%       | 25.8%  | 4.2%  | 8.4%    | 3.2%   | 9.5%     | 9.6%                 |
| Asian                                   | 2.1%                           | 8.1%                            | 35.0%       | 8.7%   | 16.3% | 15.9%   | 7.6%   | 23.9%    | 29.7%                |
| White                                   | 42.8%                          | 59.4%                           | 20.5%       | 29.0%  | 56.3% | 38.2%   | 71.1%  | 33.2%    | 35.1%                |
| Black or African<br>American            | 0.4%                           | 0.3%                            | 0.1%        | 0.7%   | 0.5%  | 0.4%    | 0.2%   | 0.4%     | 0.8%                 |

|                                   |       |       |       |       |       |       |       |       |         |
|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| American Indian and Alaska Native | 0.5%  | 0.5%  | 0.1%  | 0.6%  | 0.4%  | 0.6%  | 1.3%  | 0.3%  | 0.4%    |
| Some Other Race                   | 1.1%  | 1.1%  | 2.5%  | 0.7%  | 1.2%  | 1.0%  | 0.8%  | 1.8%  | 2.1%    |
| Two or More Races                 | 27.4% | 23.4% | 30.0% | 34.7% | 21.2% | 35.5% | 15.8% | 30.9% | 22.8%   |
|                                   |       |       |       |       |       |       |       |       |         |
| <b>AGE</b>                        |       |       |       |       |       |       |       |       |         |
| Population                        | 1,056 | 8,118 | 964   | 1,612 | 6,452 | 7,184 | 1,084 | 7,574 | 167,207 |
| Under 18                          | 21.0% | 23.0% | 24.0% | 26.2% | 20.0% | 24.2% | 18.7% | 24.0% | 21.8%   |
| 18-24                             | 5.6%  | 7.0%  | 7.6%  | 7.0%  | 5.2%  | 8.1%  | 5.2%  | 7.3%  | 8.8%    |
| 25-44                             | 22.2% | 28.3% | 28.4% | 25.4% | 20.7% | 27.0% | 26.3% | 25.1% | 27.0%   |
| 45-64                             | 39.1% | 32.7% | 26.7% | 30.1% | 39.1% | 29.9% | 36.3% | 31.3% | 29.6%   |
| 65 and older                      | 12.1% | 9.0%  | 13.4% | 11.3% | 15.0% | 10.8% | 13.6% | 12.4% | 12.8%   |
| Median age                        | -     | 39.6  | 37.9  | 38.7  | 47.7  | 38.4  | 44.9  | 40.5  | 39.6    |

Source for Makawao District: **Maui County Data Book: 2015**, Table 1.3.6 Summary Characteristics of Persons by Race Census Designated Places, Maui County For Ke'anae, Wailuānui and Nāhiku, information was extracted as the net value between the Hāna CT 301 and the Hāna CDP.

### **East Maui**

East Maui encompasses the License Area and consists primarily of rural residences. According to the Draft Maui Island Water Use and Development Plan (March, 2019), this region had a population of 11,892 residents in 2015. This population is projected to increase by 3.6 percent to 12,321 by 2035.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. In general, the Proposed Action will maintain existing conditions, subject to the requirements under the CWRM D&O and any reservations in favor of the DHHL. No significant direct adverse impacts on demographics or population in East Maui is anticipated to result from the Proposed Action. Operation of the EMI Aqueduct System would allow for the implementation and cultivation of Mahi Pono's diversified agricultural plan in Central Maui, which would serve to directly and indirectly stimulate economic activity on the island of Maui and potentially drive population growth, which could conceivably impact population in East Maui.

### **Upcountry Maui**

In 2017, there were an estimated 37,128 residents and 14,178 households within the Upcountry Maui Water System service area.

The County of Maui projects that the population in the Upcountry Maui Service Area will grow to 43,675 in 2030 (CWRM D&O, p. 210). This would translate to an estimated 16,678 households.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. In general, the Proposed Action will maintain existing conditions, subject to compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant direct adverse impacts on demographics or population within the Upcountry Maui are anticipated to result from the Proposed Action; continued water supply to Upcountry Maui should not reduce or stimulate population growth. Operation of the EMI Aqueduct System would allow for the implementation and cultivation of Mahi Pono's diversified agricultural plan, which would serve to directly and indirectly stimulate economic activity on the island of Maui and potentially drive population growth.

### **Central Maui**

There are no residences within the agricultural fields in Central Maui.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. In general, the Proposed Action will maintain existing conditions, subject to the limitations imposed by the CWRM D&O and any reservations in favor of the DHHL. No significant direct adverse impacts on demographics or population within Central Maui are anticipated to result from the Proposed Action. Operation of the EMI Aqueduct System would allow for the implementation and cultivation of Mahi Pono's diversified agricultural plan in Central Maui, which would serve to directly and indirectly stimulate economic activity on the island of Maui and potentially drive population growth.

## **4.7.2 Social Characteristics**

Earthplan was contracted by WOC to prepare a Social Impact Assessment (SIA) in support of the DEIS (See Appendix G). Earthplan's SIA assesses how the Proposed Action affects the human environment. While there are many facets to the human environment, the social context is basically framed by relationships. The social aspects of an area relate to people living and interacting with other people. The SIA explores how changes in the physical environment of a community or neighborhood caused by a proposed land development may affect the neighborhood as a social environment.

Earthplan conducted seven focus group discussions in November 2018 to discuss the how the Proposed Action might affect the participants' interests, interest and participation in previous lease- and water-related events, such as the CWRM D&O proceedings, media coverage and participation in the scoping meetings subsequent to the publication of the EISPN related to the Proposed Action. After the November 2018 focus group sessions A&B sold the Central Maui agricultural fields to Mahi Pono. To gauge how community issues may be affected by the change in ownership and agricultural operations, Earthplan conducted interviews with a cross section of key community leaders in April 2019.

The November focus groups were conducted, as follows:

- Two focus groups with Upcountry Community Associations, including Kula, Pukalani, and Makawao Community Associations
- Farmers and ranchers
- Mālamalama Maui (a two-year community project to use arts and culture)
- Huelo/Ha'ikū residents and farmers
- Environment and sustainability
- Ke'anae and Wailuānui (Ko'olau Moku) residents, farmers, and cultural practitioners

Collectively, 64 people signed in at the seven focus group meetings. However, the actual number of participants is higher because some who arrived after the session started did not sign in. Four people participated in two sessions to share their views from different perspectives.

From the seven focus group discussions, a set of common topics were raised by the participants related to the Proposed Action. These topics were:

- Relationship to A&B, the EMI Aqueduct System, and the proposed Water Lease
- Community Interaction
- Legal Proceedings
- How changes may affect participants personally or other people they know
- Credible basis for the 30-year Water Lease application
- Suspicion that the 30-year Water Lease will eventually support urbanization
- Change in Upcountry Water System
- Maintenance of the EMI Aqueduct System
- Balance in water resource allocation
  - Water is a public trust
  - Support for sustainable local agriculture
  - Hawaiian system of water use in agriculture is balance
  - Need for more farmers in East Maui
  - The need for resolution for downstream users in watershed areas

In April 2019, Earthplan, contacted community leaders who helped convene the November 2018 focus group meetings and other community leaders who may provide insight not

represented in the November 2018 focus group meetings, to gather input in light of the sale to Mahi Pono and Mahi Pono’s stated intention to pursue diversified agriculture in Central Maui.

These April 2019 interviews were not intended to be statistically analyzed. Rather, they were intended to stimulate discussion about the recent changes. A total of 18 people were interviewed, who represented a broad cross section of community interests and involvement. The following presents a profile of those interviewed:

- Nine of those interviewed participated in the November 2018 focus group meetings. The other nine people were invited initially-contacted interviewees or were referred to the interviewer as possible interests that may not have been represented in the November 2018 focus group sessions.
- Eight people are actively involved in farming and ranching. Some are subsistence farmers, while others raise flowers and livestock in businesses they own. Several have leadership positions in organizations that support ranching and farming.
- Eight people are business owners or executives. Their businesses are related to real estate, a restaurant, flowers, livestock, and macadamia nuts.
- Eight people are active in community organizations that advocate for and address various community needs and interests. Their efforts are related to the community planning, resource management, the arts, education, religion, affordable housing and economic opportunity.
- Six people are community leaders in geographic-specific organizations in Ke‘anae, Hāna, Ha‘ikū, and Kula.
- Three people in leadership roles in environmental and sustainability organizations

Topics brought up from the 18 interviews were:

- Strong desire for continued agriculture in Central Maui
- Optimism that Mahi Pono would be able to bring environmentally friendly large scale diversified farming
- Recognition of the need for water to support agriculture
- Opportunities to re-evaluate ways to achieve balance among water user groups
- Opportunity for food self-sufficiency and reduction of food import
- Concerns and challenges associated with the Proposed Action
  - Enough water to support Mahi Pono’s farm plan
  - Legislative proceedings related to State water leases
  - BLNR responsibility and accountability



- Public trust, the need for more information on water needs, and amount of time needed to secure proper permits
- Agricultural exportation may take precedence over local market
- Use of chemicals
- EMI Aqueduct System conditions
- Source of labor
- Lack of clarity on how individual ranchers will be incorporated in Mahi Pono's farm plan
- The need for consistent, transparent communication and to make things "pono" with the East Maui Native Hawaiian communities

From November 2018 to April 2019, perceptions of the participants generally changed from being pessimistic to being optimistic with the change in land ownership from A&B to Mahi Pono. However, some concerns raised in the November 2018 focus group meetings still persist today.

Below is a summary of Earthplan's focus group meetings and interviews conducted in November 2018 and April 2019 respectively. It should be noted that these were and are perceptions of the participants that represent the existing conditions at the time the SIA was conducted related to each geographic region being assessed in this DEIS. Some of their perceptions may conflict with what is presented and discussed elsewhere within this DEIS.

### **East Maui**

#### **November 2018 Focus Group Meetings**

A focus group with residents and farmers from Huelo and Ha'ikū was convened on November 15, 2018 at Hale Akua in Huelo. Most of these participants live in the Huelo watershed area owned by the State of Hawai'i. They generally lived downstream of the EMI Aqueduct System and many live and farm in areas adjacent to streams that are subject to the CWRM's D&O.

As landowners and farmers downstream of the EMI Aqueduct System, two major concerns emerged among participants. First, many reported that the EMI Aqueduct System is not maintained in a manner that was safe for people in the area and located downstream. Focus group participants said that portions of the ditch area are so overgrown with vegetation that people visiting the area are injured if they stumble upon or fall into ditches and flumes that are not readily visible. Two bridges on State land often flood in this wet season, and people cannot drive to their residences until the water level subsides. It was felt that the bridges are unsafe because of a lack of maintenance.

Also, people who visit popular areas in the vicinity of the State Forest Reserve, such as Twin Falls (which is partially within License Area; the upper falls are within the License Area but, the area that is frequently visited is outside the License Area), and area trails, noted that these areas are subject to overgrown landscaping and flash flood conditions. Participants noted that neither EMI nor the State has participated in maintenance of the EMI Aqueduct System and trails in this area, even though this area attracts residents and visitors alike.

Also, participants said that EMI personnel do not notify residents in the area when the gates open to allow downstream flow. The sudden onrush of stream water has endangered several people who happened to be in/near the stream at that time.

It was noted that, with the closing of the sugar plantation, the low level of maintenance has deteriorated even further given the reduction of EMI staffing to, reportedly, about eight people.

A second major concern with this group is fairness in how they, as a community, have been treated in two ways. First, they reported of the 25 streams in the petition before the CWRM, only three streams in the Huelo watershed were considered kalo streams and designated for full flow. While they agreed with such designation in other watersheds, they felt more streams in their area should have been considered.

Another fairness related concern raised by the group is that residents and farmers in Huelo and Ha'ikū have very limited rights to watershed streams. Except for those whose properties have deeds allowing stream water access via pipes, most cannot access stream water. They cannot use the water for agriculture or domestic uses. Participants noted that they are off the electricity grid, and they are very interested in using stream flow for hydroelectricity. It was reported that there have been drought times in which residents had to truck in water even though they live next to streams. It was also said that those who were fortunate to have wells on their property share their water with neighbors during these times.

The Environmental and Sustainability focus group meeting brought up discussions relevant to East Maui. At the time, it was reported that the public has very limited access to EMI Aqueduct System as EMI maintains locked gates. The EMI Aqueduct System upkeep is unknown and the participants suspect that much of the EMI Aqueduct System is in disrepair. They believe that the State should have its own maintenance access for community-based monitoring. Such community access should also allow for cultural practices.

A focus group was held with residents, farmers, and cultural practitioners on November 16, 2018 at Ke'ānae School. The prevalent theme in this focus group meeting was the foundational impact of generational change and legacy. Participants shared an inherent personal angst that permeated ethnic identities and communal cultural practices.

This focus group repeatedly cited instances of multiple 'ohana generations that had to deal with the transition from full stream flow to EMI stream diversions. Participants stressed that wai (water) is life, the starting point for Hawaiian culture in all forms, including food, soft fiber, medicine. The wai from streams contain food sources and fed kalo patches and agricultural activities. In the past, keiki (children) played in streams and intimately learned about nature and the ecosystem. Participants personally experienced these activities and it pained them that their ability to pass this legacy on to their children and grandchildren has been hindered by EMI stream diversions.

Kupuna participants noted that getting water back in the streams has been occurring over decades, starting with their own kupuna. Several people said, "We are weary of this fight." Further, this group was unique in having many young people; they acknowledged the sacrifices of their kupuna and are prepared to fight for their children, again stressing the multi-generational effect of water leases in East Maui.

Another perspective that was a common theme is the natural order of the environment. It was often noted that Hawaiian cultural practices are based on using the environment in its natural state. As one person said, "We are servants of nature." They described the ahupua'a land system and the 'auwai (ditch/canal) that fed their agricultural fields in a systematic way.

They stressed that the flow of streams into the ocean has also been an integral part of cultural resources. Stream fish, shrimp and mollusks need the interaction between streams and nearshore waters and this allows for healthy ecosystems and productive food gathering.

Without exception, participants in this focus group wanted to see streams restored and diversion structures entirely removed. While they felt that releasing the kalo streams as initially done by A&B in 2016 and as now required under the CWRM D&O is a step in the right direction, they believed that continued stream diversions in this area need to end.

Regardless of changes in stream diversion and restoration, participants believed that the EMI Aqueduct System infrastructure is not being maintained or managed. There were stories of the need for better maintenance, including downstream scouring in flooding conditions, dry streams with only intermittent release from gates, and washed out bridges.

One recollection is of a site visit with County officials of the EMI Aqueduct System. The road was so overgrown that vehicle almost drove into the ditch. When one person exited the vehicle, he stepped into the ditch and water reached his knees.

Another instance of ineffective stream management is related to mosquitos, which became more prevalent during times when stream flow was low due to diversions. The population of mosquito fish, which ate the mosquitos, eventually decreased as the ponds dried up. Additionally, the population of toads, which also controlled mosquitos, decreased with EMI's increased spraying of Roundup, a chemical weed killer.

Participants reported that EMI staffing has decreased to eight people and they were not hopeful that maintenance and management would improve in the near future.

#### **April 2019 Interviews**

"Balance" was a frequent theme among interviewees. They acknowledged that various groups need water originating from East Maui State watershed lands and felt that users should have access to water they truly need. Of note is that, regardless of one's own interest in the Water Lease, no one wanted water withheld from other groups.

There was disagreement as to the source of water and how the water is allocated. Further, interviewees sometimes felt that A&B's efforts towards the Water Lease was self-serving and divisive. Nevertheless, people were hopeful that this contentious environment was coming to an end with Mahi Pono as the new owner. Those interviewed expressed willingness to explore options regarding water if community needs, such as local farming / ranching, food self-sufficiency, and so on, can be met.

As expressed in the November 2018 focus groups, many felt that, as a public trust, stream water from State watershed lands should not be diverted for private purposes.

It was pointed out that State watershed stream water used in the EMI Aqueduct System is one of four sources of water that can be used. Other sources reportedly include water from watershed lands owned by EMI, Central Maui water wells on lands now owned by Mahi Pono, and the West Maui Ditch System.

An issue often raised in the November 2018 focus group sessions was the reportedly poor condition of the EMI Aqueduct System. Interviewees also discussed this topic from the perspective of reducing water losses. They said that the reduction of water losses would reduce the amount of water required for agricultural operations.

These interviewees wanted to know how Mahi Pono will ensure that continued use of the EMI Aqueduct System will be monitored and operated for efficient use of water, which is valued as a public trust, an integral environmental resource, and essential for healthy ecosystems.

Interviewees pointed out that, even though the CWRM D&O restored several streams in East Maui, the social and cultural effects of historical and significant stream diversions have yet to be rectified. This belief was reiterated several times in the November 2018 focus groups and expressed by those interviewed.

While there has been interaction between Mahi Pono and East Maui residents, there still needs to be acknowledgement of past wrongs and a “path to healing” that will allow residents and the new landowner to have a constructive relationship.

Those interviewed understood that Mahi Pono is not responsible for whatever occurred during A&B’s tenure. Mahi Pono inherited a legacy that developed for over one hundred years. Nevertheless, to move forward as an integral part of the Maui community, Mahi Pono needs to “make pono” with East Maui so that everyone can move forward. One person said, “There needs to be apology, repentance and reparation.”

### **Impacts and Mitigation Measures**

The social impact of diverting water from East Maui is generational, one that has affected livelihoods, family cohesion, the ability to integrate with environment for food gathering and recreation, resource stewardship, and personal connections or disconnections with values inherent in the lifestyles of East Maui residents.

East Maui residents, farmers and cultural practitioners have been advocating for the reduction of stream diversions and the return of full stream flows. Focus group participants and interviewees stressed that previous water leases have had significant impact on their culture, social well-being and generational ability to thrive in East Maui.

While the CWRM D&O addresses or mitigates that impact to some degree, the proposed Water Lease would still affect streams in their area. The Proposed Action is viewed as a continuation of taking East Maui water to support a private for-profit company. The Proposed Action is not seen by some participants as part of a solution, but rather as an extension of past wrongs. Participants vowed to continue to oppose the proposed Water Lease, and advocate the removal of all diversion structures from the kalo and community streams designated for full restoration. They also noted that

East Maui streams have been flowing well since sugar cultivation ceased. They were very concerned that once active stream diversion resumes, stream flow in the majority of East Maui streams will be lessened and again restricted.

For East Maui farmers, the proposed Water Lease would continue to divert water from streams not designated for full restoration, although some are mandated to have partial restoration to support the stream habitat. When active diversion resumes, it is expected that an overall decrease in stream flow will occur in East Maui when compared to current conditions, but there will be an overall increase in stream flow compared to when sugar was fully operational in Central Maui.

EMI has indicated that it is modifying or removing several diversion structures to complete restoration of diverted streams that have been designated for full flow. This has positive social value for East Maui because it represents progress in stream restoration. Stream restoration addresses physical mitigation and will support cultural and food gathering practices. EMI is also moving its focus to streams in Huelo as a part of its stream abandonment project, specifically Hanehoi Stream. There are other stream diversions in these areas that may require further, more complicated designs that may need more time.

In the April 2019 follow-up interviews, there was hope that Mahi Pono would address problems with physical infrastructure by improving stewardship of the EMI Aqueduct System. EMI has been increasing the size of its crew and continue to evaluate the needs for further employees to maintain both the EMI Aqueduct System and the associated access roads and trails. It was stressed, however, that, while physical and environmental mitigation is crucial, there is still a fundamental need to rectify social, cultural and emotional impacts that have developed for over one hundred years. Although Mahi Pono did not cause these impacts, the company has inherited a legacy that is generational and needs to be addressed to help these East Maui communities move forward.

Two areas of mitigative measures are recommended for consideration, should the proposed Water Lease be granted by the BLNR. These measures are intended to establish an ongoing working relationship between the community, Mahi Pono and EMI, and related public agencies, as well as continue resolution with East Maui communities.

It is recommended that interest groups, or stakeholder groups, are clearly defined so that there is recognition of who will be affected by the proposed Water Lease. Groups should include geographic communities, environmental, agriculture and business interests, and public agencies. Each group would be encouraged to reach consensus on their own needs, concerns, opportunities and possible solutions.

A starting point for identifying stakeholder groups could be the interviewees and focus group participants that participated in Earthplan's SIA and their networks.

It is recommended that interest groups are equitably represented in a "Core Working Group" that would serve as a forum for exchanging ideas and collaborative efforts, as



well as provide feedback and suggestions to Mahi Pono. Each member of the Core Working Group would be expected to reach out to their own networks to extend the discussion beyond the Core Working Group. While there would likely be strong differences in perspectives and opinions, the Core Working Group would need to find ways to establish core principles, common ground and manageable solutions.

The fundamental value that will help bring people to the same table is trust. The proposed Water Lease has elicited skepticism and distrust over many decades, and these feelings prevent willingness for participating in mediation and collaboration. While developing trust among the various groups will be challenging, the first step is transparency. Being open about intent, plans, and activities can begin to establish credibility and open the door to dialogue.

Specifically for the Ke‘anae – Wailuānui community to move past historical impacts, there needs to be established a point of departure. Mitigation needs to go beyond the physical restoration of streams. It needs to address the social context and include apology and reconciliation. This needs to be done within a cultural foundation that binds the community together, and key players, including Mahi Pono, public agencies and elected officials. The manner and forum for this process should be defined by the cultural leaders integral with the process.

## **Upcountry Maui**

### **November 2018 Focus Group Meetings**

The focus group meeting with the Kula and Pukalani Community Associations was convened on November 12, 2018 at the Kula Community Center. A separate session was held with the Makawao Community Association on November 13, 2018 at the Makawao Elementary School.

A common theme with the Upcountry Maui residents was the continuation of reliable water service to Upcountry Maui residents, businesses and farmers. There was general appreciation for water provided by the EMI Aqueduct System. It is noted that these Upcountry Maui residents felt that East Maui agricultural and cultural practitioners should also have the water they need for their activities. They understood the need for flowing cold water in kalo cultivation.

While participants understood their relationship with the EMI Aqueduct System, they believed that not all Upcountry Maui communities are served equally by the EMI Aqueduct System. They said that the EMI Aqueduct System supports the two water treatment plants for Kula, including Olinda /Upper Kula and Piihola WTP only in times of drought. They believe there needs to be clarification on the actual Upcountry Maui dependence on the EMI Aqueduct System.

Another theme, expressed primarily in the Kula / Pukalani focus group, was that water is a public trust, and should not be controlled by a single private corporation. They suggested a restructuring of public utilities to include a water utility that would be administered similar to the current electricity in the public utility structure. Further, profit made from use of this public trust should be invested in public need.

At the time (November 2018), with the conversion of A&B to a real estate investment trust, participants believed that water for agricultural uses is inconsistent with a company whose primary purpose is real estate.

However, one person was very concerned about making any change to the EMI Aqueduct System unless it was really needed. He said that the EMI Aqueduct System has worked well for over 100 years, and that any change should be carefully studied to make sure that the modifications are necessary and make sense.

During the focus group meeting with ranchers and farmers held on November 12, 2018 at the Kula Community Center, it was stressed that participants wanted to see a cap on potable water for Upcountry Maui needs, though they stressed that residents should get water they need. When that cap is reached, alternative sources such as wells should be used.

Overall, participants in each group supported local water users. East Maui supported Upcountry Maui use of water and vice-a-versa. Participants also stressed that the amount of water from the EMI Aqueduct system serving Upcountry Maui, which participants identified as 6 mgd, is a very small portion of the total water being diverted. They believe that Upcountry Maui water needs should be put in perspective of the overall water quantity that would be made available with a 30-year Water Lease.

Participants doubted that the MDWS could adapt to changes if the EMI Aqueduct System were to curtail or discontinue providing water and services as is currently occurring. They said that the MDWS is already experiencing difficulty in maintaining the Upcountry Maui Water System now, and that any challenge would likely not be met. Residents were concerned that if domestic water was limited in any way, then the MDWS would need to pump water from wells. This would be more costly than receiving water from the EMI Aqueduct System and the MDWS would likely pass this cost to the water users. Likewise, well development would also cost money and water users would end up paying through water fees.

#### **April 2019 Interviews**

“Balance” was a frequent theme among interviewees. They acknowledged that various groups need water originating from East Maui State watershed lands, and felt that users should have access to water they truly need. Of note is that, regardless of one’s own interest in the Water Lease, no one wanted water withheld from other groups.

#### **Impacts and Mitigation Measures**

The effect of the Proposed Action on Upcountry Maui domestic and agricultural water users will depend on how much water will be released from the EMI Aqueduct System for the MDWS use. If Upcountry Maui water needs exceed its water allocation, other sources of water will need to be developed. The cost of well development and pumping is expected to result in increased water fees.

Two areas of mitigative measures are recommended for consideration, should the proposed Water Lease be granted by the BLNR. These measures are intended to establish an ongoing working relationship between the community, Mahi Pono and EMI, and related public agencies, as well as continue resolution with East Maui communities.

It is recommended that interest groups, or stakeholder groups, are clearly defined so that there is recognition of who will be affected by the proposed Water Lease. Groups should include geographic communities, environmental, agriculture and business interests, and public agencies. Each group would be encouraged to reach consensus on their own needs, concerns, opportunities and possible solutions.

A starting point for identifying stakeholder groups could be the interviewees and focus group participants that participated in Earthplan's SIA and their networks.

It is recommended that interest groups are equitably represented in a "Core Working Group" that would serve as a forum for exchanging ideas and collaborative efforts, as well as provide feedback and suggestions to Mahi Pono. Each member of the Core Working Group would be expected to reach out to their own networks to extend the discussion beyond the Core Working Group. While there would likely be strong differences in perspectives and opinions, the Core Working Group would need to find ways to establish core principles, common ground and manageable solutions.

The fundamental value that will help bring people to the same table is trust. The Proposed Action has elicited skepticism and distrust over many decades, and these feelings prevent willingness for participating in mediation and collaboration. While developing trust among the various groups will be challenging, the first step is transparency. Being open about intent, plans, and activities can begin to establish credibility and open the door to dialogue.

## **Central Maui**

### **November 2018 Focus Group Meetings**

During the focus group meeting with ranchers and farmers on November 12, 2018, participants stressed that water from the Water Lease should be allocated to agriculture first, and that the priority should be for local farmers, ranchers and flower growers who are actively in production, as determined by tax status.

The participants tended to oppose monocrops that would not be produced by local farmers. They noted that coffee production for Starbucks was cited in the media as a possibility in the A&B farm plan; this was not consistent with local farming. Also, it was noted that pongamia orchards, an alternative being considered by A&B, would bring invasive species to the area and is poisonous for cattle. They believed that A&B's recent conversion of sugar lands to ranch lands was an effort to lower taxes because of lower production value. They reported that these lands continue to have sugarcane and are not used for ranching.

This group strongly advocated for quantification of water under the Water Lease. They felt that a water lease without indications of how the water would be specifically used would be irresponsible. They suspected that, while some of the water might be reserved for the 23,000 acres of IAL, there may be less restrictions on water use of the remaining 10,000 acres of the 33,000 acres in Central Maui. They speculated that these lands could eventually be used for non-agricultural uses.

During the environment and sustainability focus group meeting on November 16, 2018, participants were concerned with the type of agriculture that the water would support. They felt that a display produced by A&B that illustrated possible diversified agriculture was neither credible nor sincere. Participants noted that media coverage indicated that A&B has a potential agricultural partner. However, participants noted that there is no indication if this is real. Further, this group believes any agricultural activities supported by a State water lease should be local based and not threaten the social environment with chemicals, downwind spraying and incompatible or potentially harmful crops, such as pongamia.

Overall, participants, particularly ranchers and farmers, expressed interest in leasing land from A&B. Frustration was shared about previous efforts of local farmers in negotiating leases with the company. Reportedly there has been a policy of a minimum of a thousand acres, which most local ranchers and farmers could not afford. One person described a situation in which he was willing to lease a large tract, then sublease affordable portions to other farmers; this was not permitted.

Participants wanted to see Central Maui be a place for a wide diversity of successful agricultural activities operated by Maui farmers.

Participants suspected that eventually water from State lands will be used to urbanize at least a portion of A&B land holdings. While it may be difficult from a land use entitlement perspective to convert these lands for urban uses, conversion of the 10,000 acres that are not designated as IAL may be a more feasible opportunity. Participants strongly felt that the Water Lease should spell out specific uses allowed and what happens if A&B vacillates from the agreement. If unforeseen urbanization did occur, participants were very concerned that the area's infrastructure would be significantly impacted. They did not believe that such development would be curtailed by public agencies and public officials interested in increased tax revenues.

#### **April 2019 Interviews**

Those interviewed stressed that they wanted to see agriculture as a major land use on Central Maui. Several mentioned that the greenery experienced is an integral part of what makes Maui special. They said the green landscape is visually pleasing when driving along the coast and on mauka – makai highways. Interviewees talked about how they look forward to seeing this landscape as they fly over the agricultural fields when flying in and out of Maui. With the loss of the sugar industry, they were concerned that agriculture might be replaced by less desirable alternatives, namely more urban development. They did not want to see undeveloped Central Maui lands populated by residential communities and business complexes.

Interviewees pointed out the agriculture needs to re-establish a major role in Maui's economy. Though interviewees had different ideas about the source of and how much water would be needed for future agriculture, there was consensus that Central Maui agricultural activities will need water to remain economically viable. Those interviewed saw the potential for supporting businesses that supply the agricultural industry, such as irrigation, fertilizer, equipment, and so on. Local food vendors and restaurants would also have access to locally grown food, the supply of which is currently limited. Further, the continuation and promotion of agriculture encourages young people and future generations to consider farming as a way of life

Interviewees were heartened that Mahi Pono has publicly, and in one-on-one meetings, stated that no GMOs would be used in its agricultural operations. However, those interviewed were unclear about the extent to which chemical pesticides, fertilizers and soil additives would be used in agricultural operations. They urged Mahi Pono to share this information with the community. Moreover, those interviewed felt the use of chemicals would further “kill the soil” and is contrary to regenerating the soil and organic farming practices. It was noted that chemicals used even in the short-term time frame may detract from Mahi Pono’s qualification to qualify for organic farming status.

A key positive aspect noted by interviewees is the wide variety of crops being discussed in farm plans and crop plans presented by Mahi Pono. They liked that one crop would not dominate the agricultural landscape. They noted that previous A&B discussions of possible monocrops were problematic because these crops, such as coffee, would dominate Maui’s agricultural environment, only to be largely exported.

Those interviewed hoped that future Central Maui agricultural activities would help Maui and Hawai’i become increasingly food self-sufficient. As an island state, Hawai’i is dependent on imported food and vulnerable to limitations on the quality of this food and transportation disruptions. They hoped that the potential large scale agricultural operations and production with the new ownership of Central Maui lands would provide food supply for Maui and Hawai’i that can lead to food self-sufficiency.

Interviewees encouraged agricultural production that would include the local market as a major target, thereby increasing the potential for food self-sufficiency. They wanted to see a variety of crops catering to the local market, and suggested produce such as dryland taro, avocado, guava, sweet potato, macadamia nuts, and popular vegetables such as bok choy and eggplant. They also hoped that Maui restaurants, supermarkets and food vendors could acquire local foods that would be fresh, affordable and a constant supply. Those interviewed expected that some of the agricultural produce would be exported as a necessary financial strategy. Interviewees wanted to see a healthy balance between allocating a portion of agricultural products for Maui food self-sufficiency and exportation for profit.

While it was noted that large scale agriculture is necessary to create a critical mass, it was also stressed that this scale of agriculture should be balanced by supporting individual livestock ranchers, small farmers and local businesses. Interviewees liked the community agricultural component proposed by Mahi Pono. They felt that, while it would provide land for small farmers, the consolidation of support, such as processing, equipment and marketing, would help lower costs for local farmers. However, it is noted that none of the interviewees indicated that they were personally involved in crop farming activities that may be part of the community farming program, nor did they know anyone who had been approached with this opportunity.

Overall, those interviewed wanted Mahi Pono to succeed. This is based on what they had heard, learned and discussed with Mahi Pono thus far. The new ownership and related ramifications imply a future that had not been previously envisioned, a future that could possibly achieve acceptable community objectives, realize viable diversified agriculture in Central Maui, support food self-sufficiency, help local ranchers and farmers, and revive agriculture as a viable economic stimulus for Maui. Interviewees appreciated that many agricultural jobs would result when Mahi Pono’s farm plan is implemented. They were



concerned, however, that, with the current low unemployment rate, Mahi Pono may find it difficult to fill new employment positions. Other challenges to finding employees could be housing and high labor costs.

The current lack of affordable housing is a problem. Interviewees said that the housing market intended for Maui's local working population is typically filled by retirees moving to Maui who can afford the average-priced homes. This results in keeping housing costs high and pricing out local buyers. Maui residents therefore have difficulty in finding affordable housing that will allow them to remain on Maui.

Another problem cited was high labor costs and unionization. These present economic challenges to many businesses operating in and starting up on Maui. One person felt that unionization and high labor costs may be economic deterrents in establishing BMP, the requirements of which exceeds minimal industry standards.

Interviewees wanted to see these challenges addressed so that there is an optimal labor supply to support Mahi Pono's farm plan.

#### **Impacts and Mitigation Measures**

The effect of the proposed Water Lease on Maui-based farmers, ranchers, and flower growers will depend on whether they can participate in future diversified agriculture in Central Maui. Thus far, there has been discussion regarding setting aside land for local farmers and eventually creating support facilities and services intended to provide means to reduce costs for individual farms. Little or no mention has been made regarding including livestock farmers in Mahi Pono's farm plan.

Interviewees have shared information with Mahi Pono regarding the significant contribution of agriculture on climate change. It was noted that agriculture is responsible for a significant portion of GHG emissions, and is therefore a main contributor to climate change.

Participants explained that regenerative agriculture integrates farm management practices to systematically improve soil health. Healthy soil would improve crop yields and resistance to pests. It was pointed out that regenerative agriculture reduces water use through the selection of crops that adapt well to local climate. If done properly, this practice can decrease reliance on agricultural chemicals, including fertilizers and biocides. Regenerative agriculture also integrates livestock that are humanely raised into crop production.

Interviewees stressed that Mahi Pono should implement a Water Management Plan. The Plan should outline improvements to the EMI Aqueduct System, including brush fire prevention and relate water needs to specific crops. They also stressed that Mahi Pono actively facilitate internship programs and educational activities that will help young people learn about agriculture, food self-sufficiency, and resource stewardship.

Two areas of mitigative measures are recommended for consideration, should the proposed Water Lease be granted by the BLNR. These measures are intended to establish an ongoing working relationship between the community, Mahi Pono and

EMI, and related public agencies, as well as continue resolution with East Maui communities.

It is recommended that interest groups, or stakeholder groups, are clearly defined so that there is recognition of who will be affected by the proposed water lease. Groups should include geographic communities, environmental, agriculture and business interests, and public agencies. Each group would be encouraged to reach consensus on their own needs, concerns, opportunities and possible solutions.

A starting point for identifying stakeholder groups could be interviewees and focus group participants and their networks.

It is recommended that interest groups are equitably represented in a “Core Working Group” that would serve as a forum for exchanging ideas and collaborative efforts, as well as provide feedback and suggestions to Mahi Pono. Each member of the Core Working Group would be expected to reach out to their own networks to extend the discussion beyond the Core Working Group. While there would likely be strong differences in perspectives and opinions, the Core Working Group would need to find ways to establish core principles, common ground and manageable solutions.

The fundamental value that will help bring people to the same table is trust. The proposed action has elicited skepticism and distrust over many decades, and these feelings prevent willingness for participating in mediation and collaboration. While developing trust among the various groups will be challenging, the first step is transparency. Being open about intent, plans and activities can begin to establish credibility and open the door to dialogue.

#### **4.7.3 Economic and Fiscal**

Munekiyo Hiraga, in support of this DEIS, prepared an Economic and Fiscal Impact Study (June 2019) assessing the economic and fiscal impacts of the Proposed Action (See Appendix H). This study assesses economic and fiscal impacts of the Proposed Action on the EMI Aqueduct System and operations, and the implied impacts on three geographic areas of Maui under both baseline conditions (outlined below) and future conditions. For an assessment of future conditions, the year 2030 was selected as the point for analysis of the impacts of the Proposed Action because it is assumed that timeframe would allow for the full implementation of the farm plan in Central Maui. The three geographic areas are: (1) East Maui, including Nāhiku, (2) Upcountry Maui; and (3) Central Maui.

##### **Baseline Conditions**

A&B cultivated sugarcane continuously in Central Maui for over a century. EMI, originally a subsidiary of A&B and now jointly owned and operated by A&B and Mahi Pono, has operated the EMI Aqueduct System since 1878 to provide irrigation to the Central Maui fields. Water service by EMI to the MDWS for Upcountry Maui began in the early 1960's. Although A&B ended sugarcane operations in December 2016, the long history of sugarcane cultivation provides relevant baseline conditions for the purposes of assessing economic and fiscal impacts associated with the Proposed Action.

**a. Typical Sugarcane Cultivation: 2006**

The year 2006 is representative of the 1987 to 2006 period of “typical” sugarcane operations. Rainfall in East Maui was regarded as normal, the restoration of stream flows was not large enough to significantly affect HC&S sugarcane operations, and the plantation was economically healthy. The 2006 analysis was applied to EMI operations and impacts on Central Maui, and not to assess the economic and fiscal impacts for East Maui, Nāhiku or Upcountry Maui as the impacts for these areas in 2006 were not expected to be substantially different from the 2008 to 2013 period.

**b. Recent Sugarcane Cultivation: 2008 to 2013**

This period was used to represent the recent sugarcane cultivation period, while sugar operations were still active and some stream restoration had been implemented. The 2008 to 2013 time period was selected because those years are representative of the last 6 full years of sugarcane operations, stream restoration had occurred, and because the CWRM D&O incorporated water diversion and distribution data for these years.

**c. Interim Diversified Agriculture Operations (2017)**

Since the cessation of sugarcane operations in 2016, some of the former sugarcane fields have been transitioned into other types of agricultural uses. The current “existing condition”, however, is actually an interim condition which is expected to change over time as additional fields are transitioned to diversified agriculture under the Proposed Action. While the interim diversified agriculture operations are the current “existing conditions”, much of the former sugar fields are currently fallow, thus the sugarcane cultivation analyses described above provide more appropriate benchmarks to which the Proposed Action may be compared for the purposes of economic and fiscal impacts.

**Future Condition/Proposed Action**

The economic and fiscal impacts of the Proposed Action include a discussion of operational costs, revenue, employment and earnings related to the EMI Aqueduct System; agricultural operations in Upcountry Maui, Central Maui, and East Maui (i.e., taro cultivation); and the impact on public/domestic water supplies (and related issues) in Nāhiku and Upcountry Maui. Those impacts are described below, sorted by the impacts on EMI Operations and the respective impacts to East Maui, Upcountry Maui, and Central Maui.

**4.7.3.1. EMI Operations - Economic and Fiscal Impacts: Baselines and Proposed Action**

**a. Typical Sugarcane Cultivation: 2006**

In 2006, EMI diverted an estimated 156.54 mgd of surface water. Average daily use by the MDWS was 3.23 mgd (Plasch Econ Pacific, LLC, 2019).

**Typical Sugarcane Cultivation: 2006 - Economic and Fiscal Impacts**

In 2006, EMI's operational costs were \$2.0 million, or \$0.035 per 1,000 gallons (kgal). Operational costs include EMI labor, fringe benefits, materials, professional services, taxes, revocable permit rent to the State, and other expenses. It is noted that this represents the cost to transport the water to Maliko Gulch. There were additional costs

for water transportation and storage from Maliko Gulch to the MDWS and the Central Maui agricultural fields. However, these additional costs were covered by HC&S. As such, the \$0.035 per kgal cost does not reflect the full cost to provide water to the MDWS and Central Maui.

Direct spending by EMI, excluding the revocable permit payment to the State from the operational costs, was \$1.8 million. The purchase of goods and services by EMI and the families of employees generated indirect sales and in turn, these suppliers generated more indirect sales by their purchases of goods and services. The indirect sales are estimated at \$2.2 million. Total direct spending and indirect sales was \$4.0 million, of which \$3.2 million was on Maui and \$0.8 million on O'ahu.

EMI employed 16 people in 2006 with a payroll of \$0.8 million. As with indirect sales, EMI operations generated indirect jobs, including those at companies providing supplies and equipment, professional services, and those involved with supplying goods and services to families of employees. EMI operations generated about 7 indirect jobs with an associated payroll of \$0.3 million. The total direct and indirect employment was 23, of which about 20 were on Maui. The direct and indirect jobs associated with EMI operations supported an estimated 51 people.

EMI revenues primarily consist of the revenue from water delivered to the MDWS. EMI also received some land lease revenue, however the amount of lease income was nominal.

With respect to fiscal impacts, the MDWS paid EMI \$0.06 per thousand gallons of water delivered for the Upcountry Water System. Based on delivery of 3.23 mgd, the MDWS payment to EMI in 2006 was \$70,700.

Associated taxes accrued to the State of Hawai'i General Fund would include General Excise Tax (GET) on direct spending and indirect sales, and payroll taxes paid by employees. GET would be approximately \$42,000, while payroll tax paid by employees is estimated at \$47,400. The total tax revenue accrued to the State in 2006 was approximately \$89,400.

EMI paid \$158,284 in 2006 to the State Special Land Development Fund for the revocable permits for the water, which is equivalent to approximately \$210,800 in 2018 dollars. The OHA receives 20% of the revocable permit revenue, while the DHHL receives 30%. This translates to approximately \$42,200 for OHA and \$63,200 for DHHL.

#### **b. Recent Sugarcane Cultivation: 2008 to 2013**

Between 2008 and 2013, EMI diverted an average of 113.71 mgd to HC&S (CWRM D&O, FOF 685). Average daily use by the MDWS was 7.1 mgd (CWRM D&O, FOF 551). The remainder was utilized by HC&S to support A&B's agricultural operations or represents system losses.

**Recent Sugarcane Cultivation: 2008 to 2013 - Economic and Fiscal Impacts**

Average operational costs for EMI between 2008 and 2013 was \$1.6 million, or \$0.039 per thousand gallons (kgal). As previously noted, this represents the cost to transport the water to Maliko Gulch; it does not reflect the full cost to provide water to the MDWS and Central Maui.

Direct spending by EMI, excluding the revocable permit payment to the State from the operational costs, was \$1.4 million. Total direct spending and indirect sales was \$3.2

Fiscal impacts are determined based on an average usage of 7.1 mgd for which the MDWS payments to EMI totaled approximately \$155,500 per year. GET would average approximately \$37,000 per year while payroll tax paid by employees is estimated at \$45,400 annually. The total tax revenue accrued to the State was approximately \$82,400 per year.

EMI paid \$187,900 to the State Special Land Development Fund for the revocable permits for the water, including approximately \$37,600 for the OHA and \$56,400 for the DHHL.

**c. Interim Diversified Agriculture Operations (2017)**

In 2017, an estimated 23.99 mgd of surface water was diverted from the Collection Area. The MDWS used 2.86 mgd, which is significantly lower than the historical average cited by CWRM of 7.1 mgd.

**Interim Diversified Agriculture Operations (2017) - Economic and Fiscal Impacts**

In 2017, EMI operational costs were \$1.7 million. Direct spending by EMI, excluding the revocable permit payment to the State, was \$1.5 million. Total direct spending and indirect sales was \$342 million, of which \$2.7 million was on Maui. EMI employed 13 people in 2017, with a payroll of \$0.5 million. Total direct and indirect jobs was 19, with an associated payroll of \$0.8 million.

In terms of fiscal impacts, based on the MDWS' water use of 2.86 mgd, the MDWS paid \$62,600 to EMI for the delivery of surface water. Total State GET and payroll tax revenues would be \$65,700. EMI paid \$162,200 to the State Special Land Development Fund for the revocable permits for the water with the same proportional disbursements to the OHA and the DHHL.

**d. Proposed Action - Issuance of Water Lease**

Due to the nature of the EMI Aqueduct System, the operational costs are largely fixed, with minimal variable costs. Future operational costs for the EMI Aqueduct System are anticipated to be similar to the average cost experienced during the recent sugar operations period (2008-2013), with the only variation being the amount of the Water Lease payments owed to the State. Therefore, while the costs remain constant, the per unit cost for delivery of water increases as the amount of water diverted decreases. The maximum amount of water allowed in compliance with the CWRM D&O translates to an estimated 87.95 mgd from the Collection Area plus an estimated 4.37 mgd that could be diverted from the area between Honopou and



Maliko Streams, which is outside of the License Area, for an estimated total diversion of 92.32 mgd.

**Proposed Action - Economic and Fiscal Impacts**

Total operational costs for EMI labor, fringe benefits, materials, professional services, taxes, Water Lease, and other expenses are projected to be \$2.3 million per year. This would translate to \$0.068 per kgal. A currently unknown factor in EMI's operating cost is the annual Water Lease payment to DLNR. For the purposes of the economic impacts analysis, the Water Lease payment has been calculated based on the equivalent per unit cost under the existing 2019 revocable permit. The revocable permit rent payment set in November 2018 for calendar year 2019 was \$230,964.24, which represents an increase from the rent that was previously paid. Assuming 16.8 MGD is diverted under the 2019 revocable permit, the Water Lease rent rate would translate to \$0.038 per thousand gallons. This rate of \$0.038 is assumed as the basis for the future annual lease payment to the DLNR. However, the actual Water Lease rental amount will be based on an appraisal conducted prior to issuance of the Water Lease. Should the Water Lease amount be higher or lower, the operational costs of the EMI Aqueduct System would be adjusted accordingly.

Direct spending by EMI, excluding the long-term Water Lease payments to the State from the operational costs, is forecasted to be \$1.4 million. Total direct spending and indirect sales is estimated at \$3.2 million, of which \$2.6 million would be on Maui.

EMI is expected to employ a staff of 17 people with a payroll of \$0.8 million. Total direct and indirect jobs was 24, with an associated payroll of \$1.1 million. The direct and indirect jobs associated with EMI operations would support an estimated 54 residents.

Fiscal impacts under the Proposed Action assume that the rate the MDWS pays to EMI will increase because EMI's per unit operating cost will increase as the fixed costs will be spread out over a lower volume of water diverted and possible higher Water Lease payments to the State compared to historic payments. It is estimated that EMI's operating cost under the Proposed Action would be \$0.068 per kgal, which is higher than the current MDWS payment to EMI of \$0.06 per kgal. The actual rate the MDWS will pay to EMI in 2030 will be subject to a future agreement between the parties. However, for the purposes of the fiscal impacts analysis, the 2030 water service fee rate is estimated to be \$0.10, which has been calculated based on the ratio of operational cost to the MDWS service fee for 2008 to 2013. Under this assumption, EMI would receive an estimated \$268,000 in 2030 from the MDWS.

The amount paid to the State Special Land Development Fund for the Water Lease would be based on an appraisal conducted prior to issuance of the Water Lease. Assuming the amount of the Water Lease is based on the equivalent per unit cost under the existing revocable permits, the annual payment to the Special Land Development Fund would be \$846,700. Of this, \$169,300 would be disbursed to OHA and \$254,000 would be set aside for the DHHL. GET revenue would be estimated at \$37,000 while payroll tax would be \$45,400 per year.

#### **4.7.3.2. East Maui - Economic and Fiscal Impacts: Baselines and Proposed Action**

Impacts related to East Maui include both the agricultural users in East Maui, such as taro farmers, as well as residents in Nāhiku who rely on water delivered through the EMI Aqueduct System.

Due to the heavy rainfall on the windward slopes of Haleakalā and the many streams in the area, many of the makai communities in East Maui are well suited for growing taro and truck crops. Also, a number of farmers in East Maui have appurtenant and riparian rights to use water from these streams. Collectively, there are about 45 acres in East Maui that are suitable for growing taro, and about 35 acres for truck crops (Plasch Econ Pacific, LLC, 2019).

Nāhiku is a small rural community in east Maui located makai of Hana Highway in the vicinity of mile marker 25. The Nāhiku community is characterized by rural residential uses. There is no significant commercial development in Nāhiku. MDWS receives water directly from the EMI Aqueduct System for the Nāhiku community, with the source of that water being a development tunnel located east of Makapipi Stream, that feeds into the Ko'olau Ditch and is accessed by MDWS in the Ko'olau Ditch near Makapipi Stream.

##### **a. Baseline Condition**

A number of East Maui farmers divert stream water to irrigate taro lo'i and small farms. Taro farming is difficult and labor-intensive, and the net returns are modest. Nevertheless, many farmers are attracted to the lifestyle and to growing this culturally significant crop. Farmers in East Maui have reported that past surface-water diversions to supply water to Central Maui left insufficient water in the streams for them to take full advantage of the agricultural potential in East Maui. The CWRM D&O returns free flowing water, with no upstream diversions, to all streams that have historically supported significant taro cultivation. As a result, ample stream water should now be available to irrigate taro lo'i and the small farms relying on East Maui streams.

In Nāhiku, there are 43 water meters, all located along Nāhiku Road (County of Maui, Department of Water Supply, 2019). In 2013, there were 43 connections to MDWS' Nāhiku system, serving a population of 107 people. The average daily flow to the Nāhiku community was 41,000 gpd 2013 (County of Maui, Department of Water Supply, 2019).

##### **Baseline Condition: Economic and Fiscal Impacts:**

Given the small population of Nāhiku and the lack of commercial land uses, the economic and related fiscal impacts for the Nāhiku community are considered negligible. Insufficient data is available to describe the economic and fiscal baseline conditions for East Maui.

##### **b. Proposed Action - Issuance of Water Lease**

Under the Proposed Action, the amount of water that can be diverted must be in compliance with the CWRM D&O, which required a return of flow to the taro streams in East Maui. The Proposed Action also contemplates a continuation of water delivery to MDWS and therefore the continuation of service to the Nāhiku community.

### **Proposed Action - Economic and Fiscal Impacts**

The taro farms and other farms in East Maui that depend on stream flows would produce at full development about 1.0 million pounds per year of taro, and about 400,000 pounds per year of other crops. The resulting direct sales would be about \$1.4 million per year. Indirect sales generated by the purchase of goods and services would be about \$1.5 million per year. Thus, total direct and indirect sales would be about \$2.9 million per year (with rounding), of which about \$2.3 million would be on Maui and \$500,000 on O'ahu. Profits from farm operations and indirect sales would be about \$300,000.

Full development of the taro farms and other farms in East Maui that depend on stream flows would result in about 14 jobs and generate about 7 indirect jobs, for a total of about 21 jobs. The payroll is expected to reach about \$500,000 for the direct jobs and \$800,000 for all direct and indirect jobs. The direct and indirect jobs provided will support an estimated 47 residents, most of which would be on Maui.

Given the small population of Nāhiku and the lack of commercial land uses, the economic impacts to Nāhiku under the Proposed Action, where water continues to be provided to the community, are considered negligible.

In terms of fiscal impacts, the taro farms and other farms in East Maui that depend on stream flows would generate approximately \$67,000 per year in State taxes at full development. For the County of Maui, property taxes will total about \$100 per year. The City and County of Honolulu will derive about \$300 per year from the excise tax surcharge. Given the small population of Nāhiku and the lack of commercial land uses, the fiscal impacts to Nāhiku under the Proposed Action, where water continues to be provided to the community, are considered negligible.

#### **4.7.3.3 Upcountry Maui - Economic and Fiscal Impacts: Baselines and Proposed Action**

The MDWS Upcountry Water System relies on three surface water sources for potable water, one of which is delivered by the EMI Aqueduct System through the Wailoa Ditch to the Kamole-Weir Water Treatment Plant (WTP), and the other two through the MDWS higher elevation aqueducts (the Upper and Lower Waikamoi flumes) maintained by EMI through a contractual agreement. All three sources are addressed through a contractual agreement between the County and A&B, and under that agreement continued delivery to MDWS is contingent upon the issuance of the Water Lease.

Approximately 80% to 90% of water delivered within the MDWS Upcountry Maui Water System is supplied by surface water and the remainder is by groundwater (wells) (CWRM D&O, FOF 799). As noted above, one of the water sources that the MDWS Upcountry District relies on for potable water is delivered by the EMI Aqueduct System through the Wailoa Ditch. The surface water delivered by Wailoa Ditch is treated at the Kamole Weir WTP, which has the largest production capacity of the three WTPs within the MDWS Upcountry District.

In 1993, the MDWS determined that the Upcountry Water System had insufficient supply for fire protection, domestic, and irrigation purposes to take on new or additional services without detriment to existing customers. A water meter priority list for landowners who had applied for

water service in the area was established in 1994. As of January 3, 2019, there were 1,650 applicants on the water meter list (MDWS, 2019).

**a. Recent Sugarcane Cultivation: 2008 to 2013**

Between 2008 and 2013, the Upcountry Water System used an average of 7.9 mgd. Approximately 60% of the MDWS' water use in the Upcountry System is for residential, commercial, or institutional use and 40% is for agricultural users. Of this, an average of 7.1 mgd was delivered by the EMI Aqueduct System (CWRM D&O at pp. 143, 213).

**Recent Sugarcane Cultivation: 2008 to 2013 - Economic and Fiscal Impacts**

In 2010, there were approximately 35,300 people within the Upcountry Maui Water System service area (CWRM D&O, FOF 797). Based on a median household income of \$77,400, households in the Upcountry Maui Water System area had a collective income of \$1.0 million.

It is estimated that there were approximately 830 businesses in Upcountry Maui in 2010, employing 5,100 individuals. Total payroll is estimated at \$232.1 million and direct sales revenue associated with these businesses is estimated to be \$836.4 million.

Fiscal impacts include revenues and expenditures related to the MDWS activities going into to the County's Water Supply Fund. Based on the average amount of water delivered by the EMI Aqueduct System between 2008 and 2013, it is estimated that the MDWS paid \$155,500 to EMI.

The County of Maui assesses water service fees based on 18 different use classifications (i.e., single-family, multi-family, industrial, etc.). The same water rates are charged across the nine (9) water systems in Maui County. The average water service fee rate Countywide is \$4.00 per kgal. Based on this rate and water usage between 2008 and 2013, water service fees averaged \$11.5 million annually from Upcountry Maui.

**b. Interim Diversified Agriculture Operations (2017)**

According to the MDWS Annual Report, the Upcountry Water System used 7.9 mgd in 2017, of which 2.86 mgd was provided by EMI. MDWS's use of surface water from the EMI Aqueduct System was low in 2017 because heavy rainfall increased supplies from other County sources that depend upon rainfall (Plasch Econ Pacific, LLC, 2019).

Approximately 40% of the water delivered through the Upcountry Maui Water System is for agricultural uses, including supplying non-potable water to KAP, which consists of 31 farm lots ranging from 7 to 29 acres owned by the County of Maui. The source of water for KAP and the planned 262-acre expansion of KAP, is Reservoir 40, which is sourced by the EMI Aqueduct System. The economic and fiscal impacts related to this supply to KAP are assessed in Section 4.7.4 regarding Agricultural Economy and therefore are not repeated here.

**Interim Diversified Agriculture Operations (2017) - Economic and Fiscal Impacts**

In 2017, there were estimated 37,100 residents and 14,200 households within the Upcountry Maui Water System service area. Based on a median household income of \$77,400, households in Upcountry Maui had a collective income of \$1.1 billion and consumption expenditures of \$603.5 million. Residential property values within the Upcountry Maui Water System service area was approximately \$2.3 billion in 2017.

There were approximately 880 businesses in Upcountry Maui in 2017, employing 5,400 individuals. Total payroll is estimated at \$245.7 million. Direct sales associated with these businesses were approximately \$885.6 million. Commercial property values within the Upcountry Maui Water System Service Area were approximately \$145.8 million in 2017.

In total, direct sales from residents' consumption expenditures and Upcountry Maui businesses are estimated at \$1.3 billion and residential and commercial property value is approximately \$2.5 billion. In addition to residents and businesses serviced by the MDWS in Upcountry Maui, there are also numerous public uses that benefit from water from the EMI Aqueduct System and the MDWS. These public uses include but are not limited to, public and private schools, fire stations, community centers, and parks. The MDWS system also services agricultural users including the KAP.

Fiscal impacts during this period, based on an assumed delivery of 2.86 mgd from the EMI Aqueduct System in 2017, mean the MDWS would have paid \$62,600. Based on the average water service fee rate Countywide of \$4.00 per kgal and the assumed water usage in 2017, water service fees of \$11.6 million were collected from Upcountry Maui and deposited into the Water Supply fund.

**c. Proposed Action - Issuance of Water Lease**

For the purposes of analyzing the impacts of the Proposed Action, it is assumed that the Upcountry Maui Water System will have access to 7.1 mgd supplied by the EMI Aqueduct System. However, that amount is not sufficient to address expected growth in Upcountry Maui, which is projected to require as much as an additional 7.95 mgd to meet future demands through 2030.

The MDWS projects that by 2030, the population of the area served by the Upcountry Maui Water System will grow to 43,675 residents, with a predicted additional water need of 1.65 mgd (CWRM D&O at 214). In addition to water demand resulting from population growth, additional water is needed to meet the demands of the applicants on the water meter waiting list. MDWS anticipates that it will need to develop between 4.2 mgd and 7.95 mgd in addition to the approximately 7.1 mgd currently provided through the EMI Aqueduct System, to meet demands through 2030 (CWRM D&O at 214). For the purposes of the economic and fiscal impacts analysis, it is assumed that the full 7.95 mgd will be needed to meet future demands through 2030.

The MDWS has evaluated a variety of strategies to meet the long-term future demands in the Upcountry Maui Water System and/or respond to reductions in the surface water supply. The strategies that have been determined to be most cost effective consist of combinations of



additional basal well capacity and/or construction of raw water storage reservoirs. New basal well development would involve construction of new wells at the 1,300 foot elevation and/or wells at the 1,800 foot elevation, along with transmission pipelines, storage tanks, and booster pump stations. A possible limitation on the development of new wells is the Consent Decree that MDWS entered into in 2003 that requires that the MDWS conduct rigorous cost/benefit analyses of other water source options before developing groundwater in the East Maui region. According to an assessment by Brown and Caldwell, development of additional basal wells may be a “viable strategy to meet future needs from a technical perspective; however, there are legal issues that must be resolved before the MDWS can proceed” (Brown and Caldwell, 2014). In addition, the hydrogeological viability of the wells would need to be assessed.

Constructing additional raw water storage reservoirs to store water from wet periods for use during dry periods presents another strategy to meet future water demand. The MDWS evaluated reservoirs ranging in size from 100 million gallons (mgal) to 300 mgal to serve the Olinda, Piihola, and/or Kamole Weir WTPs. The analysis determined that the most cost-effective reservoirs would be reservoirs designed to feed the Piihola WTP or the Kamole-Weir WTP (Brown and Caldwell, 2014).

New reservoirs have high capital costs but lower operational and maintenance costs compared to groundwater wells. There must be sufficient source water available to fill the reservoir. In comparison, new wells carry relatively lower capital costs but require transmission and storage improvements and have higher operational costs due to the cost of pumping groundwater. It is also noted that there is risk associated with drilling new wells because of the uncertainty of the quantity and quality of water that would be found. The assessment prepared by Brown and Caldwell opined that it would be easier to develop new basal wells than to construct new storage reservoirs due to the need for capital financing mechanisms to construct expensive reservoirs, and potential environmental issues associated with constructing a new reservoir in the Lower Kula area (Brown and Caldwell, 2014).

#### **Proposed Action - Economic and Fiscal Impacts**

Under the Proposed Action it is assumed that MDWS will continue to have access of up to 7.1 mgd through the EMI Aqueduct System. The County of Maui projects that the population in the Upcountry Maui Service Area will grow to approximately 43,700 in 2030, translating to an estimated 16,700 households. Assuming a median household income of \$77,400, households in the Upcountry Maui Service Area are anticipated to have a collective income of \$1.3 billion and consumption expenditures of \$710.0 million. Residential property values within Upcountry Maui are estimated to grow to \$2.7 billion.

Assuming proportional growth in line with population, there will be an estimated 1,100 businesses in Upcountry Maui in 2030, employing 6,700 individuals. Total payroll would be estimated at \$304.9 million, while direct sales associated with these businesses would be \$1.1 billion. Commercial property values within Upcountry Maui are estimated to grow to \$180.9 million.

In total, direct sales from residents' consumption expenditures and Upcountry Maui businesses are estimated at \$1.6 billion and residential and commercial property value is approximately \$2.9 billion.

Fiscal impacts to Upcountry Maui arise from the assumption that the MDWS will need to develop 7.95 mgd of new water sources to meet future demands through 2030 (even with the continued supply of 7.1 mgd from the EMI Aqueduct System under the Proposed Action). The Brown and Caldwell analysis indicates that incremental basal wells would be a strategy to meet future demands assuming no reduction in surface water flows. Under the Brown and Caldwell analysis, the life-cycle unit cost of developing and operating wells is \$34 per kgal. It is noted that the life-cycle unit cost to develop new water for Upcountry Maui customers is high. In comparison, a similar analysis conducted for the Central Maui Water System showed a unit cost of less than \$10 per kgal, or less than one third the cost of Upcountry Maui water development (Brown and Caldwell, 2014). The total life-cycle cost for 7.95 mgd of new wells is \$1.2 billion. The life-cycle cost is expressed as the net present value of all the costs incurred over 25 years, including capital, operating, and maintenance costs.

As previously mentioned, the rate that the MDWS pays to EMI will increase by 2030 because it is assumed that EMI's per unit operating cost will increase under the Water Lease. The actual rate the MDWS will pay to EMI will be subject to a future agreement between the two entities. However, for the purposes of this analysis, the 2030 water service fee rate is estimated to be \$0.10, which has been calculated based on the ratio of operational cost to the MDWS service fee for 2008 to 2013. Under this assumption, the MDWS would pay an estimated \$268,900 per year to EMI.

Water service rates vary by class of users (i.e., residential, commercial, agricultural, etc.). The average the MDWS water service rate Countywide is \$4 per kgal. Inasmuch as the same water rates are charged across the nine water systems in Maui County, there are many factors that determine the water service rate. Therefore, it is difficult to predict what the water service rate would be in 2030. However, it is noted that the life-cycle unit cost to develop new water for Upcountry customers of \$34 per kgal far exceeds the current average water service rate of \$4 per kgal. It is assumed that the MDWS would seek a variety of funding sources to cover the cost to develop new wells. This may include County capital improvement program funds as well as State and/or Federal funds.

Nevertheless, due to the significant cost of new water source development, it would be reasonable to expect that water service rates would increase in the future to offset the costs of new water sources. As noted above, the County's water rate structure is uniform for all customers; water rates are not dependent on the service area a customer is located in (Brown and Caldwell, 2014). Therefore, under the MDWS' current rate structure, the increases would apply Countywide because rates do not vary by service area.

#### **4.7.3.4. Central Maui - Economic and Fiscal Impacts: Baseline and Proposed Action**

A&B continuously cultivated sugarcane on the fields of Central Maui for over a century. These Central Maui fields were irrigated by water from the EMI Aqueduct System and brackish groundwater. The impact analysis is based on approximately 30,000 acres of Central Maui fields that were historically serviced by the EMI Aqueduct System and supplemental brackish

groundwater. Excluded from the analysis were fields west of Maui Veterans Highway that were irrigated with surface water from the Wailuku Water Co. and supplemental brackish water.

**a. Typical Sugarcane Cultivation: 2006**

For the 2006 crop, 145,200 tons of raw sugar were produced from the Central Maui fields, of which approximately 84% (29,430 acres) was served by water sourced through the EMI Aqueduct System.

**Typical Sugarcane Cultivation: 2006 - Economic and Fiscal Impacts**

Sales of sugar and energy sourced from Central Maui generated approximately \$101 million in direct sales. The purchase of goods and services by HC&S and families of those employees generated indirect sales estimated at \$91 million. Total direct and indirect sales were \$191 million, of which \$160 million was on Maui. Profits from sugar operations and indirect economic sales were estimated at \$19 million.

HC&S employed some 630 workers, and total indirect jobs during this time is estimated at 710, for a total direct and indirect employment of 1,300 jobs. Payroll was approximately \$48.5 million for direct jobs and \$82.7 million for all jobs (direct and indirect). These jobs supported an estimated 3,300 residents.

In terms of fiscal impacts, sugar generated an estimated \$5.9 million in State tax revenues and rental payments to the State. The revenues were low because the sale of exported sugar was exempt from excise taxes. Property taxes to the County of Maui were about \$50,000 per year.

**b. Recent Sugarcane Cultivation: 2008 to 2013**

During this period, approximately 36,180 acres of land was farmed for sugar, of which approximately 84% (30,320 acres) were served by water sourced through the EMI Aqueduct System.

**Recent Sugarcane Cultivation: 2008 to 2013 - Economic and Fiscal Impacts**

The amount of sugar produced in this period was less than the prior period (136,300 tons/year versus 145,200 tons/year). Sales of sugar and energy generate annual revenue of approximately \$116 million in direct sales. Total direct and indirect sales averted nearly \$220 million per year. Profits from sugar operations and indirect sales were estimated at \$22 million.

HC&S employment was slightly lower than in the prior period 620 workers compared to 630 workers). Total direct and indirect employment is estimated at 700 workers. Payroll for direct workers is estimated at \$34.3 million, and total payroll (direct and indirect) was \$68 million).

Fiscal impacts include State tax revenue during this period, which averaged \$5.1 million. Property taxes paid to the County of Maui were about \$70,000 per year. The City and County of Honolulu received some \$40,000 per year from the excise tax surcharge.

### **c. Interim Diversified Agriculture Operations (2017)**

During this period very little of the Central Maui lands were in cultivation. Approximately 200 acres were used to grow pongamia and 500 acres used for unirrigated pasture.

#### **Interim Diversified Agriculture Operations (2017) - Economic and Fiscal Impacts**

Economic impacts during this period are negligible. The limited use of the Central Maui fields generated an estimated 10 direct and indirect jobs with a total payroll of \$0.5 million.

Fiscal impacts during this period were \$30,000 in tax revenues, and \$20,000 per year paid to the County of Maui for real property taxes. The excise surcharge to the City and County of Honolulu was negligible.

### **d. Proposed Action - Issuance of Water Lease**

Impacts from the issuance of the Water Lease are measured in two phases. First, during the estimated 10-year development period, where the Central Maui fields get prepared and used for diversified agriculture. Second, the full operations period, which follows the development period and is when the Central Maui fields are in full operation under the Mahi Pono farm plan.

Under the Mahi Pono farm plan Central Maui is expected to host a major expansion in crop farming and cattle grazing under the Proposed Action. Mahi Pono’s current plans for Central Maui envision cultivating a broad range of food and non-food crops for local consumption and export, including orchard crops (citrus, macadamia nuts, coffee, avocado, etc.), tropical fruits, vegetables and melons, row crops, annual crops, energy crops, and grass-fed cattle. In addition, the company plans to lease some of its land to other farmers at favorable terms, including relatively low rents for long periods. A solar farm is also proposed under the farm plan.

#### **Proposed Action - Economic and Fiscal Impacts - Development Period**

Implementation of the Mahi Pono farm plans requires conversion of former sugarcane lands into cropland, irrigated pasture, and unirrigated pasture. An estimated 319,000 square feet of building space (for washing and packing areas, storage etc.) would be required, as well as the development of a 37.5 mW solar farm with storage batteries. The total development expenditures would be about \$214.7 million, or an average expenditure of about \$21.5 million per year assuming a 10-year development period. Indirect sales associated with development activities are estimated to be \$18.5 million per year for a total of \$39.9 million per year, of which \$33.5 million would be on Maui and \$6.5 million on O‘ahu. Profits on development activity and indirect sales would be about \$4.0 million per year.

Direct and indirect employment associated with the development activities to implement the farm plan would average about 326 jobs, of which 285 jobs would be on Maui and 42 jobs on O‘ahu. Actual employment would vary over the 10-year development period. Payroll for the direct and indirect jobs would average \$14.5 million per year and these jobs would support an estimated 730 residents.

Fiscal impacts will raise from the conversion of Central Maui farmlands from sugarcane to diversified agriculture and green energy would generate an average of about \$1.9 million per year in State taxes, for a 10-year cumulative total of about \$18.6 million. However, because developers of solar farms receive a State subsidy of \$500,000 per 1 mW of generating capacity, the planned solar farm would generate a State subsidy averaging \$1.88 million per year for a cumulative total of about \$18.8 million. Thus, State tax revenues from development activities less the energy subsidy would result in a cumulative loss of about \$100,000 (with rounding).

The County of Maui would derive negligible tax revenues from the anticipated development activity and the City and County of Honolulu would derive cumulative excise tax surcharges of about \$1.0 million.

### **Proposed Action - Economic and Fiscal Impacts - Full Operations**

At full operations, the Mahi Pono farm plan will cause a substantial amount of crop production, including about 8 million pounds per year from the Community Farm, 321 million pounds per year from orchards, and 9 million pounds per year of tropical fruits, plus production from row crops, annual crops, and energy crops. Annual sales are expected to reach \$155.9 million. The pastures would support a cattle herd of about 7,300 cow-and-calf animal units, produce over 4,300 calves per year, and generate revenues of about \$4.8 million per year. The solar farm would generate about 82,125 mW of electricity per year, with revenues of about \$8.2 million per year. Combined farm and energy revenues would reach \$168.9 million per year in direct sales (far exceeding the 2006 revenues from sugar production of \$101 million, and the \$116 million average for the 2008 to 2013 period).

Purchases of goods and services by farmers and the families of employees would generate indirect sales and, in turn, these suppliers would generate more indirect sales by their purchase of goods and services. The indirect sales are estimated at about \$160.7 million per year. Total direct and indirect sales would be about \$329.5 million per year, of which about \$273.3 million would be on Maui and about \$56.2 million on O'ahu. Profits from farm operations, energy operations, and indirect sales would be about \$33 million.

At full operations farm employment is expected to reach about 790 jobs (about 160 more than provided by sugar operations in 2006). The jobs would be typical of those provided by diversified-crop farming and ranching-managing soils and pests, operating and maintaining irrigation systems, planting crops, pruning trees, harvesting crops, sorting and washing crops, packing crops, trucking crops to markets and shipping terminals, moving cattle among pastures, maintaining fences, marketing, accounting, etc.

The purchase of goods and services by farmers and ranchers and by the families of their employees would generate an estimated 350 jobs. In total, about 1,140 direct and indirect jobs would be supported, including about 1,000 jobs on Maui. Payroll is estimated at \$45.3 million for all direct and indirect jobs. The direct and indirect jobs would support an estimated 2,550 residents.



Regarding fiscal impacts at full operations, diversified agricultural operations in Central Maui would generate an estimated \$4.5 million in State tax revenues by 2030. Property taxes paid by to the County of Maui would be about \$800,000 per year, and the City and County of Honolulu would derive about \$140,000 per year from the excise tax surcharge.

#### 4.7.4 Agricultural Economy

In support of this DEIS, Plasch Econ Pacific LLC prepared a report on Agricultural and Related Economic Impacts (June 2019) assessing the economic agricultural impacts of the Proposed Action (see Appendix I). This study assesses agricultural and related economic impacts for the Proposed Action as compared to baseline conditions (outlined in section 4.7.3 above) and an agricultural assessment of three geographic areas: (1) East Maui, including Nāhiku; (2) Upcountry Maui, including KAP; and (3) Central Maui.

The year 2030 was selected as the point for analysis of the impacts of the Proposed Action because it is assumed that timeframe would allow for the full implementation of the farm plan in Central Maui.

##### **East Maui - Agricultural Conditions**

Because of the heavy rainfall on the windward slopes of Haleakalā and the many streams in East Maui, many makai areas along the streams are well suited for growing taro and truck crops. Also, a number of the landowners have appurtenant and riparian rights to use water from these streams for farming.

Collectively, the known landowners have about 45 acres in East Maui that are suitable for growing taro, and about 35 acres suitable for truck crops. This accounting includes only the known existing and potential farms in East Maui addressed by the CWRM D&O. Solar radiation for these areas is less than 350 calories per square centimeter per day, which is similar to or slightly below other taro-growing areas in Hawai'i.

A number of East Maui farmers divert stream water to irrigate taro lo'i and small farms. Taro farming is a chosen way of life and an important cultural activity for many. In the past, farmers in East Maui have reported that surface-water diversions to supply water to Central Maui left insufficient water in the streams for them to take full advantage of the agricultural potential in East Maui. However, in light of the CWRM D&O, ample stream water should now be available to irrigate taro lo'i and the small farms relying on East Maui streams. The large volume of water that flows out of the taro lo'i can be used to irrigate other crops.

According to the CWRM D&O, the usable acreage of the farms in East Maui that have water rights to the streams subject to the IIFS are as follows:

**Table 4-8: Usable Acreage in East Maui for Taro Lo'i**

| AREA    | TARO LO'I (ACRES) | OTHER AGRICULTURE (ACRES) |
|---------|-------------------|---------------------------|
| Ke'anae | 12.13             | 7.00                      |
| Wailuā  | 7.22              | 11.86                     |

|             |       |       |
|-------------|-------|-------|
| Wailuā      | 8.30  | 11.23 |
| Wailuā      | 11.63 | 5.00  |
| Honopou     | 5.55  |       |
| Total Acres | 44.83 | 35.09 |

This accounting only includes known farms and future farms per the CWRM D&O. Thus, stream restoration could result in about 44.83 acres planted in taro in East Maui, and 35.09 acres in other crops.

Wetland taro requires very large volumes of water flowing through the lo'i, partly to control the water temperature, thereby preventing taro rot. After flowing through the lo'i, the large volume of excess water can be used to irrigate other crops. For this analysis, it is assumed that the gross and net water requirements of taro are 140,000 and 30,000 gad, respectively. Other crops are assumed to require about 5,000 gad. With these assumptions, the gross and net water requirements for the East Maui farms are about 6.3 mgd and 1.5 mgd, respectively. The high gross water requirement reflects the fact that nearly 80% of the water used for growing taro is diverted from streams, passes through lo'i, and is then returned to the streams.

#### **East Maui: Agricultural Impacts of the Proposed Action**

The agricultural impacts to East Maui are assumed to take place irrespective of the issuance of the Water Lease. Taro farms and other farms in East Maui that depend on stream flows would produce at full development about 1 million pounds per year of taro, and about 400,000 pounds per year of other crops. The resulting direct sales would be about \$1.4 million per year. Indirect sales generated by the purchase of goods and services would be about \$1.5 million per year. Thus, total direct-and-indirect sales would be about \$2.9 million per year (with rounding), of which about \$3 million would be on Maui and \$700,000 on O'ahu. About \$500,000 of consumption expenditures would be subject to the excise tax on final sales, and \$2.4 million subject to the excise tax on intermediate sales. Profits from farm operations and indirect sales would be about \$300,000, or possibly less.

Full development of the taro farms and other farms in East Maui that depend on stream flows protected under the CWRM D&O would result in about 14 jobs and generate about 7 indirect jobs, for a total of about 21 jobs. The payroll is expected to reach about \$500,000 for the direct jobs and \$800,000 for all direct and indirect jobs. The direct and indirect jobs provided will support an estimated 47 residents living in about 20 homes, most of whom would be on Maui.

These East Maui farmers will generate less than \$70,000 per year in State taxes at full development. For the County, property taxes will total about \$100 per year. The City and County of Honolulu will derive about \$300 per year from the excise-tax surcharge.

#### **Upcountry Maui - Agricultural Conditions**

The soil ratings for Upcountry Maui (Land Capability Grouping NRCS, ALISH, LSB) are provided in Section 4.1.2.

Upcountry Maui receives moderate sunshine, with average daily insolation ranging from less than 350 to 450 calories per square centimeter per day, although a small portion of Upcountry Maui receives 500 calories. KAP receives about 450 calories per square centimeter per day. Average annual rainfall in Upcountry Maui ranges from 15 to nearly 120 inches. KAP receives an average of less than 25 inches per year. At Kula, average temperatures range from the low 50s in the winter to the high 70s in the summer. Similar to Central Maui, the prevailing tradewinds in Upcountry Maui blow from a northeasterly direction. Occasional strong winds can cause crop damage if they are not protected by windbreaks.

Upcountry Maui has lands that are suitable for farming, but the general conditions are not as good as those in Central Maui. The farms are small and scattered, solar radiation is less, farms are farther from markets and shipping terminals, water is limited and expensive, and annual rents at the KAP are much higher than those planned for Central Maui (\$1,200 per acre vs. \$150 per acre under the Mahi Pono farm plan).

**a. Upcountry Maui: Agricultural Impacts of Interim Diversified Agricultural Operations (2017)**

The EMI Aqueduct System supplies water to the MDWS Upcountry Water System Service Area, which covers approximately 61,500 acres. Approximately 32,500 acres are identified as being in agricultural use according to the County of Maui Real Property Tax records or State of Hawai'i Office of Planning. Land in diversified crops includes KAP, which is managed by the County of Maui, Office of Economic Development to promote the development of diversified agriculture on the island of Maui. KAP lots are leased to 26 farmers who grow a variety of crops, including vegetables, turf grass, landscape nursery products, flowers, bananas, and dryland taro. The total farmland irrigated with water from the EMI Aqueduct System is about 1,250 acres (447 acres for KAP plus about 800 acres for other farms = 1,247 acres).

In 2017, the EMI Aqueduct System supplied about 2.86 mgd to the MDWS for Upcountry Maui, which is well below the long-term average of 7.1 mgd. MDWS use of surface water from the EMI System was low in 2017 because heavy rainfall increased supplies from other County sources that depend on rainfall. Combined with other water sources and after system losses, the MDWS delivered about 7.93 mgd to residents, farms, businesses and others. An estimated 3.16 mgd were used for agriculture. About 0.46 mgd were for crops at the KAP, however, 1.5 mgd had to be supplied by the EMI Aqueduct System to produce the 0.46 mgd used by the farmers. About 2.7 mgd were used for crops elsewhere in Upcountry Maui. The pastures in Upcountry Maui are not irrigated. Other farmers in Upcountry Maui rely on rainfall to water their crops.

In 2017, farmers at KAP and other farmers in Upcountry Maui who relied on water from the EMI System produced an estimated 12.5 million pounds of crops per year. Annual farm sales were about \$12.5 million, and indirect sales were about \$13.8 million. Total direct-plus-indirect sales were about \$26.3 million per year, of which about \$21.5 million were on Maui and about \$4.8 million on O'ahu. About \$2.7 million of consumption expenditures were subject to the excise tax on final sales, and about \$23.7 million subject to the excise tax on intermediate sales. Rents paid to the County totaled about

\$500,000 per year. Profits from farm operations and indirect sales were an estimated \$2.6 million per year.

During this timeframe, KAP farmers and other farms in Upcountry Maui who relied on water from the EMI Aqueduct System provided about 80 jobs and generated about 40 indirect jobs, for a total of about 120 jobs. The payroll was about \$2.9 million for the direct jobs and \$4.8 million for all direct and indirect jobs. The direct and indirect jobs would support an estimated 275 residents living in about 120 homes, with about 245 residents and 110 homes on Maui.

In 2017, the farms at KAP and other farms in Upcountry Maui that rely on water from the EMI Aqueduct System would generate about \$45,000 per year in State taxes. For the County, property taxes plus rents paid to the County by farmers at the KAP totaled less than \$54,000 per year. The City and County of Honolulu received about \$2,000 per year from the excise-tax surcharge.

**b. Upcountry Maui: Agricultural Impacts of the Proposed Action**

A continuation of water supplied through the EMI Aqueduct System to serve Upcountry Maui, as planned under the Proposed Action, is projected to result in some 1,520 acres of farmland being irrigated by that source in 2030.

A continuation of water delivered through the EMI Aqueduct System to MDWS is assumed as part of the Proposed Action. Therefore, it is anticipated that the 262-acre expansion of KAP would go forward. That land would have to be converted from fallow sugarcane fields to productive fields for diversified agriculture, with an estimated cost of \$1.3 million. Related indirect sales are projected at \$320,000 per year over a 5-year period. Thus, expenditures plus indirect sales are expected to average approximately \$600,000 per year, and cumulative State tax revenues associated with this conversion would be approximately \$200,000.

Overall, farming in Upcountry Maui is expected to increase due to the KAP expansion. KAP farms and others in Upcountry Maui who will rely on water from the EMI Aqueduct System are projected to produce an estimated 15.1 million pounds of crops per year. Annual farm sales are expected to reach about \$15.1 million, and indirect sales about \$13.4 million. Total direct-plus-indirect sales will be about \$31.8 million per year, of which about \$26 million will be on Maui and about \$5.9 million on O'ahu. About \$3.2 million of consumption expenditures would be subject to the excise tax on final sales, and about \$28.6 million subject to the excise tax on intermediate sales. Rents paid to the County would total about \$900,000 per year. Profits from farm operations and indirect sales are expected to reach about \$3.2 million per year.

Employment will increase due to the KAP expansion. By 2030, farmers who rely on water from the EMI Aqueduct System are expected to provide about 100 jobs and generate about 50 indirect jobs, for a total of about 150 jobs. The payroll is expected to reach about \$3.5 million for the direct jobs and \$5.8 million for all direct and indirect jobs. The direct and indirect jobs provided will support an estimated 330 residents living in about 140 homes, with about 300 residents and 130 homes on Maui.

State taxes generated from Upcountry Maui farms that rely on water from the EMI Aqueduct System would generate about \$54,000 per year in State taxes. For the County, property taxes plus rents paid to the County by farmers at the KAP would total about \$85,000 per year. Most of the increase from 2017 would be due to the additional rental income from the anticipated KAP expansion.

### **Central Maui - Agricultural Conditions**

The soil ratings for Central Maui (Land Capability Grouping NRCS, ALISH, LSB) are provided in Section 4.1.2. 27,097 acres in Central Maui are considered "high-quality farmland" meaning rated I or II by NRCS, Prime or Unique by ALISH, or A or B by the LSB. With less water available, less acreage would be rated as high-quality farmland.

Central Maui receives considerable sunshine, with average daily insolation ranging from slightly less than 450 calories per square centimeter per day in mauka areas, to over 500 calories near Pā'ia. Average annual rainfall in Central Maui ranges from less than 15 inches per year in the southern part of the isthmus to over 50 inches in the north-eastern area of Central Maui. Most of this rainfall occurs during the winter rainy season (October through April), while the summer months (May through September) are hot and dry. Because of the low annual rainfall and/or seasonal rainfall, irrigation water is needed to grow crops in Central Maui. Average temperatures range from the low 60s in the winter to the mid-80s in the summer. The mild temperatures are favorable for growing many crops. The prevailing tradewinds blow from a northeasterly direction across the isthmus and out to sea. Occasional strong winds can cause crop damage if they are not protected by windbreaks.

Farmers in Central Maui are well-situated to supply the small Maui Island market. Compared to other farmers in Hawai'i, they can also compete reasonably well in supplying mainland markets, as long as their crops have long shelf-lives and so can be shipped by surface vessel. However, compared to farmers on O'ahu, they are at a disadvantage in supplying the Honolulu market. Furthermore, they are at a disadvantage in supplying mainland markets if their crops have short shelf-lives and so must be shipped by air. Also, farmers on Maui are at a disadvantage in competing against the low-cost producers who supply mainland markets.

Most of the water for irrigating crops must come from surface water. Upper fields can be irrigated only with surface water. Lower fields can be irrigated with a mix of surface water and brackish groundwater. Because of salinity, the use of brackish water on the lower fields is limited to about 30% of the water applied. Combining the upper and lower fields, the overall water split across all 30,000 acres would be approximately 80% surface water and 20% brackish groundwater water.

#### **a. Central Maui – Agricultural Impacts of Typical Sugar Cane Cultivation: 2006**

HC&S grew sugarcane on fields in Central Maui from 1882 to 2016 (134 years). Over time, it grew to become the largest plantation in the islands, and it was the last Hawai'i sugar plantation to close. Its success was due to its large size and economies of scale, a compact configuration which reduced costs, favorable agronomic conditions (e.g., good soils and high solar radiation), and abundant low-cost water from the EMI System. Most of the HC&S fields were owned by A&B, but some were leased from the State



and other entities. For the 2006 crop year, HC&S grew sugarcane on about 35,180 acres, of which about 29,430 acres were irrigated by the EMI Aqueduct System and brackish groundwater wells, and about 5,750 acres were irrigated with water from the West Maui Ditch System and brackish groundwater wells. Fields irrigated by the EMI Aqueduct System had about 12,800 acres (43.5%) in the upper fields irrigated only with surface water, and about 16,630 acres (56.5%) in the lower fields irrigated with a mix of surface water and brackish groundwater.

After system losses, the volume of water used to irrigate the 2006 sugarcane crop was about 143 mgd. About 112 mgd (78.3%) was surface water and 31 mgd (21.7%) was brackish groundwater. Gross water requirements (before system losses) were about 185 mgd (about 145 mgd of surface water and 40 mgd of brackish groundwater).

During this period (2006), HC&S produced about 145,200 tons of raw sugar, and sold sugar and energy to generate about \$101 million in direct sales. The purchase of goods and services by HC&S and the families of HC&S employees generated indirect sales and, in turn, these suppliers generated more indirect sales by their purchases of goods and services. The indirect sales are estimated at about \$91 million. Total direct-plus-indirect sales were about \$191 million, of which about \$160 million was on Maui and about \$32 million on Oʻahu. About \$46 million of consumption expenditures were subject to the excise tax on final sales, and about \$67 million subject to the excise tax on intermediate sales. About \$140,000 per year was paid to the State to lease fields in Central Maui. Profits from sugar operations and indirect economic sales were an estimated \$19 million.

In 2006, sugar operations generated about \$5.9 million in State tax revenues and rental payments to the State. Most of the revenues were derived from excise taxes on consumption expenditures by families supported by the direct and indirect jobs that were provided, and personal income taxes paid by these same families. Tax revenues were low because the sale of the exported sugar was exempt from the excise taxes. Property taxes paid by HC&S to the County of Maui were about \$50,000 per year. In 2006, the City and County of Honolulu derived no revenue from the excise-tax surcharge because it was not in effect that year.

**b. Central Maui: Agricultural Impacts of Recent Sugar Cane Cultivation: 2008 to 2013**

During this period there was only a modest change from the typical sugar scenario. The plantation was about 36,180 acres with about 30,320 acres irrigated with water from the EMI Aqueduct System. During this period water used to irrigate the sugarcane crop declined to 132 mgd. About 81 mgd (61.3%) was surface water and 51 mgd (38.7%) was brackish groundwater. The high amount of brackish groundwater decreased sugar yields, but maintained high levels of biomass for energy production. Gross water requirements (before system losses) were about 172 mgd including about 106 mgd of surface and about 67 mgd of brackish groundwater.

HC&S produced an average of about 136,300 tons of raw sugar per year (a decrease of 8.9 tons from 2006), and sold sugar and energy to generate average annual

revenues of about \$116 million in direct sales (an increase of about \$15 million). Total direct-plus-indirect sales averaged nearly \$220 million per year, of which about \$183 million was on Maui and \$36 million on Oʻahu. About \$37 million of consumption expenditures were subject to the excise tax on final sales, and about \$103 million subject to the excise tax on intermediate sales. About \$140,000 per year was paid to the State to lease fields in Central Maui. Profits from sugar operations and indirect sales were an estimated \$22 million.

For the 2008-to-2013 period, sugar operations generated an average of about \$5.1 million in State tax revenues and rental payments to the State. Property taxes paid by HC&S to the County of Maui were about \$70,000 per year. The increase from 2006 was due to a higher tax rate. The City and County of Honolulu derived about \$40,000 per year from the excise-tax surcharge.

**c. Central Maui: Agricultural Impacts of Interim Diversified Agriculture Operations (2017)**

Limited agricultural activities took place in Central Maui during this period, including 200 acres to grow the energy crop pongamia, and approximately 500 acres in unirrigated pasture. Less than 1 mgd was used to irrigate the pongamia. Negligible revenues were produced during this period.

This period generated about \$30,000 in tax revenues. Property taxes paid by HC&S to the County of Maui were about \$20,000 per year. Property taxes decreased because of the land was assessed at a lower value following the closure of sugar operations. The City and County of Honolulu derived negligible revenues from the excise-tax surcharge.

**d. Central Maui: Agricultural Impacts of Proposed Action**

Impacts from the issuance of the Water Lease are measured in two phases. First, during the estimated 10-year development period, where the Central Maui fields get prepared and used for diversified agriculture. Second, the full operations period, which follows the development period and is when the Central Maui fields are in full operation under the Mahi Pono farm plan.

The farm plan will evolve over time based on a number of factors, including the available supply of surface water, experience which will be gained on crops that grow well in Central Maui, crops that are profitable, the size of the market for profitable crops, etc. Nevertheless, current estimations are that 80% of the Central Maui fields will be used for orchards, which reflect a long-term commitment to agriculture. About 800 acres would be used for community farms of 1, 5 and 10 acres. The solar farm is assumed to use approximately 250 acres. Mahi Pono plans on leasing approximately 2,050 acres to other farmers. Full development of the Mahi Pono farm plan would require an estimated 82 mgd of irrigation water after system losses. Gross water requirements, before system losses, would be about 107 mgd, which is a decline of 79 mgd from the 2006 sugar cane crop year.

**Proposed Action – Agricultural Impacts During Development Period**

Implementation of the Mahi Pono farm plan would require converting former sugarcane lands to about 15,950 acres of cropland, 4,700 acres of irrigated pasture, and 9,100 acres of unirrigated pasture. The conversion is expected to take place over 10 years, to be followed by the full operations period of the farm plan. The conversion would require removing remaining sugarcane plants, adding amendments, planting windbreaks around fields, modifying field irrigation systems, installing fencing, planting crops, etc. The total cost for this conversion is estimated at about \$89 million.

The farm plan also requires an estimated 319,000 square feet of building space for washing and packing areas, storage, etc. Construction is estimated at about \$31.9 million.

Based on recently built or approved solar farms, the 250 acres for green energy are sufficient space for a 37.5 MW solar farm with storage batteries costing about \$93.8 million. The total development expenditure would be about \$214.7 million, or an average expenditure of about \$21.5 million per year assuming a 10-year development period.

Excluding imported construction materials (e.g., solar panels), the annual expenditures would be about \$8.9 million for field preparations and about \$12.6 million per year for building structures. These figures are used to estimate indirect sales. Development activities will generate indirect sales associated with supplying goods and services to the companies involved with the development, and to the families of those who work for these companies. In turn, the companies supplying goods and services, and the families of their employees, will purchase goods and services from other companies, and so on. These indirect sales will include sales by companies supplying agricultural goods (soil amendments, fencing, irrigation systems, etc.); rental of farm equipment; equipment repair; warehousing services; shipping and trucking services; etc. Indirect sales also include sales by grocery stores, drug stores, restaurants, service stations, beauty salons, medical providers, accountants, attorneys, insurance agents, etc. Based on State economic multipliers, these indirect sales are expected to average about \$18.5 million per year. Thus, development expenditures plus indirect sales are expected to average about \$39.9million per year, of which about \$33.5 million would be on Maui and about \$6.5 on O‘ahu. About \$29.4 million of development and consumption expenditures would be subject to the excise tax on final sales, and about \$10.5 million subject to the excise tax on intermediate sales. Profits on development activity and indirect sales would be about \$4 million per year.

An average of 210 workers would be needed over the assumed 10-year development period to convert former sugarcane fields to fields for diversified crops and pasture, construct agricultural buildings, and install a solar farm. Jobs would include equipment operators, soil specialists, irrigation specialists, planters, truck drivers, construction workers, supervisors, etc. Also, the various jobs would range over a variety of skill levels, including entry-level, semi-skilled, skilled, management, and professional positions. Most of these temporary jobs are expected to be filled by residents of Maui and other the islands. In addition to the direct jobs, about 120 indirect jobs would be generated by purchases of goods and services. Indirect jobs will include those at

companies supplying farming equipment, irrigation systems, fencing, chemicals, building materials, repair services, etc. Other indirect jobs would include those involved with supplying goods and services to families, and would range over a variety of skill levels.

Thus, direct-plus-indirect employment during the development period would average about 330 jobs, of which about 290 jobs would be on Maui and 40 jobs on Oʻahu. Actual employment would vary over time. The payroll during development would average about \$8.8 million for the direct jobs and \$14.5 million for all direct and indirect jobs. During the development period, the direct and indirect jobs would support an estimated 730 residents living in about 310 homes, of which about 640 residents and 280 homes would be on Maui.

The conversion of the Central Maui farmlands from sugarcane to diversified agriculture and green energy would generate an average of about \$1.9 million per year in State taxes, for a 10-year cumulative total of about \$18.6 million. However, due to the State subsidy provided to developers of solar farms (\$500,000 per 1 MW of generating capacity), the State tax revenues from development minus the energy subsidy would result in a cumulative loss of about \$100,000 (with rounding). Given the nature of Hawaiʻi's tax system, the County of Maui would derive negligible tax revenues from the anticipated development activity. Over the 10-year development period, the City and County of Honolulu would derive cumulative excise-tax surcharges of about \$60,000.

#### **Proposed Action – Agricultural Impacts During Full Operations.**

At full development, the Mahi Pono farm plan would result in a substantial amount of crop production, including about 8 million pounds per year from the Community Farm, 321 million pounds per year from orchards, and 9 million pounds per year of tropical fruits, plus production from row crops, annual crops, and energy crops. Annual sales are expected to reach about \$155.9 million. The pastures would support a cattle herd of about 7,300 cow-and-calf animal units (au), produce over 4,300 calves per year, and generate revenues of about \$4.8 million per year. Thus, total farm sales would be about \$160.7 million per year, of which an estimated \$104.4 million (65%) would be Hawaiʻi sales and \$56.2 million export sales (35%).

Based on recently built or approved solar farms, the solar farm would generate about 82,100 MW of electricity per year, with revenues of about \$8.2 million per year paid by MECO to the solar-farm operator. Combined farm and energy revenues would reach about \$168.9 million per year in direct sales (exceeding the 2006 revenues from sugar production of \$101 million, and the \$116 million average for the 2008-to-2013 period). Purchases of goods and services by farmers and the families of employees would generate indirect sales and, in turn, these suppliers would generate more indirect sales by their purchase of goods and services. The indirect sales are estimated at about \$160.7 million per year. Total direct-plus-indirect sales would be about \$329.5 million, of which about \$273.8 million would be on Maui and about \$56.2 million on Oʻahu.

About \$24.9 million of consumption expenditures would be subject to the excise tax on final sales, and about \$248.2 million subject to the excise tax on intermediate sales. Rental income from leasing land to other farmers and to an energy company would be

about \$1 million per year. Profits from farm operations, energy operations, and indirect sales would be about \$33 million.

At full development, farm employment is expected to reach about 790 jobs (about 160 more jobs than provided by sugar operations in 2006). The jobs would be typical of those provided by diversified-crop farming and ranching; e.g., managing soils and pests, operating and maintaining irrigation systems, planting crops, pruning trees, harvesting crops, sorting and washing crops, packing crops, trucking crops to markets and shipping terminals, moving cattle among pastures, maintaining fences, marketing, accounting, etc. The increase in employment would be gradual, with most jobs filled by former sugarcane workers, skilled workers from Maui and other islands, recent graduates of agricultural programs at Hawai'i high-schools and colleges, and unskilled workers who would receive on-the-job training.

The purchase of goods and services by farmers and ranchers, and by the families of their employees, would generate an estimated 350 indirect jobs. Indirect jobs would include those at companies providing agricultural supplies and equipment, office supplies and equipment, repair services, trucking services, veterinarian services, etc. Other indirect jobs would include those involved with supplying goods and services to employees and their families. Thus, direct-plus-indirect employment would totaled about 1,140 jobs, with about 1,000 jobs on Maui. Both the direct and indirect jobs would range over a variety of skill levels, including entry-level, semi-skilled, skilled, and management positions. The payroll would be about \$28.5 million for the direct jobs and \$45.3 million for all direct and indirect jobs. The direct and indirect jobs would support an estimated 2,550 residents living in about 1,100 homes, with about 2,290 residents and 1,010 homes on Maui.

The State will enjoy significant tax revenues when the farm plan is in full operation. The farm plan operations are estimated to generate \$4.5 million in State tax revenues by 2030. Property taxes paid to the County would be about \$800,000 per year. The City and County of Honolulu would derive about \$140,000 per year from the excise-tax surcharge.

#### **4.8 Recreational Uses and Park Facilities**

A range of recreational uses and park facilities are located within the areas affected by the Proposed Action. The following describes such existing uses and facilities in relation to the three geographic areas where the amount of water from the License Area may affect such uses and facilities.

##### **East Maui**

The County's Department of Parks and Recreation operates and maintains several parks and recreational facilities within East Maui in the vicinity of the License Area, include the following: 4<sup>th</sup> Marine Division Memorial Park, Alfred Boteilho Sr. Gymnasium and Pā'ia Park, H.A. Baldwin Park, Ha'ikū Park and Community Center, Ho'okipa Beach Park, Lower Pā'ia Park, Pā'ia Community Center, Rainbow Park, and the Ulumalu Arena.

The State of Hawai'i DLNR, Division of Forestry and Wildlife through its Nā Ala Hele Hawai'i Trail and Access System maintains the Waikamoi Ridge Trail and the Ke'anae Arboretum Walk



within the License Area. In addition, through its Division of State Parks, DLNR also operates and maintains the Kaumahina State Wayside, Pua'a Ka'a State Wayside, and Wailuā Valley State Wayside located along Hana Highway, also known in this section as the Hāna Belt Road. All of the State waysides and lookouts are outside of the License Area except for the Kaumahina State Wayside, which is within the License Area (See Figure 4-37). The Hāna Highway itself, which meanders along the coastline makai of and, in some places, through portions of the License Area, is also an immensely popular sightseeing route with spectacular coastal and mauka view. Maintained by the State of Hawai'i Department of Transportation, the roadway has many shoulder areas that are used as pull outs for sightseeing. One of the more impressive views of the Ke'anae peninsula is from the Ke'anae-Wailuā Lookout.

Waikamoi Ridge Trail is a ½ mile loop trail just off the side of Hāna Highway. The trail is positioned at the far eastern edge of the Waikamoi Preserve, which is home to a mix of indigenous and introduced species and offering hikers many lookouts along the trail. However, the trail does not have views of any waterfalls or streams. The Ke'anae Arboretum Walk is a 1/8 mile paved walkway from Hāna Highway that is alongside Pi'ina'au Stream on historic leveled terraces built for taro cultivation. Pi'ina'au Stream is subject to the CWRM D&O and is ordered to be fully restored with no diversions.

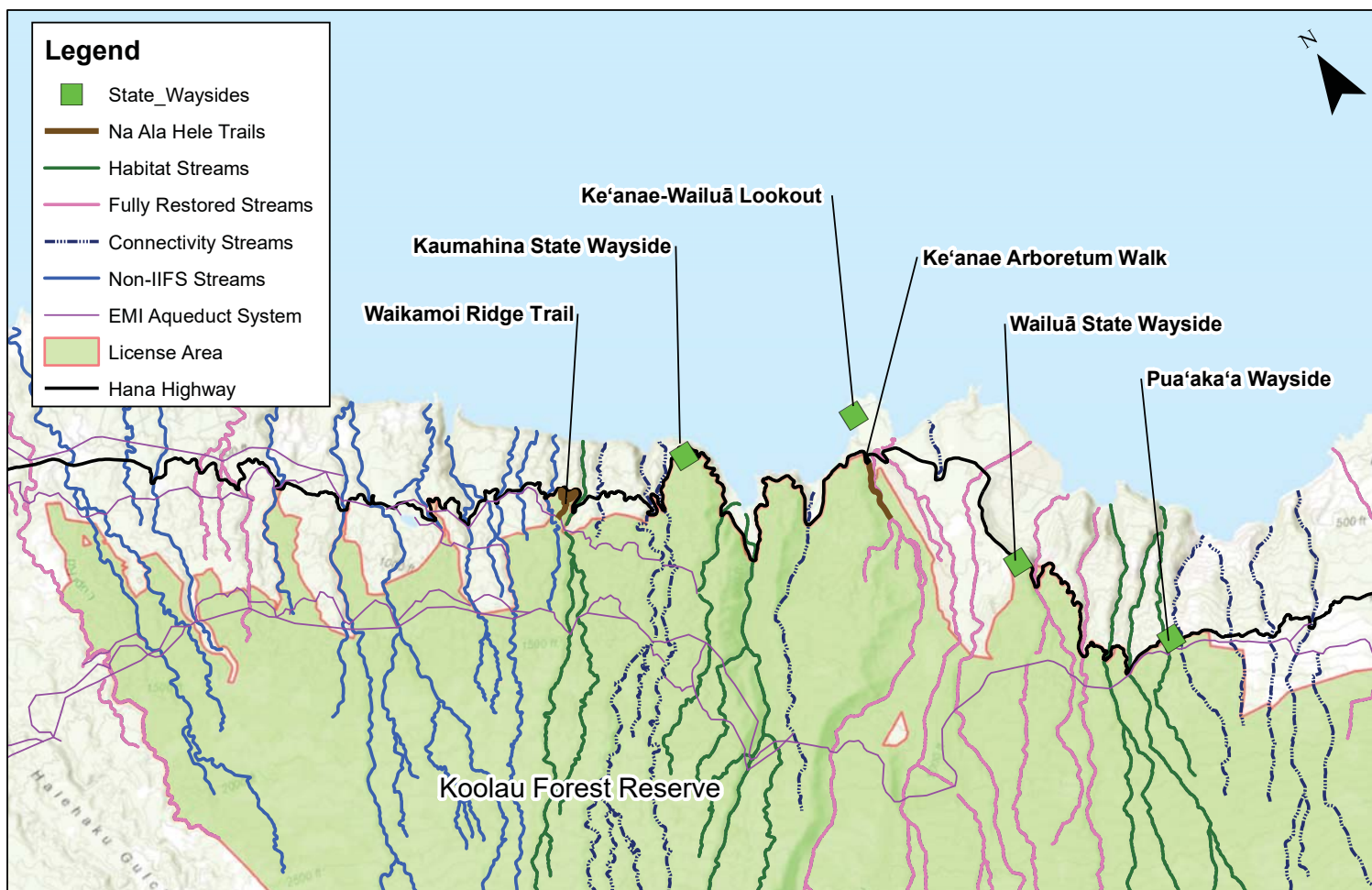
Kaumahina State Wayside is within the License Area located along Hāna Highway offering views of the northeast Maui coastline. The nearest stream to Kaumahina State Wayside is Ha'ipua'ena Stream, which is located approximately .25 miles to the east. This stream was designated as "Public Use Stream" in the CWRM D&O.

Pua'a Ka'a State Wayside is just off of Hāna Highway as well. This wayside offers views of some waterfalls that are from Pua'aka'a Stream, a tributary to Kopili'ula Stream, which is subject to the CWRM D&O. Kopili'ula Stream along with its tributary, Pua'aka'a Stream, is ordered to have limited diversions and is designated as a "Habitat Stream" under the CWRM D&O.

Wailua Valley State Wayside is lookout just off of Hāna Highway, offering views of Ke'anae Valley and Ko'olau Gap in Haleakalā's rim. In the distance, in the valley, the wayside offers a vantage point of waterfalls that feed into the valley. This wayside is located in the vicinity of Wailuānui Stream, which also feeds Waikani Falls, which is subject to the CWRM D&O. Wailuānui Stream is ordered to be fully restored under the CWRM D&O.

Ke'anae-Wailuā Lookout is located off of Hāna Highway on Ke'anae Road offering views of the Ke'anae peninsula and is makai of the Ke'anae Arboretum Walk. This lookout is near a historic taro cultivation site that is still utilized today and is in the vicinity of Pi'ina'au Stream which enters the ocean just east of the lookout and is ordered for full restoration.

Twin Falls is partially within the License Area. The upper falls are within the License Area but the area that is frequently visited is outside the License Area. It is noted that participants in the SIA noted that the Twin Falls trails and other area trails are subject to overgrown landscaping and flash flood conditions.



0 0.5 1 2 Miles

1 in = 1 miles

Source: ESRI, State OP, & Akinaka

FIGURE 4-37

## RECREATIONAL MAP

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS

The Ko'olau Forest Reserve Hunting Unit encompasses portions of Huelo, Honomanū and Ke'anae Nāhiku within the License Area (See Figure 4-38). The Hunting Unit is administered by the DLNR, Division of Forestry and Wildlife. To hunt within the License Area, hunters must obtain a license from the DLNR and an EMI Permit/Waiver. Hunting grounds are limited to one hunting party per hunting area, as regulated by the DLNR. Hunters enter the hunting unit every Saturday and Sunday, as well as holidays observed by EMI. Prior to entering, hunting parties must sign in with the license number obtained from the DLNR, and upon exiting must log in any game that are taken. Access to the hunting grounds is managed by EMI through eight existing EMI access roads. Hunting is permitted year round. Hunting parties may enter the License Area by vehicular access, however, must traverse by foot in most areas.

Hiking is also a permitted recreational use within the License Area, and is limited to hiking clubs. Access to the License Area for hiking is acquired through a Hiking Waiver from EMI. Only two hiking clubs currently enter the License Area lands approximately four to six times a year; the Sierra Club Maui Group and Mauna Ala Hiking Club. They enter on foot, and are guided by a club hiking expert with a manageable number of people.

Other recreational uses are not permitted on the License Area for safety reasons, but trespassing and unpermitted access for hiking, gathering, and illegal hunting does occur on State lands.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on recreational uses and park facilities in the East Maui are anticipated.

In general, the permitted recreational activities (hunting and hiking) in the License Area are not dependent upon the volume of water flowing in the streams. Nevertheless, with an increase in base streamflow, the subjective experience of individuals participating in hunting or hiking could be enhanced by the aesthetic of increased stream flows. In the lower reaches of streams below the License Area, streams with higher base flow would enhance recreational sightseeing, swimming and fishing/gathering activities. Increased streamflow could also impact the physical safety of those entering streams as streamflow could potentially be more turbulent.

The waysides and parks along Hana Highway in East Maui will benefit aesthetically by the increased streamflows ordered by the CWRM D&O for the streams they are associated with, as discussed previously, and may also result in an increase of recreational use of the streams such as swimming or fishing. The Proposed Action must be in compliance with the CWRM D&O so the beneficial effects on recreation should not be altered by implementation of the Proposed Action.





### **Upcountry Maui**

The County’s Department of Parks and Recreation operates and maintains several parks and recreational facilities within Upcountry Maui, which include the following: The Eddie Tam Memorial Center, Hāli‘imaile Park, Harold Rice Park, Kēōkea Park, Kula Community Center and Tennis Courts, Mayor Hannibal Tavares Community Center & Upcountry Pool, New Kula Ball Field, Old Kula Center, Sun Yet Sen Park, and the Waiakoa Gymnasium. Many of these facilities include irrigated landscaping restrooms, showers, water fountains, and pools that are supplied with water delivered through the EMI Aqueduct System.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on recreational uses and park facilities in the region are anticipated as the amount of water that has been used to service these facilities is anticipated to remain close to current levels. In the Proposed Action, however, because the CWRM D&O requires maintenance of base flow in certain streams, the amount of water that can be diverted when streams are naturally running low would be reduced. This would likely occur during seasonally drier summer months. If the shortage is prolonged, water conservation measures may be required. Imposition of such measures could become more frequent and last longer.

### **Central Maui**

There are no parks or permitted recreational activities, including hunting, within the agricultural fields in Central Maui. The County’s Department of Parks and Recreation operates and maintains several parks and recreational facilities within Central Maui, in the vicinity of the Central Maui agricultural fields, including the following: Kahului Community Center, Kahului Park, Kamali‘i Park, and Baldwin Park. Several golf courses are also located in the vicinity of Central Maui, including the King Kamehameha Golf Club, Dunes at Maui Lani Golf Course, and Maui Country Club. There are also several public and private pools that serve the communities in the area. Water derived from the EMI Aqueduct System is not used for any recreational facilities in Central Maui.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on recreational uses and park facilities in the Central Maui region are anticipated.



## **4.9 Visual Resources**

Maui's visual resources are important to the state's tourism industry and the quality of life enjoyed by the State's residents. The island's visual resources include a broad range of natural and developed areas and a tremendous variety of land uses, water bodies, and vegetation types. These visual resources also include urbanized areas that range from small rural towns to the largest city of Kahului.

### **East Maui**

Several scenic view planes can be found within the vicinity of the License Area. Specifically, the License Area is located along the slopes of Haleakalā in East Maui, and affords views of the ocean to the north and the peak of Haleakalā to the south. The scenic drive along the Hāna Highway was recognized in 2000 when President Clinton designated the Hāna Millennium Legacy Trail. The following year it was listed in the National Register of Historic Places. The drive along Hāna Highway is notable for views of waterfalls, including those in streams flowing out of the License Area. The highway also features waysides, lookouts and trails discussed Section 4.7.1.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on visual resources in the region are anticipated because no new construction or land alteration is planned for the License Area. However, in the short-term, measuring from the current time, where diversions are lower due to the lack of agricultural activity in Central Maui, against the time when Mahi Pono's diversified agriculture needs begin to use the maximum amount of water permitted, there will be a decrease in stream flows and waterfalls that can be viewed along Hāna Highway. However, this expected decrease from the current baseline must be considered in a historical context as well: the impacts to such visual resources under the Proposed Action will be far less than the impacts over the years of sugarcane operations when vastly more water was diverted from East Maui than is planned under the Proposed Action.

### **Upcountry Maui**

Many scenic viewplanes are found within Upcountry Maui. Specifically, Upcountry Maui extends from the northern shores of Ha'ikū to near Makena. It affords views of the ocean to the north and south, the central isthmus and Mauna Kahalawai to the west, and the peak of Haleakalā to the east.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action

continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on visual resources in the Upcountry Maui region are anticipated because no new activities of a significant nature are associated with the Proposed Action.

### **Central Maui**

Central Maui's visual resources consist mainly of agricultural plains and old sugar plantations. Specifically, Central Maui is located just west of the northern portion of Upcountry Maui. It boasts the view planes of the ocean to the north and south, Mauna Kahalawai to the west, and Haleakalā to the east. When sugar was being cultivated, the agricultural fields would provide a pastoral seasonally green backdrop. Since sugar is harvested on a two-year cycle, most of the fields would be green during the growing season and at least half would be green during harvest. As sugar shut down statewide, the Central Maui fields closed the final chapter of the industry, providing a last look back at a history that spanned 138 years in Hawai'i. Subsequently, fallow fields offer a more arid scene of pioneer species, mostly weeds, invading the agricultural fields which are generally brown in color and are not aesthetically attractive.

### **Impacts and Mitigation Measures**

The Proposed Action will result in the transitions of the agricultural fields formerly in sugarcane operation to diversified agriculture operations. Currently, a majority of the fields are fallow and minimal agricultural activities are occurring. The visual resources are anticipated to shift to diversified agriculture, increasing the scenic beauty of Central Maui as the agricultural fields will return to a cultivated state. As discussed by participants in the SIA, the greenery of Central Maui is an integral part of what makes Maui special, and is appreciated when driving along the coast and on mauka – makai highways, and when flying overhead.

## **4.10 Air Quality**

The State of Hawai'i DOH, Clean Air Branch, monitors the ambient air quality in the State for various gaseous and particulate air pollutants. The U.S. Environmental Protection Agency (EPA) has set National Ambient Air Quality standards (NAAQS) for six criteria pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, ozone, and particulate matter. Hawai'i has also established a state ambient air standard for hydrogen sulfide related to volcanic activity on Hawai'i Island. The primary purpose of the statewide monitoring network is to measure ambient air concentrations of these pollutants and ensure that these air quality standards are met.

In general, air quality throughout Maui is good, with prevalent tradewinds during most of the year facilitating dispersion and dilution of potential pollutants. Traffic congestion does not occur at a scale that would raise concerns for carbon monoxide accumulation along heavily travelled roadways, even during the calmest wind conditions. Much of the particulate matter emissions that affect air quality on the island of Maui originate from area sources, including agricultural activities on Central and Upcountry Maui. Such activities, however, do not currently reach the scale of former sugar growing operations which, in addition to soil disturbance while working

the fields, included cane burning prior to harvesting. More recently, however, wildfires in Central Maui on fallow fields formerly in sugar cultivation, have generated intense smoke and dust over relatively short periods of time until they have been extinguished.

### **Impacts and Mitigation Measures**

#### **East Maui**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on air quality in the East Maui region are anticipated because the use of surface water through the EMI Aqueduct System does not generate air pollution directly or indirectly, as the EMI Aqueduct System is gravity fed system.

#### **Upcountry Maui**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on air quality in the Upcountry Maui region are anticipated as the Proposed Action would not require the construction of any new water service facilities by the MDWS. Therefore, there would be no associated dust generation, emissions by construction-related vehicles or stationary equipment such as emergency generators.

When water service is provided to the planned 262-acre expansion of the KAP, grading and grubbing work prior to cultivation will disturb soils generating dust and emissions from construction vehicles. Such activities are subject to HAR, Section 11-60.1-33, Fugitive Dust, which states, in part: "11-60.1-33(a): No person shall cause or permit visible fugitive dust to become airborne without taking reasonable precautions." And, Section 11-60.1-33(b): "...no person shall cause or permit the discharge of visible fugitive dust beyond the property lot line on which the fugitive dust originates." It will be incumbent on the County to comply with these regulations during the preparation of the expansion area and during its operation.

#### **Central Maui**

Under the Proposed Action, the regional air quality is expected to improve due to the termination of sugarcane burning practices. However, the transition to diversified agriculture may affect air quality from an increase in equipment emissions and in the very short-term, from dust from uncultivated land.

Diversified agricultural activities would be subject to HAR, Section 11-60.1-33, Fugitive Dust, which states, in part: "11-60.1-33(a): No person shall cause or permit visible fugitive dust to become airborne without taking reasonable precautions." And, Section 11-60.1-33(b): "...no person shall cause or permit the discharge of visible fugitive dust beyond the property lot line on which the fugitive dust originates. Given the expanse of the agricultural fields in Central Maui, extra precaution must be exercised near its boundaries. Particularly in these areas, mitigation measures will include keeping fallow land to a minimum, using cover crops to minimize exposed soil and limiting vehicular speed during plowing activities and while traveling onsite. Also, water will be used to minimize dust during activities such as grading and grubbing, any gathered soil will be stabilized, any loading for soil will minimize the drop distance, and soil transport will use water or soil covering to control dust.

#### **4.11 Noise**

Noise levels are measured in units called decibels, a numeric system expressed on a logarithmic scale. Since the human ear does not perceive all pitches or frequencies equally, noise levels are adjusted, or weighted to correspond to human hearing. This adjusted unit is known as the A-weighted decibel, or dBA. In a rural area with no major roads nearby, noise levels would average around 50 dBA, whereas an urban area near a major arterial roadway would average around 70 dBA.

##### **East Maui**

The License Area encompasses predominantly undeveloped State Land Use Conservation District lands, with no industrial sources of noise.

##### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts from noise in the East Maui region are anticipated.

##### **Upcountry Maui**

Upcountry Maui is a rural community that emits small scale noise from agriculture, cars, and equipment

##### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in

compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts from noise in the Upcountry Maui region are anticipated.

### **Central Maui**

Currently, minimal agricultural operations are occurring within the agricultural fields within Central Maui emitting less noise than was the case under past sugarcane operations.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts from noise in the Central Maui region are anticipated, however, when the Mahi Pono farm plan is fully implemented, the Central Maui fields will have more activity than current levels, possibly resulting in some increase in noise levels from current conditions.

Compared to past sugar operations, however, diversified agricultural equipment and transportation vehicles will generally be smaller and quieter than those that were used to efficiently harvest a monocrop. The system of internal cane haul roads, which will be used for diversified agricultural, help to keep transportation noise away from public areas. Due to the expansive fields in Central Maui, only a few areas are close to noise sensitive uses such as residences. The nearest school, Pukalani Elementary, is a half mile away, and health care facilities are two or more miles away. Diversified agricultural activities conducted near residential areas will be mitigated by confining them to daylight hours and avoiding weekends and holidays.

## **4.12 Hazardous Materials**

A hazardous material is generally characterized as any item or agent (physical, chemical, or biological) which has the potential to cause harm to humans, animals, or the environment, either independently or through interaction with other factors. Toxic Materials are specific hazardous materials identified in regulations. Hazardous wastes are specifically defined or determined as such based on their ignitability, corrosiveness, reactivity, and toxicity. The potential impacts hazardous materials and waste have on human health and the environment are largely dependent upon their types, quantities, toxicities, and management practices.

Hazardous wastes may take the form of a solid, liquid, contained gas, or semi-solid. In general, any combination of wastes that poses a substantial present or potential hazard to human health or the environment that has been discarded or abandoned is a hazardous waste.

EPA and Hawai'i universal waste regulations streamline hazardous waste management standards for federally-designated "universal wastes," which include: batteries, pesticides and mercury-containing materials. Universal wastes are considered hazardous, however, they are subject to less restrictive waste disposal regulations than for hazardous wastes.



Operations of the EMI Aqueduct System for the Proposed Action do not involve construction or ground disturbing activities, and does not involve the use of materials and processes that involve chemical agents or materials typical to construction that could be considered hazardous.

### **East Maui**

EMI personnel use federally regulated herbicides to maintain the trails and access roads used for the maintenance of the EMI Aqueduct System.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on or from hazardous materials in the region are anticipated as the Proposed Action does not involve any the use of any hazardous materials, except for the continued use herbicides in compliance with state and federal regulations in connection with the continued maintenance of the EMI Aqueduct System.

### **Upcountry Maui**

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on or from hazardous materials in the Upcountry Maui region are anticipated as the Proposed Action does not involve any the use of any hazardous materials in Upcountry Maui.

### **Central Maui**

For over a century, sugarcane operations were conducted in the agricultural fields in Central Maui. To maintain sugarcane throughout the years various chemicals were used to maintain and manage crops, maintain equipment and for fuel. A survey of soils across the agricultural fields in Central Mai conducted by Mahi Pono as part of their due diligence investigations did not identify any residues of concern. All required remediation measures have or will be implemented.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI

Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on or from hazardous materials in the region are anticipated. Any use of agricultural chemicals for diversified agriculture will be in strict compliance with federal regulations and Mahi Pono will exercise due care to prevent the release of fuels, lubricants and other hazardous materials used in their operations, and utilize BMPs in their agricultural operations.

#### **4.13 Traffic**

##### **East Maui**

The primary thoroughfare in East Maui is Hāna Highway, which is a 64.4 mile-long stretch of Hawaiʻi Routes 36 and 360 that connects Kahului to Hāna. As a part of the EMI Aqueduct System, there is a system of access roads and trails that are used to access the License Area and maintain the EMI Aqueduct System by EMI personnel.

##### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on traffic in the East Maui region are anticipated.

##### **Upcountry Maui**

Upcountry Maui has several thoroughfares. Haleakalā Highway (Hwy 37) is the major entry route into the region. Other primary roads are Baldwin Avenue (Hwy 390), which links Pāʻia to Makawao, Makawao Avenue (West Hwy 365), which connects Makawao to the Haleakalā Highway, and Kaupakalua Road (East Hwy 365) which stretches from Makawao to Haʻikū, just before Hāna Highway.

##### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on traffic in the Upcountry Maui region are anticipated.

### **Central Maui**

The Central Maui agricultural fields have an internal roadway network comprised of unpaved “cane haul” roads with limited crossings of public roadways. Until the end of sugar cultivation in 2016, there were three primary traffic signalized crossings being used, two along Haleakalā Highway at North Firebreak Road and Keahua Road; and, one along Mokulele Highway. During the sugarcane harvest season, these traffic signals operated to allow free traffic flow along the highway until crossing signals were activated by HC&S vehicles, primarily large trucks, involved with sugar operations. Other secondary crossings of public roadways occurred at unsignalized crossings on Baldwin Avenue and Pulehu Road. All off-road farm equipment and the majority of light passenger vehicle traffic, however, utilized the internal roadway network.

During the sugarcane planting and harvesting season, which occurred between March and December, daily harvested cane deliveries by large cane haulers to Pu'unēnē averaged approximately 125 trips. These trips were evenly spread out over a 24-hour period, seven days a week using the internal field roadway network.

The planting operations required 30 semi-truck trailer trips between the seed fields, the seed treatment facility in Pu'unēnē, and the field that was being planted. These trips were spaced out between 6:00 am and 10:00 pm, Monday through Saturday. Harvesting and farm equipment was transported via semi-truck and lowboy trailer as fields were completed, all mostly within the internal field roadway network.

Field and farm workers were transported to their assigned areas by light vehicles in order to coordinate manpower requirements. Generally, this traffic occurred between 7:00 am and 3:30 pm daily with peak movement at the beginning and end of the period. As such, there were approximately 80 vehicles that would have been involved during this transport, again, mostly using the internal field roadway network.

Workers at the HC&S Sugar Mill in Pu'unēnē commuted to one of five designated employee parking lots, the largest located at the corner of Hansen Road and Pu'unēnē Avenue. Table 4-9, estimates the number of vehicles in the employee parking areas by time and day of the week as an indication of vehicle traffic demand attributable to mill workers.

**Table 4-9 Central Maui Traffic**

|           | 6:00<br>AM | 2:00<br>PM | 10:00<br>PM |
|-----------|------------|------------|-------------|
| Sunday    | 100        | 80         | 60          |
| Monday    | 400        | 100        | 60          |
| Tuesday   | 400        | 100        | 60          |
| Wednesday | 400        | 100        | 60          |
| Thursday  | 400        | 100        | 60          |
| Friday    | 400        | 100        | 60          |
| Saturday  | 200        | 80         | 60          |

(Source: A&B)

Since the closure of sugar operations in 2016, there has been little traffic on the field roadway network, mainly consisting of Mahi Pono vehicles accessing the fields.

#### **Impacts and Mitigation Measures**

Traffic generation for diversified agricultural operations contrasts sharply against the large-scale monocrop sugar operations. Whereas the scale of sugar operations was massive and highly coordinated, diversified agriculture involves a multitude of smaller scale operations that are dispersed over time according to specific crop requirements. Unlike a monocrop, diversified crops would not necessarily share the same time frame for planting, tending, harvesting, processing and distribution. Therefore, traffic associated with those activities would be much more dispersed seasonally, over the work week and on a daily basis. Moreover, such traffic would largely be using an internal roadway network that was designed to minimize conflicts by vehicles used in sugar operations with the public roadway system.

At full operation, Mahi Pono expects to have some 790 farm employees. This compares to approximately 640 for HC&S. It is not certain if Mahi Pono's distribution of employees between the fields and a processing center near the former sugar mill in Puunene will be similar to former sugar employees between the fields and the mill. But, the expanse of the fields and the internal roadway system to the mill suggests that the impacts to public roads will not be significant.

Therefore, it is anticipated that traffic associated with the proposed diversified agricultural operations in Central Maui will not adversely affect peak-hour traffic conditions on public roadways. Nevertheless, should any traffic conflicts or traffic volume concerns on public roadways by diversified agricultural operations be identified in the future, measures can be taken to assess and address such concerns. Such measures may include signal timing adjustments to establish a minimum time between activation of signals stopping traffic along public streets or the addition of turning lanes.

### **4.14 Public Services and Facilities**

#### **4.14.1 Police, Fire, and Medical Services**

##### **East Maui**

**Police:** Law enforcement services for the License Area are provided by the State of Hawai'i Division of Conservation and Resources Enforcement. The general region outside of the License Area is served by the County Police Department's headquarters in Wailuku and the Department's East Maui Patrol.

**Fire:** Fire protection service for the License Area is provided by the State of Hawai'i Division of Forestry and Wildlife. The general region is also served by the County Department of Fire Control's Makawao and Pā'ia Stations, which are located 6-7 miles east and south east of the proposed License Area, respectively.

**Medical Services:** Maui Memorial Medical Center is the only major medical facility on the island and services the East Maui region. Acute, general, and emergency care services are provided

by this 196-bed facility, while other medical and dental offices and practices are located nearby in Upcountry Maui, in Pukalani, and Makawao, as well as in Hāna. Emergency ambulance and air evacuation stations are located in both Makawao and in Hāna.

**Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of DHHL. No significant impacts on public services in the region are anticipated as the Proposed Action will not generate the need for additional services.

**Upcountry Maui**

**Police:** Law enforcement services for Upcountry Maui are provided by Maui Police Department. Upcountry Maui is located approximately 13 miles from the Maui Police Department's headquarters in Wailuku.

**Fire:** Fire protection service for Upcountry Maui is provided by the Maui Country Fire Department. The general region of Upcountry Maui is serviced by the Makawao and Kula Fire Stations.

**Medical Services:** Maui Memorial Medical Center is the only major medical facility on the island and services the Upcountry Maui region. Acute, general, and emergency care services are provided by this 196-bed facility, while other medical and dental offices and practices are located in Upcountry Maui. Emergency ambulance and air evacuation stations are located in both Makawao and in Hāna.

**Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on public services in the region are anticipated as the Proposed Action will not generate the need for additional services.

When water service is provided to the planned 262-acre expansion of the KAP, grading and grubbing work prior to cultivation will be accomplished by earth moving equipment that will be delivered to the site using public roads. At that time police services may be required. When the expansion becomes operational, service requirements currently provided for the existing KAP may increase demand for these services.



### **Central Maui**

**Police:** Law enforcement services for Central Maui are provided by Maui Police Department. Central Maui is located in the patrol area of Maui Police Department's headquarters in Wailuku.

**Fire:** Fire protection service for Central Maui is provided by the Maui Country Fire Department. The general region of Central Maui is serviced by the Wailuku, Kahului, and Pāʻia Fire Stations.

**Medical Services:** Maui Memorial Medical Center is the only major medical facility on the island and services the Central Maui region. Acute, general, and emergency care services are provided by this 196-bed facility, while other medical and dental offices and practices are located in Central Maui.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on public services in the region are anticipated as the Proposed Action will not generate the need for additional services. The Proposed Action will allow for the resumption of the relationship with the Maui County Fire Department which allows their use of water from the various reservoirs within the agricultural fields to fight fires.

## **4.14.2 Education**

### **East Maui**

The State of Hawai'i Department of Education operates ten schools in the proximity of East Maui, including five elementary schools, two middle schools, two high schools, and one charter school. Public schools servicing the region include Pāʻia Elementary School, Hāna Elementary School, Makawao Elementary School, Pukalani Elementary School, Haʻikū Elementary School, Keʻanae School, Samuel Enoka Kalama Intermediate School, Hāna Intermediate & High School, and King Kekaulike High School.

There are a total of nine private schools that serve the region, including Kamehameha Schools Maui, Doris Todd Memorial Christian School, Clearview Christian Girls School, Seabury Hall, St. Joseph School, Haleakalā Waldorf School, Horizons Academy, Maui Ocean Academy, and Montessori of Maui.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee

or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with CWRM D&O and any reservations in favor of DHHL. No significant impacts on education in the region are anticipated.

### **Upcountry Maui**

The State of Hawai‘i Department of Education operates 11 schools in the proximity of Upcountry Maui, including six elementary schools, two middle school, two high schools, and one charter school. Public schools servicing the region include Pā‘ia Elementary School, Hāna Elementary School, Makawao Elementary School, Ha‘ikū Elementary School, Pukalani Elementary School, Ke‘anae School, Kula Elementary School, Samuel Enoka Kalama Intermediate School, Hāna Intermediate & High School, and King Kekaulike High School.

There are a total of nine private schools that serve the region, including Kamehameha Schools Maui, Doris Todd Memorial Christian School, Clearview Christian Girls School, Seabury Hall, St. Joseph School, Haleakalā Waldorf School, Horizons Academy, Maui Ocean Academy, and Montessori of Maui.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on education in the region are anticipated.

### **Central Maui**

The State of Hawai‘i Department of Education operates 11 schools in the proximity of Central Maui, including six elementary schools, two middle school, two high schools, and one charter school. Public schools servicing the region include Pā‘ia Elementary School, Hāna Elementary School, Makawao Elementary School, Ha‘ikū Elementary School, Pukalani Elementary School, Ke‘anae School, Kula Elementary School, Samuel Enoka Kalama Intermediate School, Hāna Intermediate & High School, and King Kekaulike High School.

There are a total of nine private schools that serve the region, including Kamehameha Schools Maui, Doris Todd Memorial Christian School, Clearview Christian Girls School, Seabury Hall, St. Joseph School, Haleakalā Waldorf School, Horizons Academy, Maui Ocean Academy, and Montessori of Maui.

### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in

compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on education in the region are anticipated.

#### **4.14.3 Solid Waste Collection and Disposal**

With the closure of the Makawao Landfill, all solid wastes generated on the island of Maui are transported to either the Central Maui Landfill in Pu‘unēnē, or the Hāna Landfill in Hāna.

##### **East Maui**

Solid waste generated in East Maui would be transported to Hāna Landfill in Hāna.

##### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on solid waste collection and disposal in the region are anticipated as the Proposed Action will not generate any solid waste.

##### **Upcountry Maui**

Solid Waste generated in Upcountry Maui is transported to the Central Maui Landfill in Pu‘unēnē due to the closure of the Makawao Landfill.

##### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the applicant to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on solid waste collection and disposal in the region are anticipated as the Proposed Action will not generate any solid waste.

##### **Central Maui**

Solid Waste generated in Central Maui is transported to the Central Maui Landfill in Pu‘unēnē.

##### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the applicant to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No

significant impacts on solid waste collection and disposal in the region are anticipated as the Proposed Action will not generate any solid waste.

#### **4.15 Infrastructure and Utilities**

##### **4.15.1 Water System**

###### **East Maui**

The most extensive infrastructure system in East Maui is the EMI Aqueduct System which spans the State-owned License Area and extends beyond it at Honopou Stream to Māliko Stream where the last stream diversion is located. It consists of approximately 388 separate intakes, 24 miles of ditches, and 50 miles of tunnels, as well as numerous small dams, six major reservoirs, intakes, pipes, 13 inverted siphons and flumes. Beyond Māliko Stream, the system delivers collected flows to Upcountry Maui then to Central Maui. Section 1.1.1 illustrates and describes the history of the EMI Aqueduct System.

During full sugar cultivation in 2008, the cost to operate the EMI Aqueduct system was estimated to be \$1.8M per year (Munekio Table 4). Since the closure of sugar, the cost has been approximately \$1.5M per year due to adjustments required to reduce flow and more recently to implement the CWRM D&O. It is projected that maintenance costs will return to a more stable condition with the Proposed Action at approximately \$1.4M per year, which is comparable to the five year period preceding the closure of sugar.

A portion of the Nāhiku community, a settlement located below the Nāhiku and Ke‘anae License Area, is served by the MDWS directly through the EMI Aqueduct System via a development tunnel in the Koolau Ditch near Makapipi Stream. The tunnel draws up 20,000 to 45,000 gallons per day, dependent on weather, directly from the EMI Aqueduct System. The area is at a lower elevation where the water system has sufficient pressure for residential service. A more detailed description of this service is provided in Section 2.1.2.3.

###### **Impacts and Mitigation Measures**

No significant adverse impacts to the EMI Aqueduct System and the Nāhiku water system are anticipated from the Proposed Action as diversions are removed or modified in the EMI Aqueduct System to comply with the CWRM D&O and to convey the amount of water required to supply the MDWS in Upcountry Maui and to Central Maui agricultural fields as they are converted from fallow conditions to diversified agriculture. In the long-term, the MDWS service to Nāhiku would be similar to current conditions.

###### **Upcountry Maui**

The MDWS operates and maintains the “Upcountry Maui Water System” which services the communities of Kula, Pukalani, Makawao Ha‘ikū, Hāli‘imaile, Waiakoa, Kēōkea, Waiohuli, ‘Ulupalakua, Kanaio, Olinda, ‘Ōma‘opio, Kula Kai, and Pūlehu. In Upcountry Maui, the MDWS serves customers’ water needs for both domestic (approximately 60% of use) and agricultural (approximately 40% of use), including the agricultural users at the KAP.

The Upcountry Maui Water System relies on three surface water sources, which accounts for approximately 80-90 percent (13 mgd) of water delivered through the system (CWRM FOF 800, p. 211, 2018). One of the three surface water sources is delivered directly by the EMI Aqueduct System, through the Wailoa Ditch. Average daily use by the MDWS from the Wailoa

Ditch is 7.1 mgd, which includes water processed by the Kamole-Weir WTP and non-potable water for the KAP, which receives water from Reservoir 40. A more detailed description of this service is provided in Section 2.1.3.1.

**Impacts and Mitigation Measures**

No significant adverse impacts on the Upcountry Maui Water System are anticipated from the Proposed Action as diversions are removed or modified in the EMI Aqueduct System to comply with the CWRM D&O and to convey diverted flows out of the License Area. In the long-term, as diversified agriculture grows in Central Maui, the amount of water that the CWRM D&O allows to be diverted may be insufficient to meet all demands during periods of drier weather during the summer months. Because the CWRM D&O requires that base flow to be kept in certain streams, during drier weather when streamflow is low, flows may not reach a volume at which diversion would be permitted. If prolonged, this shortage could require mandatory conservation measures to be implemented, as they have in the past. Such measures, however, could be required more frequently and last longer than in the past. The effects of climate change could exacerbate this impact. However, this impact is not a result of the implementation of the Proposed Action.

**Central Maui**

Irrigation water for diversified agriculture in the Central Maui agricultural fields is discussed in Section 2.1.4. There is no other domestic or agricultural water service provided in Central Maui by the MDWS using water from the EMI Aqueduct System.

**Impacts and Mitigation Measures**

Impacts of the Proposed Action and alternatives on the availability of irrigation water for diversified agriculture in the Central Maui agricultural fields are discussed in Section 2.1.4. Since there is no other usage of water from the EMI Aqueduct System in Central Maui, no impacts associated with the Proposed Action or alternatives are anticipated.

**4.15.2 Wastewater System**

**East Maui**

There are no County operated wastewater disposal facilities in the East Maui region. Individual wastewater disposal needs in the area are currently addressed either by cesspools, septic tanks or individual wastewater treatment systems.

**Impacts and Mitigations**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the applicant to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on wastewater systems in the region are anticipated.



### **Upcountry Maui**

There are no County operated wastewater disposal facilities in the Upcountry Maui region. Individual wastewater disposal needs in the area are currently addressed either by cesspools, septic tanks or individual wastewater treatment systems.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the applicant to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on wastewater systems in the region are anticipated.

### **Central Maui**

There are no County operated wastewater disposal facilities in the Central Maui region. Individual wastewater disposal needs in the area are currently addressed either by cesspools, septic tanks or individual wastewater treatment systems. None of these systems use water from the EMI Aqueduct System.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the applicant to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on wastewater systems in the region are anticipated.

## **4.15.3 Electrical System**

### **East Maui**

Electrical service to communities in East Maui, where available, is provided by the Maui Electric Company (MECO). The MDWS relies on this service to treat and supply water derived from the EMI Aqueduct System to supply domestic water to a portion of the Nāhiku community.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the applicant to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, and allows the lessee or its permittees, to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on electrical systems in the region are anticipated.

### **Upcountry Maui**

Electrical service to Upcountry Maui, where available, is provided by the Maui Electric Company (MECO). The MDWS relies on this service at the Kamole Weir WTP to process water derived through the Kamole-Weir from the EMI Aqueduct System.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the applicant to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will continue the conveyance of water to the MDWS to meet the domestic and agricultural demands of Upcountry Maui. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on electrical systems in the region are anticipated.

### **Central Maui**

There are two hydroelectric facilities that utilize water derived from the EMI Aqueduct System. One is located in the area historically known as Kaheka Village, and the other at Pā'ia. Currently, only Kaheka Hydroelectric plant is generating at a low load to fulfill house power demand for the office buildings, well security systems and well motor heaters. Excess generation is supplied to the utility grid with no compensation.

Generating hydroelectric power is a non-consumptive use of water and the water can subsequently be used for agricultural purposes after flowing through the hydroelectric facilities. Kaheka and Pā'ia Hydroelectric Plants generate power to supply the many drip irrigation systems, groundwater well pumps, and facility/tenant buildings through a private 62-mile transmission grid.

The Water Lease will allow the continued use of surface water for hydroelectric generation at the Kaheka and Pā'ia plants.

#### **Impacts and Mitigation Measures**

The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable the applicant to continue operation of the EMI Aqueduct System that has been in operation for over a century. The Proposed Action continues the use of the system for the transport of surface water, which will allow for the transition of the agricultural fields in Central Maui to a diversified agriculture operation. The farm plan contemplated in relation to the Proposed Action includes a solar farm to generate 37.5 mW of clean energy to be provided to the MECO grid. In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&O and any reservations in favor of the DHHL. No significant impacts on electrical systems in the region are anticipated.

## **4.16 Secondary and Cumulative Impacts**

HAR Section 11-200-2 **Definitions and Terminology** provides the following definitions for impacts to be assessed under an EIS.

*"Secondary impact" or "secondary effect" or "indirect impact" or "indirect effect" means effects which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.*

*"Cumulative impact" means the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

#### **4.16.1 Secondary Impacts**

The secondary impacts of the Proposed Action primarily relate to developing diversified agriculture in Central Maui, including the economic and social impacts of diversified agriculture and job creation on Maui's broader economy and the County's tax revenues. These impacts are summarized in Section 4.7 Socio-Economic Characteristics based on a detailed evaluation in the Economic and Fiscal Impact Study (See Appendix H) and the Social Impact Assessment (See Appendix G).

#### **4.16.2 Cumulative Impacts**

##### **4.16.2.1 Cumulative History**

The cumulative impact of the Proposed Action can be regarded as an additive impact overlaid on more than 100 years of history during which the EMI Aqueduct System was developed to provide water for the development of a sugar industry in Central Maui as well as for the later development of Upcountry Maui. This DEIS summarizes the pertinent history in Chapters I and 2 as a basis for understanding the events that have shaped the existing conditions described in Chapter 4. In addition, the following studies document the pertinent history related to the sugar industry in Maui and the EMI Aqueduct System and how they have shaped existing condition:

- Archaeological LRFI (See Appendix E) discusses the historic context of the Proposed Action;
- CIA (See Appendix F) also provides a historic context and documents cultural resources and practices recalled by cultural informants;
- HSA (See Appendix D) documents the various characteristic components of the EMI Aqueduct System that provide the historic context for the functioning system; and
- SIA, which discusses history in a context for understanding the current perceptions of people from the community, including their perceptions of the recent involvement of Mahi Pono.

The cumulative history of the environment is reflected in the following studies:

- Terrestrial Flora and Fauna Technical Report (See Appendix C), which describes the present composition of flora and fauna in the License Area and the agricultural fields

of Central Maui that reflect the history of how they have been changed by human activity; and,

- Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams<sup>4</sup> using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A) which, likewise, documents the stream habitats of East Maui as they have been shaped by human activity.

#### **4.16.2.2 The CWRM D&O**

The cumulative impact of the Proposed Action on the existing environment will include its compliance with the CWRM D&O. Through the D&O, the CWRM ordered:

- Full restoration of flow in the following streams to taro growing areas or for community and non-municipal domestic uses: Honopou, Huelo (Puolua), Hanehoi, Pi‘ina‘au, Palauhulu, Waioakamilo, Wailuānui, ‘Ōhi‘a, Waianu, Kualani, and Makapipi. (COL 138). These streams are identified as “kalo and community streams”, and have historically supported significant kalo cultivation.
- Restoration of the following streams restored to a minimum  $H_{90}$  level: Pi‘ina‘au, Wailuānui, Honomanū, Waikamoi, Nua‘ailua, East Wailuāiki, Kopili‘ula, and Waiohue. Restoration of these streams should allow the stream species to flourish and reproduce, benefiting not only the natural environment but also allowing for better opportunity for the exercise of traditional and customary native Hawaiian rights. (COL 131).
- Full restoration of West Wailuāiki Stream and Honomanū Stream. West Wailuāiki presents a unique research opportunity to collect valuable information regarding the impact of full restoration of a stream versus habitat restoration  $H_{90}$ . Honomanū Stream, despite having several diversions on it, has a high biological rating with a potential for high natural habitat gains with the restoration of flow to the dry reaches. Full restoration would be for the segment of stream below the Lower Kula Ditch diversion. (COL 136).
- Provision of a wetted pathway providing connectivity for the movement of instream biota.

The following studies, as summarized the DEIS in Chapter 4, address the cumulative impacts of the CWRM D&O:

- The impacts of streamflow restoration as a cumulative impact upon the existing biological habitat conditions of the streams are addressed by the Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams<sup>5</sup> using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A).

---

<sup>4</sup> The DEIS identifies 37 streams associated with the License Area (See Section 1.1.4.2). 36 streams were identified in the CWRM D&O associated with the License Area. Two of these streams, Kualani and ‘Ōhi‘a streams were not included in Trutta’s HSHEP model as they were not diverted by the EMI Aqueduct System and Palauhulu Stream is a tributary of Pi‘ina‘au Stream and thus was combined with Pi‘ina‘au Stream. Puakea Stream was not mentioned in the CWRM D&O and therefore was not assessed in the HSHEP model. This resulted in 33 distinct streams impacted by the EMI Aqueduct System.

<sup>5</sup> The DEIS identifies 37 streams associated with the License Area (See Section 1.1.4.2). 36 streams were identified in the CWRM D&O associated with the License Area. Two of these streams, Kualani and ‘Ōhi‘a streams were not included in Trutta’s HSHEP model as they were not diverted by the EMI

- The cultural effect of the CWRM D&O are discussed in the CIA.
- The agricultural economic effect of the CWRM D&O to restore the kalo streams are assessed in the East Maui Water Lease: Agricultural and Related Economic Impacts report (See Appendix I).

#### **4.16.2.3 Objectives of the Proposed Action**

Beyond the impacts of the CWRM D&O, awarding the Water Lease, as described in the Proposed Action, would cumulatively add impacts related to the achievement of its stated objectives:

- Preserve and maintain the EMI Aqueduct System, including its access roads
- Continue to meet domestic and agricultural water demands in Upcountry Maui
- Continue to provide water for agricultural purposes in Central Maui (specifically, to transition fields previously used for sugarcane cultivation into new, diversified agricultural uses)
- Continue to serve community water demands in Nāhiku

The cumulative impacts of achieving these objectives include the direct and secondary impacts summarized in Chapter 4 of the DEIS and discussed in detail in the following studies:

- Archaeological LRFI and the HSA discuss the preservation of the EMI Aqueduct System and protection of cultural resources in the License Area.
- The East Maui Water Lease: Agricultural and Related Economic Impacts report and the Economic and Fiscal Impact Study discuss the economic impacts of continuing to meet domestic and agricultural water demands in Upcountry Maui and Nāhiku as well as the provision of water to the agricultural fields in Central Maui to transition their use from sugar cultivation to diversified agriculture.
- The SIA discusses the perceived social impacts of continuing to meet domestic and agricultural water demands in Upcountry Maui and Nāhiku as well as the provision of water to the agricultural fields in Central Maui to transition their use from sugar cultivation to diversified agriculture.

#### **4.16.2.4 Other Cumulative Impacts**

As for reasonably foreseeable actions that, with the Proposed Action, could cumulatively affect the environment, there are none that would affect the amount of water that can be diverted by the EMI Aqueduct System nor are there any foreseeable new or foreseeable alternative uses of water from the EMI Aqueduct System. The EIS does discuss the DHHL's reservation for of water rights sufficient to support current and future homestead needs pursuant to HRS § 171-58(g) in Section 2.1 as well as the use of water by the expanded KAP.

#### **4.17 Summary of Direct, Secondary and Cumulative Impacts**

The Proposed Action is the award of a 30-year Water Lease. The lessee will conduct or authorize:

---

Aqueduct System and Palauhulu Stream is a tributary of Pi'inaau Stream and thus was combined with Pi'inaau Stream. Puakea Stream was not mentioned in the CWRM D&O and therefore was not assessed in the HSHEP model. This resulted in 33 distinct streams impacted by the EMI Aqueduct System.



- Management of the diversion of water by the EMI Aqueduct System consistent with the CWRM D&O, thereby establishing how much water will remain in the IIFS and non-IIFS streams that have historically been diverted and how much water may be diverted for other uses; and,
- EMI access to maintain the EMI Aqueduct System;

The direct, secondary, and cumulative effects of the Proposed Action and the sections of the DEIS in which the impacts are discussed include:

- Impacts to the environment as a result of changes in streamflow - Section 4.2.1 Surface Waters, 4.2.3 Coastal Waters, 4.2.2 Groundwater, and Sections 4.4.1 and 4.4.2 Flora and Fauna.
- Impacts to those who would use water from the IIFS streams, including for traditional agriculture as well as traditional cultural resources and practices related to streamflow in the IIFS streams – Section 4.6 Cultural Resources and Practices
- Impacts to consumers of water from the EMI Aqueduct System as served by the MDWS, including residential and agricultural uses in Upcountry Maui and Nāhiku – Section 3.15.1 Water System.
- Impact of using water from the EMI Aqueduct System to develop diversified agriculture in Central Maui – Section 4.7 Socio-Economic Characteristics and Section 4.4 Flora and Fauna.

(This page intentionally left blank)

---

# **Chapter 5:**

## Relationship to Land Use Plans, Policies, and Controls



## 5. RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS

This section discusses the relationship of the Proposed Action to State and County land use plans, policies, and controls. Some of the land use plans, policies, and guidelines are in tabular form, and are addressed with text and/or the following letter code:

S = Supportive, NS = Not Supportive, N/A = Not Applicable

### 5.1 State Land Use Plans and Policies

#### 5.1.1 Hawai'i State Plan

The Hawai'i State Plan, Chapter 226, HRS, as amended, provides goals, objectives, policies, and priorities for the State. The purpose of the Hawai'i State Plan is to set forth a plan that shall serve as a guide for the future long-range development of the State; identify the goals, objectives, policies, and priorities for the State; provide a basis for determining priorities and allocating limited resources, such as public funds, services, human resources, land, energy, water, and other resources; improve coordination of federal, state, and county plans, policies, programs, projects, and regulatory activities; and to establish a system for plan formulation and program coordination to provide for an integration of all major state, and county activities. The State Plan is divided into three sections. Part 1 is Overall Theme, Goals, Objectives and Policies. Part 2 is Planning Coordination and Implementation. Part 3 is Priority Guidelines. The Proposed Action's consistency with applicable goals, objectives and policies of Part 1 is discussed in Table 5-1, and an assessment of conformance with Part 3 is discussed in Table 5-2. Part 2 of the State Plan, which primarily covers internal government affairs, is not addressed.

| Table 5-1: The Hawai‘i State Plan Part I   |   | S | NS | N/A |
|--|---|---|----|-----|
|  |   |   |    |     |
| §226-4 State goals. In order to ensure, for present and future generations, those elements of choice and mobility that ensure that individuals and groups may approach their desired levels of self-reliance and self-determination, it shall be the goal of the State to achieve:   |   |   |    |     |
| (1) A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai‘i’s present and future generations.   | X |   |    |     |
| (2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.   | X |   |    |     |
| (3) Physical, social, and economic well-being, for individuals and families in Hawai‘i, that nourishes a sense of community responsibility, of caring, and of participation in community life.   | X |   |    |     |
| <b>Discussion:</b> The Proposed Action will support the State of Hawai‘i economy by providing an opportunity to markedly strengthen Hawai‘i’s agricultural sector with a viable diversified agricultural operation that provides significant employment and revenue. It also will allow for the continued conveyance of water to the MDWS to support Upcountry Maui residents, businesses and farms, as well as the Nāhiku community, by providing domestic and agriculture water to meet the needs of present usage, although current latent demand and any future growth will require alternative sources and infrastructures. Having the Central Maui farmlands in productive diversified agriculture should enhance the desired physical environment by providing a wide, contiguous area of green open space. |   |   |    |     |
|  |   |   |    |     |
| §226-5 Objective and policies for population.  |   |   |    |     |
| (a) It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter.  |   |   |    |     |



| Table 5-1: The Hawai'i State Plan Part I   |   | S | NS | N/A |
|--|---|---|----|-----|
| To achieve the population objective, it shall be the policy of this State to:  |   |   |    |     |
| (1) Manage population growth statewide in a manner that provides increased opportunities for Hawai'i's people to pursue their physical, social, and economic aspirations while recognizing the unique needs of each county.  | X |   |    |     |
| (2) Encourage an increase in economic activities and employment opportunities on the Neighbor Islands consistent with community needs and desires.   | X |   |    |     |
| (3) Promote increased opportunities for Hawai'i's people to pursue their socio-economic aspirations throughout the islands.  | X |   |    |     |
| (4) Encourage research activities and public awareness programs to foster an understanding of Hawai'i's limited capacity to accommodate population needs and to address concerns resulting from an increase in Hawai'i's population.   |   |   |    | X   |
| (5) Encourage federal actions that will promote a more balanced distribution of immigrants among the states, provided that such actions do not prevent the reunion of immediate family members.  |   |   |    | X   |
| (6) Pursue an increase in federal assistance for states with a greater proportion of foreign immigrants relative to their state's population.  |   |   |    | X   |
| (7) Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.   | X |   |    |     |
| <p><b>Discussion:</b> The Proposed Action will support the objectives and policies of the State for population.</p> <p>The Water Lease will allow for the transition of approximately 30,000 acres of former sugar cane land in Central Maui to diversified agriculture. The proposed diversified agriculture operation will contribute toward achieving the State's goal of increasing food self-sufficiency to reduce dependence on oversea sources. Moreover, putting the Central Maui fields back into operation will increase economic activities and employment opportunities for the population by creating more jobs on the island of Maui. Overall, having the Central Maui lands remain in agriculture will help maintain the rural socio-economic lifestyle on Maui, enjoyed by so many.</p> <p>The EMI Aqueduct System is a resource that provides water to communities in East Maui as well as Upcountry Maui. It delivers water to the MDWS, which in turn provides water for domestic and agricultural needs in Upcountry Maui, including KAP and the planned 262-acre KAP expansion. The Upcountry Maui Water System is the second largest on the island and the County anticipates the population dependent on the water system will grow to approximately 43,675 by 2030. Issuing the Water Lease will ensure the County has a reliable water source to provide for Upcountry Maui and to adequately plan for population growth as there are insufficient alternative water sources and infrastructure to meet present and future demands (Draft Maui Island Water Use and Development Plan, March 2019).</p> <p>The EMI Aqueduct System conveys water directly to the Nāhiku community via the EMI Aqueduct System's West Makapipi Tunnel 2, Well No. 4806-07. According to the Draft Maui Island Water Use and Development Plan (March 2019), the water conveyed from the EMI Aqueduct System serves about 43 water meters currently, and there is sufficient source to accept new water meter service applications to meet future demands of the community.</p> |   |   |    |     |
| <p><b>§226-6 Objectives and policies for the economy--in general.</b></p> <p>(a) Planning for the State's economy in general shall be directed toward achievement of the following objectives:</p> <p>(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawai'i's people.</p> <p>(2) A steady growing and diversified economic base that is not overly dependent on a few industries, and includes the development and expansion of industries on the neighbor islands.</p> <p>(b) To achieve the general economic objectives, it shall be the policy of this State to:</p>  |   |   |    |     |

| Table 5-1: The Hawai'i State Plan Part I |   | S | NS | N/A |
|--|---|---|----|-----|
| (1)                                      | Promote and encourage entrepreneurship within Hawai'i by residents and nonresidents of the State.   | X |    |     |
| (2)                                      | Expand Hawai'i's national and international marketing, communication, and organizational ties, to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State.                              |   |    | X   |
| (3)                                      | Promote Hawai'i as an attractive market for environmentally and socially sound investment activities that benefit Hawai'i's people.   | X |    |     |
| (4)                                      | Transform and maintain Hawai'i as a place that welcomes and facilitates innovative activity that may lead to commercial opportunities.  | X |    |     |
| (5)                                      | Promote innovative activity that may pose initial risks, but ultimately contribute to the economy of Hawaii.  | X |    |     |
| (6)                                      | Seek broader outlets for new or expanded Hawai'i business investments.  | X |    |     |
| (7)                                      | Expand existing markets and penetrate new markets for Hawai'i's products and services.  | X |    |     |
| (8)                                      | Assure that the basic economic needs of Hawai'i's people are maintained in the event of disruptions in overseas transportation.   | X |    |     |
| (9)                                      | Strive to achieve a level of construction activity responsive to, and consistent with, state growth objectives.   |   |    | X   |
| (10)                                     | Encourage the formation of cooperatives and other favorable marketing arrangements at the local or regional level to assist Hawai'i's small scale producers, manufacturers, and distributors.   | X |    |     |
| (11)                                     | Encourage labor-intensive activities that are economically satisfying and which offer opportunities for upward mobility.  | X |    |     |
| (12)                                     | Encourage innovative activities that may not be labor-intensive, but may otherwise contribute to the economy of Hawaii.   | X |    |     |
| (13)                                     | Foster greater cooperation and coordination between the public and private sectors in developing Hawai'i's employment and economic growth opportunities.  | X |    |     |
| (14)                                     | Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.   | X |    |     |
| (15)                                     | Maintain acceptable working conditions and standards for Hawai'i's workers.   | X |    |     |
| (16)                                     | Provide equal employment opportunities for all segments of Hawai'i's population through affirmative action and non-discrimination measures.   |   |    | X   |
| (17)                                     | Stimulate the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.                                      | X |    |     |
| (18)                                     | Encourage businesses that have favorable financial multiplier effects within Hawai'i's economy, particularly with respect to emerging industries in science and technology.   | X |    |     |
| (19)                                     | Promote and protect intangible resources in Hawai'i, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.  | X |    |     |
| (20)                                     | Increase effective communication between the educational community and the private sector to develop relevant curricula and training programs to meet future employment needs in general, and requirements of new, potential growth industries in particular. | X |    |     |

| Table 5-1: The Hawai'i State Plan Part I  | S | NS | N/A |
|---|---|----|-----|
| (21) Foster a business climate in Hawai'i- including attitudes, tax and regulatory policies, and financial and technical assistance programs-that is conducive to the expansion of existing enterprises and the creation and attraction of new business and industry.   |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action will support the objectives and policies of the State for the economy – in general.</p> <p>The Proposed Action will allow for the continued conveyance of water to supply the agricultural fields in Central Maui to support a new diversified agriculture farming model. Currently, the fields are mostly fallow and not being utilized to their full potential. Reopening the land for farming would provide employment opportunities and expand the agriculture sector of Maui's economy. Irrigating the fields in Central Maui, a region with very little rainfall, would also restore scenic greenery to the region as the land will be in cultivation rather than fallow.</p> <p>Moreover, Mahi Pono's diversified agriculture operation will aid in achieving the State's goal of doubling local food production by the year 2020. In the event of a major catastrophe, limiting overseas supplies, this diversified agriculture initiative could help supply the State with significant amounts of food. Mahi Pono will export product that exceeds the Hawai'i market.</p> <p>In the process of doing so, Mahi Pono's operations can offer opportunities for numerous secondary economic benefits—offering entrepreneurship opportunities for value-added agricultural products whether in retail or food establishments, welcoming innovative methods and approaches for the cultivation of agricultural products, expanding markets for Hawai'i-grown products, providing construction activity for needed facilities, setting the foundation for agricultural cooperatives for farmers, providing jobs directly and indirectly for all segments of Hawai'i's population, especially on a neighbor island where employment opportunities can be limited.</p> <p>Mahi Pono intends to offer approximately 800 acres of various sized community farm blocks in Central Maui to local farmers. Farmers also would have access to Mahi Pono's equipment, management, budgeting and marketing services, thus supporting entrepreneurship by residents and assisting small scale producers, manufacturers, and distributors. Mahi Pono also intends to lease some of its property to other agricultural organizations.</p> <p>The EMI Aqueduct System conveys water to the MDWS, which in turn provides water for domestic and agricultural needs in Upcountry Maui, including KAP and the planned 262-acre KAP expansion. The Proposed Action will ensure the County has a reliable water source to provide for Upcountry Maui and to adequately plan, as well as make sound investments, for growth as there are insufficient alternative water sources and infrastructure to meet present and future demands currently.</p> <p>The EMI Aqueduct System also conveys water directly to the Nāhiku community. The Water Lease will allow for the continued operation of the EMI Aqueduct System, which in turn will ensure that Nāhiku has a reliable source of potable water for domestic needs. This will allow the County to adequately plan, as well as make sound investments, for growth.</p> |   |    |     |
| <p><b>§226-7 Objectives and policies for the economy--agriculture.</b></p> <p>(a) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:</p> <ul style="list-style-type: none"> <li>(1) Viability of Hawaii's sugar and pineapple industries.</li> <li>(2) Growth and development of diversified agriculture throughout the State.</li> <li>(3) An agriculture industry that continues to constitute a dynamic and essential component of Hawaii's strategic, economic, and social well-being</li> </ul> <p>To achieve the agriculture objectives, it shall be the policy of this State to:</p>   |   |    |     |
| (1) Establish a clear direction for Hawaii's agriculture through stakeholder commitment and advocacy.   | X |    |     |
| (2) Encourage agriculture by making the best use of natural resources.  | X |    |     |
| (3) Provide the governor and the legislature with information and options needed for prudent decision-making for the development of agriculture.  | X |    |     |
| (4) Establish strong relationships between the agricultural and visitor industries for mutual marketing benefits.   | X |    |     |

| <b>Table 5-1: The Hawai'i State Plan Part I</b>   |   | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|---|----------|-----------|------------|
| (5)   | Foster increased public awareness and understanding of the contributions and benefits of agriculture as a major sector of Hawai'i's economy.  | <b>X</b> |           |            |
| (6)   | Seek the enactment and retention of federal and state legislation that benefits Hawai'i's agricultural industries.  |          |           | <b>X</b>   |
| (7)   | Strengthen diversified agriculture by developing an effective promotion, marketing, and distribution system between Hawai'i's food producers and consumers in the State, nation, and world.   | <b>X</b> |           |            |
| (8)   | Support research and development activities that strengthen economic productivity in agriculture, stimulate greater efficiency, and enhance the development of new products and agricultural by-products.   | <b>X</b> |           |            |
| (9)   | Enhance agricultural growth by providing public incentives and encouraging private initiatives.   |          |           | <b>X</b>   |
| (10)  | Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.   | <b>X</b> |           |            |
| (11)  | Increase the attractiveness and opportunities for an agricultural education and livelihood.   | <b>X</b> |           |            |
| (12)  | In addition to the State's priority on food, expand Hawai'i's agricultural base by promoting growth and development of flowers, tropical fruits and plants, livestock, feed grains, forestry, food crops, aquaculture, and other potential enterprises.                 | <b>X</b> |           |            |
| (13)  | Promote economically competitive activities that increase Hawai'i's agricultural self-sufficiency, including the increased purchase and use of Hawaii-grown food and food products by residents, businesses, and governmental bodies as defined under section 103D-104. | <b>X</b> |           |            |
| (14)  | Promote and assist in the establishment of sound financial programs for diversified agriculture   |          |           | <b>X</b>   |
| (15)  | Institute and support programs and activities to assist the entry of displaced agricultural workers into alternative agricultural or other employment.  |          |           | <b>X</b>   |
| (16)  | Facilitate the transition of agricultural lands in economically non-feasible agricultural production to economically viable agricultural uses.  | <b>X</b> |           |            |
| (17)  | Perpetuate, promote, and increase use of traditional Hawaiian farming systems, such as the use of loko i'a, māla, and irrigated lo'i, and growth of traditional Hawaiian crops, such as kalo, 'uala, and 'ulu.  | <b>X</b> |           |            |
| (18)  | Increase and develop small-scale farms.   | <b>X</b> |           |            |
| <p><b>Discussion:</b> The Proposed Action will support the objectives and policies of the State for the economy – agriculture.</p> <p>The Proposed Action will enable for the continued conveyance of water to support conversion of currently fallow lands to diversified agriculture. Mahi Pono plans to convert the agricultural lands in Central Maui generally to community farms, orchards (citrus, mac nuts, and beverage crops), tropical fruits, row and annual crops, energy crops, irrigated and nonirrigated pasture, and green energy crops. Re-establishing these 30,000 acres of the land in farming would provide employment opportunities and significantly expand the agriculture sector of Maui's economy, as well as for the State of Hawai'i. Currently the agricultural land is mostly fallow with initial start-up diversified agricultural activity. Should the Water Lease not be issued, the ongoing agricultural activities and planned cultivation of the entire Central Valley may be unfeasible. Issuance of the Water Lease would facilitate the transition of the agricultural fields in Central Maui to a productive and viable diversified agricultural operation.</p> <p>Moreover, the diversified agriculture operation will aid in achieving the State's goal of doubling local food production by 2020. In the event of a major catastrophe limiting overseas food supplies, this diversified agriculture initiative could supply the State with significant amounts of food.</p> <p>Mahi Pono intends to offer approximately 800 acres of various sized community farm blocks in Central Maui to local farmers. Farmers also would have access to Mahi Pono's equipment, management, budgeting and marketing services, thus supporting entrepreneurship by residents and assisting small scale producers, manufacturers, and</p> |   |          |           |            |

| Table 5-1: The Hawai'i State Plan Part I   |  | S | NS | N/A |
|--|--|---|----|-----|
| <p>distributors. Mahi Pono also intends to lease some of its property to other agricultural organizations and provide plots for research and offer an internship program for high school and college students. The EMI Aqueduct System conveys water to the MDWS, which in turn provides water for domestic and agricultural needs in Upcountry Maui, including KAP and the planned 262-acre KAP expansion.</p> <p>Presently, the MDWS serves the KAP with non-potable water from diversions of the same streams that serve the Kamole-Weir Water Treatment Plant through the Wailoa Ditch. KAP currently consists of 31 farm lots, ranging in size from 7 to 29 acres, for a total of approximately 445 acres, supporting 26 farmers, and is planned to expand by 262 acres. Issuance of the Water Lease would ensure that KAP, and the planned expansion, have a reliable source of water to meet its water demands.</p> |  |   |    |     |
| <p><b>§226-8 Objective and policies for the economy--visitor industry.</b></p> <p>(a) Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawai'i's economy.</p> <p>(b) To achieve the visitor industry objective, it shall be the policy of this State to:</p>  |  |   |    |     |
| (1) Support and assist in the promotion of Hawai'i's visitor attractions and facilities.   |  |   |    | X   |
| (2) Ensure that visitor industry activities are in keeping with the social, economic, and physical needs and aspirations of Hawai'i's people.  |  |   |    | X   |
| (3) Improve the quality of existing visitor destination areas by utilizing Hawaii's strengths in science and technology.   |  |   |    | X   |
| (4) Encourage cooperation between the public and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.   |  |   |    | X   |
| (5) Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawai'i's people.   |  |   |    | X   |
| (6) Provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the visitor industry.   |  |   |    | X   |
| (7) Foster a recognition of the contribution of the visitor industry to Hawai'i's economy and the need to perpetuate the aloha spirit.   |  |   |    | X   |
| (8) Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawai'i's cultures and values.  |  |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action does not include facilities or improvements that would directly affect the visitor industry of this area of Hawai'i. However, Maui's green Central Valley and rural ambiance have often been noted as assets for attracting visitors to Maui.</p>  |  |   |    |     |
| <p><b>§226 9 Objective and policies for the economy--federal expenditures.</b></p> <p>(a) Planning for the State's economy with regard to federal expenditures shall be directed towards achievement of the objective of a stable federal investment base as an integral component of Hawai'i's economy.</p> <p>(b) To achieve the federal expenditures objective, it shall be the policy of this State to:</p>  |  |   |    |     |
| (1) Encourage the sustained flow of federal expenditures in Hawai'i that generates long-term government civilian employment.   |  |   |    | X   |
| (2) Promote Hawaii's supportive role in national defense, in a manner consistent with Hawaii's social, environmental, and cultural goals by building upon dual-use and defense applications to develop thriving ocean engineering, aerospace research and development, and related dual-use technology sectors in Hawaii's economy.  |  |   |    | X   |



| <b>Table 5-1: The Hawai'i State Plan Part I</b>  |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| (3)  | Promote the development of federally supported activities in Hawai'i that respect statewide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawai'i's environment.  |          |           | <b>X</b>   |
| (4)  | Increase opportunities for entry and advancement of Hawai'i's people into federal government service.  |          |           | <b>X</b>   |
| (5)  | Promote federal use of local commodities, services, and facilities available in Hawai'i.   |          |           | <b>X</b>   |
| (6)  | Strengthen federal-state-county communication and coordination in all federal activities that affect Hawai'i.  |          |           | <b>X</b>   |
| (7)  | Pursue the return of federally controlled lands in Hawai'i that are not required for either the defense of the nation or for other purposes of national importance, and promote the mutually beneficial exchanges of land between federal agencies, the State, and the counties.                             |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will not include federal expenditures to provide for a water conveyance system. |  |          |           |            |
| <b>§226-10 Objective and policies for the economy--potential growth and innovative activities.</b>                     |  |          |           |            |
| (a)  | Planning for the State's economy with regard to potential growth and innovative activities shall be directed towards achievement of the objective of development and expansion of potential growth and innovative activities that serve to increase and diversify Hawai'i's economic base.                   |          |           |            |
| (b)  | To achieve the potential growth activity objective, it shall be the policy of this State to:   |          |           |            |
| (1)  | Facilitate investment and employment growth in economic activities that have the potential to expand and diversify Hawaii's economy, including but not limited to diversified agriculture, aquaculture, renewable energy development, creative media, health care, and science and technology-based sectors. | <b>X</b> |           |            |
| (2)  | Facilitate investment in innovative activity that may pose risks or be less labor-intensive than other traditional business activity, but if successful, will generate revenue in Hawai'i through the export of services or products or substitution of imported services or products.                       |          |           | <b>X</b>   |
| (3)  | Encourage entrepreneurship in innovative activity by academic researchers and instructors who may not have the background, skill, or initial inclination to commercially exploit their discoveries or achievements.  | <b>X</b> |           |            |
| (4)  | Recognize that innovative activity is not exclusively dependent upon individuals with advanced formal education, but that many self-taught, motivated individuals are able, willing, sufficiently knowledgeable, and equipped with the attitude necessary to undertake innovative activity.                  | <b>X</b> |           |            |
| (5)  | Increase the opportunities for investors in innovative activity and talent engaged in innovative activity to personally meet and interact at cultural, art, entertainment, culinary, athletic, or visitor-oriented events without a business focus.  |          |           | <b>X</b>   |
| (6)  | Expand Hawai'i's capacity to attract and service international programs and activities that generate employment for Hawai'i's people.  |          |           | <b>X</b>   |
| (7)  | Enhance and promote Hawai'i's role as a center for international relations, trade, finance, services, technology, education, culture, and the arts.  |          |           | <b>X</b>   |
| (8)  | Accelerate research and development of new energy-related industries based on wind, solar, ocean, and underground resources and solid waste.   |          |           | <b>X</b>   |
| (9)  | Promote Hawai'i's geographic, environmental, social, and technological advantages to attract new economic activities into the State.   | <b>X</b> |           |            |

| Table 5-1: The Hawai'i State Plan Part I  |  | S | NS | N/A |
|---|--|---|----|-----|
| (10) Provide public incentives and encourage private initiative to attract new industries that best support Hawai'i's social, economic, physical, and environmental objectives.   |  |   |    | X   |
| (11) Increase research and the development of ocean related economic activities such as mining, food production, and scientific research.   |  |   |    | X   |
| (12) Develop, promote, and support research and educational and training programs that will enhance Hawai'i's ability to attract and develop economic activities of benefit to Hawai'i.   |  |   |    | X   |
| (13) Foster a broader public recognition and understanding of the potential benefits of new, growth oriented industry in Hawai'i.   |  |   |    | X   |
| (14) Encourage the development and implementation of joint federal and state initiatives to attract federal programs and projects that will support Hawaii's social, economic, physical, and environmental objectives.  |  |   |    | X   |
| (15) Increase research and development of businesses and services in the telecommunications and information industries.   |  |   |    | X   |
| (16) Foster the research and development of nonfossil fuel and energy efficient modes of transportation   |  |   |    | X   |
| (17) Recognize and promote health care and health care information technology as growth industries.   |  |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action will support the objectives and policies of the State for the economy – potential growth and innovative activities.</p> <p>The issuance of the Water Lease under the Proposed Action will allow for the continued conveyance of water to the agricultural fields in Central Maui to support Mahi Pono's proposed diversified agriculture operation. Approximately 23,000 acres of the agricultural land in Central Maui are designated as IALs to the State, of which the majority is classified as "Prime Agricultural Land" by the ALISH rating system. However, currently the majority of the agricultural land in Central Maui is fallow. The Proposed Action would allow for the land to be put back into cultivation.</p> <p>A viable agricultural operation of the scale and diversity as proposed by Mahi Pono will provide numerous opportunities for innovative approaches in both the cultivation of the agricultural products and value-added activities. Mahi Pono also intends to provide plots for research and offer an internship program for high school and college students thus encouraging entrepreneurship in innovative activity. Additionally, Mahi Pono is committing land to the production of solar energy for the public utility system.</p> |  |   |    |     |
| <p><b>§226-10.5 Objectives and policies for the economy--information industry.</b></p> <p>(a) Planning for the State's economy with regard to telecommunications and information technology shall be directed toward recognizing that broadband and wireless communication capability and infrastructure are foundations for an innovative economy and positioning Hawai'i as a leader in broadband and wireless communications and applications in the Pacific Region.</p> <p>(b) To achieve the information industry objective, it shall be the policy of this State to:</p>  |  |   |    |     |
| (1) Promote efforts to attain the highest speeds of electronic and wireless communication within Hawai'i and between Hawai'i and the world, and make high speed communication available to all residents and businesses in Hawaii   |  |   |    | X   |
| (2) Encourage the continued development and expansion of the telecommunications infrastructure serving Hawai'i to accommodate future growth and innovation in Hawaii's economy.   |  |   |    | X   |
| (3) Facilitate the development of new or innovative business and service ventures in the information industry which will provide employment opportunities for the people of Hawaii.   |  |   |    | X   |
| (4) Encourage mainland- and foreign-based companies of all sizes, whether information technology-focused or not, to allow their principals, employees, or   |  |   |    | X   |

| <b>Table 5-1: The Hawai'i State Plan Part I</b>  |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| contractors to live in and work from Hawaii, using technology to communicate with their headquarters, offices, or customers located out-of-state.  |  |          |           |            |
| (5) Encourage greater cooperation between the public and private sectors in developing and maintaining a well-designed information industry.   |  |          |           | <b>X</b>   |
| (6) Ensure that the development of new businesses and services in the industry are in keeping with the social, economic, and physical needs and aspirations of Hawaii's people.  |  |          |           | <b>X</b>   |
| (7) Provide opportunities for Hawaii's people to obtain job training and education that will allow for upward mobility within the information industry.  |  |          |           | <b>X</b>   |
| (8) Foster a recognition of the contribution of the information industry to Hawaii's economy.  |  |          |           | <b>X</b>   |
| (9) Assist in the promotion of Hawaii as a broker, creator, and processor of information in the Pacific.   |  |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will not affect the telecommunications and information technology industries.   |  |          |           |            |
| <b>§226-11 Objectives and policies for the physical environment--land-based, shoreline, and marine resources.</b><br><br>(a) The land-based, shoreline, and marine resources objectives are:<br>(1) Prudent use of Hawai'i's land-based, shoreline, and marine resources.<br>(2) Effective protection of Hawai'i's unique and fragile environmental resources.<br><br>(b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:  |  |          |           |            |
| (1) Exercise an overall conservation ethic in the use of Hawai'i's natural resources.  |  | <b>X</b> |           |            |
| (2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.   |  | <b>X</b> |           |            |
| (3) Take into account the physical attributes of areas when planning and designing activities and facilities.  |  | <b>X</b> |           |            |
| (4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.  |  | <b>X</b> |           |            |
| (5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.  |  | <b>X</b> |           |            |
| (6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i.  |  | <b>X</b> |           |            |
| (7) Provide public incentives that encourage private actions to protect significant natural resources from degradation or unnecessary depletion.   |  |          |           | <b>X</b>   |
| (8) Pursue compatible relationships among activities, facilities, and natural resources.   |  | <b>X</b> |           |            |
| (9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.   |  |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will support the objective and policies for the physical environment – land-based, shoreline, and marine resources.<br><br>The CWRM D&O was purposefully designed to increase the practical knowledge of stream flows and native habitat restoration. The D&O establishes a quantity of water that must remain in each stream. Each stream that was part of the East Maui IIFS petition was evaluated individually for their potential for instream and non-instream use. Instream uses include the maintenance of habitat and ecosystems, recreational opportunities, aesthetic values, navigation, instream power generation, maintenance of water quality, among others. The CWRM D&O ensures a balance of instream and non-instream use of the surface water resources in East Maui. Should the Water Lease be issued, the Proposed Action will be required to be in compliance with the CWRM D&O. The Proposed Action is not contrary to |  |          |           |            |

| Table 5-1: The Hawai'i State Plan Part I  | S | NS | N/A |   |   |  |  |  |   |  |  |  |   |  |  |   |   |  |  |  |  |  |   |
|---|---|----|-----|---|---|--|--|--|---|--|--|--|---|--|--|---|---|--|--|--|--|--|---|
| <p>the CWRM D&amp;O, will exercise a conservation ethic in use of the State's natural resources, and will ensure compatibility between land-based activities and natural resources and ecological systems.</p> <p>An objective of the Proposed Action is to maintain and continue the operation of the EMI Aqueduct System. The EMI staff will be trained by qualified individuals on appropriate conduct and measures to take within the License Area during future maintenance work. This will encourage the protection of the rare and endangered plant and animal species and habitats native to Hawai'i that have been identified in the region. The EMI Aqueduct System will be maintained in a way that is compatible with the existing environment and natural resources in the region.</p> <p>Moreover, the EMI Aqueduct System in Central Maui has historically attributed to approximately 22.7% of system losses on the Central Maui side of the EMI Aqueduct System. This loss provides a significant amount of groundwater recharge to the Central Maui aquifers.</p> <p>Mahi Pono's irrigation engineering team is also designing a high-efficiency irrigation system. The new irrigation system will reduce water usage by: (1) using automatic, real-time irrigation sensors to deliver precise amounts of water efficiently; (2) recycle and re-use all water used in Mahi Pono's processing plants; and (3) integrate various live technology feeds to constantly monitor plant, soil, and tree health. Reducing water usage through effective irrigation ensures conservation of Hawai'i's natural resources.</p>   |   |    |     |   |   |  |  |  |   |  |  |  |   |  |  |   |   |  |  |  |  |  |   |
| <p><b>§226-12 Objective and policies for the physical environment--scenic, natural beauty, and historic resources.</b></p> <p>(a) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawai'i's scenic assets, natural beauty, and multi-cultural/historical resources</p> <p>(b) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:</p> <table border="1"> <tr> <td>(1) Promote the preservation and restoration of significant natural and historic resources.</td><td>X</td><td></td><td></td></tr> <tr> <td>(2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities.</td><td>X</td><td></td><td></td></tr> <tr> <td>(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.</td><td>X</td><td></td><td></td></tr> <tr> <td>(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage.</td><td>X</td><td></td><td></td></tr> <tr> <td>(5) Encourage the design of developments and activities that complement the natural beauty of the islands.</td><td></td><td></td><td>X</td></tr> </table> |   |    |     | (1) Promote the preservation and restoration of significant natural and historic resources. | X |  |  | (2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities. | X |  |  | (3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features. | X |  |  | (4) Protect those special areas, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage. | X |  |  | (5) Encourage the design of developments and activities that complement the natural beauty of the islands. |  |  | X |
| (1) Promote the preservation and restoration of significant natural and historic resources.   | X |    |     |   |   |  |  |  |   |  |  |  |   |  |  |   |   |  |  |  |  |  |   |
| (2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities.  | X |    |     |   |   |  |  |  |   |  |  |  |   |  |  |   |   |  |  |  |  |  |   |
| (3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.  | X |    |     |   |   |  |  |  |   |  |  |  |   |  |  |   |   |  |  |  |  |  |   |
| (4) Protect those special areas, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage.   | X |    |     |   |   |  |  |  |   |  |  |  |   |  |  |   |   |  |  |  |  |  |   |
| (5) Encourage the design of developments and activities that complement the natural beauty of the islands.  |   |    | X   |   |   |  |  |  |   |  |  |  |   |  |  |   |   |  |  |  |  |  |   |
| <p><b>Discussion:</b> The Proposed Action will support the objectives and policies for the physical environment – scenic, natural beauty, and historic resources.</p> <p>The EMI Aqueduct System has been in existence for over a century, and is eligible to be placed on the NRHP under National Register Criterion C, as an extensive engineering design that exemplifies the characteristics, technology, and pattern of features common to irrigation ditch systems in Hawai'i. The Proposed Action will allow for the continued maintenance of the EMI Aqueduct System.</p> <p>The issuance of the Water Lease will allow for the continued conveyance of water to the agricultural fields in Central Maui. Irrigating the fields in Central Maui, a region with very little natural rainfall, would also promote the scenic beauty of the region and preserve existing vistas, as the land will be in cultivated green space rather than remaining fallow or being developed.</p> <p>Moreover, the CWRM D&amp;O ordered that certain streams, designated as “kalo and community streams”, will be fully restored, protecting those special areas that depend upon these streams. These streams support communities that depend upon kalo cultivation, an element of Hawai'i's cultural heritage. Other streams in the East Maui region that were subject to the IIFS will have less water diverted, than what was historically diverted, enhancing and promoting the scenic beauty in the vicinity of those streams and restoring natural habitats. Should the Water Lease be issued, the Proposed Action will be required to be in compliance with the CWRM D&amp;O. The Proposed Action will not be</p>  |   |    |     |   |   |  |  |  |   |  |  |  |   |  |  |   |   |  |  |  |  |  |   |

| Table 5-1: The Hawai'i State Plan Part I  |   | S | NS | N/A |
|---|---|---|----|-----|
| contrary to the CWRM D&O, and is aligned with the State's objective and policies for the physical environment – scenic, natural beauty, and historic resources.   |   |   |    |     |
| <b>§226-13 Objectives and policies for the physical environment--land, air, and water quality.</b><br>(a) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:<br>(1) Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources.<br>(2) Greater public awareness and appreciation of Hawai'i's environmental resources.<br>(b) To achieve the land, air, and water quality objectives, it shall be the policy of this State to:   |   |   |    |     |
| (1) Foster educational activities that promote a better understanding of Hawai'i's limited environmental resources.   |   |   |    | X   |
| (2) Promote the proper management of Hawai'i's land and water resources.  | X |   |    |     |
| (3) Promote effective measures to achieve desired quality in Hawai'i's surface, ground, and coastal waters.   | X |   |    |     |
| (4) Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawai'i's people.   | X |   |    |     |
| (5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.   |   |   |    | X   |
| (6) Encourage design and construction practices that enhance the physical qualities of Hawai'i's communities.   |   |   |    | X   |
| (7) Encourage urban developments in close proximity to existing services and facilities.  | X |   |    |     |
| (8) Foster recognition of the importance and value of the land, air, and water resources to Hawai'i's people, their cultures and visitors.  | X |   |    |     |
| <b>Discussion:</b> The Proposed Action will support the objectives and policies for the physical environment – land, air, and water quality.<br><br>The water source for the EMI Aqueduct System comes from East Maui streams. 25 streams or tributaries that are diverted by the EMI Aqueduct System in the License Area were subject to the CWRM D&O. The CWRM D&O established the IIFS in an attempt to properly manage the surface water for habitat restoration, instream uses, offstream uses, scenic value, and recreational opportunities. Should the Water Lease be issued under the Proposed Action, surface water diversions will be required to be in compliance with the CWRM D&O.<br><br>The issuance of the Water Lease will allow for the continued conveyance of water from the EMI Aqueduct System to the agricultural fields in Central Maui. This will allow Mahi Pono to transition the agricultural fields in Central Maui to a diversified agriculture farming model. Without the issuance of the Water Lease, the agriculture fields in Central Maui will presumably remain in a fallow, uncultivated state until a sufficient amount of water is available. If the Central Maui lands are left in an uncultivated state for a prolonged period of time, it will increase wind-blown erosion adversely impacting the air quality of the surrounding area (CWRM, at iv, 2018) and reduce recharge of the Central Maui aquifers underlying the agricultural fields.<br><br>The issuance of the Water Lease will allow for the continued conveyance of water from the EMI Aqueduct System to the MDWS, which in turn provides water to Upcountry Maui and the Nāhiku community. The County anticipates the Upcountry Maui population, which is dependent on the Upcountry Water System, will grow to approximately 43,675 by 2030. Issuing the Water Lease will ensure the County has a reliable water source to provide for Upcountry Maui and to adequately plan for population growth as there are a lack of alternative water sources and infrastructure to meet present and future demands. This will encourage future urban developments in Upcountry Maui to accommodate growth in proximity to the existing water services and facilities with a reliable source of water.<br><br>Additionally, Mahi Pono's irrigation engineering team is designing a high-efficiency irrigation system. The new irrigation system will reduce water usage by: (1) using automatic, real-time irrigation sensors to deliver precise |   |   |    |     |



| Table 5-1: The Hawai'i State Plan Part I  |   | S | NS | N/A |
|---|---|---|----|-----|
| <p>amounts of water efficiently; (2) recycle and re-use all water used in Mahi Pono's processing plants; and (3) integrate various live technology feeds to constantly monitor plant, soil, and tree health thus promoting the proper management of Hawai'i's land and water resources.</p> <p>A stream and ocean water chemistry assessment was conducted by Sea Engineering, Inc. (SE) and Marine Research Consultants, Inc. (MRC) in 2018 (Appendix B). In general, no significant impacts on coastal water in the region are anticipated. The study concluded that the effects of stream water on marine waters is minor in these habitats owing to the naturally occurring rapid and intense mixing.</p>   |   |   |    |     |
| <p><b>§226-14 Objective and policies for facility systems--in general.</b></p> <p>(a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.</p> <p>(b) To achieve the general facility systems objective, it shall be the policy of this State to :</p>  |   |   |    |     |
| (1) Accommodate the needs of Hawai'i's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.  |   |   |    | X   |
| (2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.   |   |   |    | X   |
| (3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.   | X |   |    |     |
| (4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems.  |   |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action will support the objectives and policies for facility systems – in general.</p> <p>The issuance of the Water Lease] will allow for the continued conveyance of water from the EMI Aqueduct System to the MDWS, which in turn provides water to Upcountry Maui, including KAP and the planned 262-acre KAP expansion, as well as the Nāhiku community. The Upcountry Water System relies on 80-90% of its water from three surface water sources. One of the three surface water sources is delivered by the EMI Aqueduct System through the Wailoa Ditch, which is treated at the Kamole-Weir Water Treatment Plant. The average daily use by the MDWS from the EMI Aqueduct System is 7.1 mgd, which accounts for a major portion of the water supplied to the Upcountry Water System.</p> <p>The Nāhiku community draws between 20,000 to 45,000 gallons of water daily directly from the EMI Aqueduct System from the Ko'olau Ditch through a development tunnel.</p> <p>Without the issuance of the Water Lease, the EMI Aqueduct System may be left in an inoperable state, leaving Upcountry Maui and the Nāhiku community without a reliable source of domestic and agricultural water. The costs to develop alternative sources of water would result in higher rates for all the MDWS customers, as the MDWS' rates are island-wide and do not distinguish by geographical area or water system.</p> |   |   |    |     |
| <p><b>§226-15 Objectives and policies for facility systems--solid and liquid wastes.</b></p> <p>(b) Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:</p> <p>(1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.</p> <p>(2) Provision of adequate sewerage facilities of physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.</p> <p>(c) To achieve solid and liquid waste objectives, it shall be the policy of this State to:</p>   |   |   |    |     |
| (1) Encourage the adequate development of sewerage facilities that complement planned growth.   |   |   |    | X   |

| Table 5-1: The Hawai'i State Plan Part I   |   | S | NS | N/A |
|--|---|---|----|-----|
| (2)  | Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic.   |   |    | X   |
| (3)  | Promote research to develop more efficient and economical treatment and disposals of solid and liquid wastes.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not involve facility systems related to solid and liquid wastes  |   |   |    |     |
| <b>§226-16 Objective and policies for facility systems--water.</b>   |   |   |    |     |
| (a)  | Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities. |   |    |     |
| (b)  | To achieve the facility systems water objective, it shall be the policy of the State to:  |   |    |     |
| (1)  | Coordinate development of land use activities with existing and potential water supply.   | X |    |     |
| (2)  | Support research and development of alternative methods to meet future water requirements well in advance of anticipated needs.   |   |    | X   |
| (3)  | Reclaim and encourage the productive use of runoff water and waste water discharges.  |   |    | X   |
| (4)  | Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.  | X |    |     |
| (5)  | Support water supply services to areas experiencing critical water problems.  | X |    |     |
| (6)  | Promote water conservation programs and practices in government, private industry, and the general public to help ensure adequate water to meet long-term needs.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support the objectives and policies for facility systems – water.  |   |   |    |     |
| <p>The issuance of the Water Lease will allow for the continued conveyance of water from the EMI Aqueduct System to the MDWS, which in turn provides water to Upcountry Maui, including KAP and the planned 262-acre KAP expansion, as well as the Nāhiku community.</p> <p>The Upcountry Water System relies on 80-90% of its water from three surface water treatment plants, which makes the system extremely vulnerable to droughts and presents a challenge to the MDWS. For decades, the Upcountry region has experienced voluntary and mandatory water use restrictions imposed on residential and agricultural users during droughts, primarily during dry season, often negatively impacting the productivity of the farmers. One of the three surface water sources is delivered by the EMI Aqueduct System through the Wailoa Ditch, which is treated at the Kamole-Weir Water Treatment Plant. The average daily use by the MDWS from the EMI Aqueduct System is 7.1 mgd, which accounts for a major portion of the water supplied to the Upcountry Water System.</p> <p>The Nāhiku community receives water directly from the EMI Aqueduct System via a development tunnel in the Ko'olau Ditch. The tunnel draws 20,000 to 45,000 gallons per day, dependent on weather, directly from the EMI Aqueduct System. The water serves about approximately 43 water meters located along Nāhiku Road. One meter is classified as an agricultural use while all the others are classified as single-family use.</p> <p>Without the issuance of the Water Lease, the EMI Aqueduct System may be left in an inoperable state, leaving Upcountry Maui, and the Nāhiku community without a reliable source of water.</p> <p>Mahi Pono's irrigation engineering team is designing a high-efficiency irrigation system. The new irrigation system will reduce water usage by: (1) using automatic, real-time irrigation sensors to deliver precise amounts of water efficiently; (2) recycle and re-use all water used in Mahi Pono's processing plants; and (3) integrate various live technology feeds to constantly monitor plant, soil, and tree health thus assisting in improving, efficiency and capabilities of water systems for agricultural use.</p> |   |   |    |     |

| Table 5-1: The Hawai'i State Plan Part I   |  | S | NS | N/A |
|--|--|---|----|-----|
| <b>§226-17 Objectives and policies for facility systems--transportation.</b>   |  |   |    |     |
| (a) Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:   |  |   |    |     |
| (1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.                                   |  |   |    |     |
| (2) A statewide transportation system consistent with planned growth objectives throughout the State   |  |   |    |     |
| (b) To achieve the transportation objectives, it shall be the policy of this State to:   |  |   |    |     |
| (1) Design, program, and develop a multi-modal system in conformance with desired growth and physical development as stated in this chapter.   |  |   |    | X   |
| (2) Coordinate state, county, federal, and private transportation activities and programs toward the achievement of statewide objectives.  |  |   |    | X   |
| (3) Encourage a reasonable distribution of financial responsibilities for transportation among participating governmental and private parties.   |  |   |    | X   |
| (4) Provide for improved accessibility to shipping, docking, and storage facilities.   |  |   |    | X   |
| (5) Promote a reasonable level and variety of mass transportation services that adequately meet statewide and community needs.   |  |   |    | X   |
| (6) Encourage transportation systems that serve to accommodate present and future development needs of communities.  |  |   |    | X   |
| (7) Encourage a variety of carriers to offer increased opportunities and advantages to inter-island movement of people and goods.  |  |   |    | X   |
| (8) Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs.   |  |   |    | X   |
| (9) Encourage the development of transportation, systems and programs which would assist statewide economic growth and diversification.  |  |   |    | X   |
| (10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawai'i's natural environment.   |  |   |    | X   |
| (11) Encourage safe and convenient uses of low-cost, energy-efficient, non-polluting means of transportation.  |  |   |    | X   |
| (12) Coordinate intergovernmental land use and transportation planning activities to ensure the timely delivery of supporting transportation infrastructure in order to accommodate planned growth objectives. |  |   |    | X   |
| (13) Encourage diversification of transportation modes and infrastructure to promote alternate fuels and energy efficiency.  |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not involve facility systems related to transportation.  |  |   |    |     |
|  |  |   |    |     |
| <b>§226-18 Objectives and policies for facility systems—energy.</b>  |  |   |    |     |
| (a) Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all:                                     |  |   |    |     |
| (1) Dependable, efficient, and economical statewide energy and telecommunication systems capable of supporting the needs of the people.  |  |   |    |     |
| (2) Increased energy self-sufficiency through the reduction and ultimate elimination of Hawaii's dependence on imported fuels for electrical generation and ground transportation;                             |  |   |    |     |
| (3) Greater diversification of energy generation in the face of threats to Hawaii's energy supplies and systems;   |  |   |    |     |

| Table 5-1: The Hawai'i State Plan Part I   |   | S | NS | N/A |
|--|---|---|----|-----|
| (4) Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use; and<br>(5) Utility models that make the social and financial interests of Hawaii's utility customers a priority.<br>(b) To achieve the energy objectives, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable energy services to accommodate demand<br>(c) To further achieve the energy objectives, it shall be the policy of this State to:   |   |   |    |     |
| (1) Support research and development as well as promote the use of renewable energy sources.   |   |   |    | X   |
| (2) Ensure a sufficient supply of energy to enable power systems to support the demands of growth.   |   |   |    | X   |
| (3) Base decisions of least-cost supply-side and demand-side energy resource options on a comparison of their total costs and benefits when a least-cost is determined by a reasonably comprehensive, quantitative, and qualitative accounting of their long-term, direct and indirect economic, environmental, social, cultural, and public health costs and benefits.  | X |   |    |     |
| (4) Promote all cost-effective conservation of power and fuel supplies through measures, including:<br>(A) Development of cost-effective demand-side management programs;<br>(B) Education;<br>(C) Adoption of energy-efficient practices and technologies; and<br>(D) Increasing energy efficiency and decreasing energy use in public infrastructure.  | X |   |    |     |
| (5) Ensure, to the extent that new supply-side resources are needed, that the development or expansion of energy systems uses the least-cost energy supply option and maximizes efficient technologies.  |   |   |    | X   |
| (6) Support research, development, demonstration, and use of energy efficiency, load management, and other demand-side management programs, practices, and technologies.   |   |   |    | X   |
| (7) Promote alternate fuels and transportation energy efficiency.  |   |   |    | X   |
| (8) Support actions that reduce, avoid, or sequester greenhouse gases in utility, transportation, and industrial sector applications.  | X |   |    |     |
| (9) Support actions that reduce, avoid, or sequester Hawaii's greenhouse gas emissions through agriculture and forestry initiatives.   | X |   |    |     |
| (10) Provide priority handling and processing for all state and county permits required for renewable energy projects.   |   |   |    | X   |
| (11) Ensure that liquefied natural gas is used only as a cost-effective transitional, limited-term replacement of petroleum for electricity generation and does not impede the development and use of other cost-effective renewable energy sources.   |   |   |    | X   |
| (12) Promote the development of indigenous geothermal energy resources that are located on public trust land as an affordable and reliable source of firm power for Hawaii.  |   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support the objectives and policies for facility systems related to energy.<br><br>The EMI Aqueduct System operates completely by gravity and requires no power or fuel source. At the same time, it is also capable of generating clean power by dropping water from one ditch, through a hydropower generating plant, and into a lower ditch, thus simultaneously transporting water for use and generating electricity. Mahi Pono intends to use power from two hydro-electric facilities to provide power to pumps and wells, and other infrastructure.<br><br>Without the Proposed Action, the EMI Aqueduct System may not be able to serve the needs of Upcountry Maui, and a replacement source of water will be necessary to make up the deficit, likely one that consumes more energy (such as groundwater wells, which require pumping). Additionally, water would not be available to irrigate the Central Maui |   |   |    |     |

| Table 5-1: The Hawai'i State Plan Part I  |  | S | NS | N/A |
|---|--|---|----|-----|
| fields to any significant degree, resulting in significantly less agriculture than is currently planned and a reduced ability to sequester greenhouse gases on Maui through agriculture.  |  |   |    |     |
| Additionally, Mahi Pono is committing land to the production of solar energy for the public utility system. Mahi Pono intends to use power from two hydro-electric facilities to provide power to pumps and wells, and other infrastructure.  |  |   |    |     |
| <b>§226-18.5 Objectives and policies for facility systems--telecommunications.</b>  |  |   |    |     |
| (a) Planning for the State's telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.   |  |   |    |     |
| (b) To achieve the telecommunications objective, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable telecommunications services to accommodate demand.   |  |   |    |     |
| (c) To further achieve the telecommunications objective, it shall be the policy of this State to:   |  |   |    |     |
| (1) Facilitate research and development of telecommunication systems and resources.   |  |   |    | X   |
| (2) Encourage public and private sector efforts to develop means for adequate, ongoing telecommunication planning.  |  |   |    | X   |
| (3) Promote efficient management and use of existing telecommunication systems and services.  |  |   |    | X   |
| (4) Facilitate the development of education and training of telecommunication personnel.  |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not involve facility systems related to telecommunications.   |  |   |    |     |
|   |  |   |    |     |
| <b>§226-19 Objectives and policies for socio-cultural advancement--housing.</b>   |  |   |    |     |
| (a) Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:  |  |   |    |     |
| (1) Greater opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, and livable homes, located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more rental and for sale affordable housing is made available to extremely low-, very low-, lower-, moderate-, and above moderate-income segments of Hawaii's population. |  |   |    |     |
| (2) The orderly development of residential areas sensitive to community needs and other land uses.  |  |   |    |     |
| (3) The development and provision of affordable rental housing by the State to meet the housing needs of Hawaii's people.   |  |   |    |     |
| (b) To achieve the housing objectives, it shall be the policy of this State to:   |  |   |    |     |
| (1) Effectively accommodate the housing needs of Hawai'i's people.  |  |   |    | X   |
| (2) Stimulate and promote feasible approaches that increase affordable rental and for sale housing choices for extremely low-, very low-, lower-, moderate-, and above moderate-income households.  |  |   |    | X   |
| (3) Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.   |  |   |    | X   |
| (4) Promote appropriate improvement, rehabilitation, and maintenance of existing housing units and residential areas.   |  |   |    | X   |
| (5) Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.  |  |   |    | X   |



| Table 5-1: The Hawai'i State Plan Part I  |   | S | NS | N/A |
|---|---|---|----|-----|
| (6)   | Facilitate the use of available vacant, developable, and underutilized urban lands for housing.   |   |    | X   |
| (7)   | Foster a variety of lifestyles traditional to Hawai'i through the design and maintenance of neighborhoods that reflect the cultures and values of the community.  |   |    | X   |
| (8)   | Promote research and development of methods to reduce the cost of housing construction in Hawai'i.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect the objectives and policies for socio-cultural advancement related to housing.   |   |   |    |     |
| <b>§226-20 Objectives and policies for socio-cultural advancement--health.</b><br>(a) Planning for the State's socio-cultural advancement with regard to health shall be directed towards achievement of the following objectives:<br>(1) Fulfillment of basic individual health needs of the general public.<br>(2) Maintenance of sanitary and environmentally healthful conditions in Hawai'i's communities.<br>(3) Elimination of health disparities by identifying and addressing social determinants of health.<br>(b) To achieve the health objectives, it shall be the policy of this State to: |   |   |    |     |
| (1)   | Provide adequate and accessible services and facilities for prevention and treatment of physical and mental health problems, including substance abuse.   |   |    | X   |
| (2)   | Encourage improved cooperation among public and private sectors in the provision of health care to accommodate the total health needs of individuals throughout the State.  |   |    | X   |
| (3)   | Encourage public and private efforts to develop and promote statewide and local strategies to reduce health care and related insurance costs.   |   |    | X   |
| (4)   | Foster an awareness of the need for personal health maintenance and preventive health care through education and other measures.  |   |    | X   |
| (5)   | Provide programs, services, and activities that ensure environmentally healthful and sanitary conditions.   |   |    | X   |
| (6)   | Improve the State's capabilities in preventing contamination by pesticides and other potentially hazardous substances through increased coordination, education, monitoring, and enforcement  |   |    | X   |
| (7)   | Prioritize programs, services, interventions, and activities that address identified social determinants of health to improve native Hawaiian health and well-being consistent with the United States Congress' declaration of policy as codified in title 42 United States Code section 11702, and to reduce health disparities of disproportionately affected demographics, including native Hawaiians, other Pacific Islanders, and Filipinos. The prioritization of affected demographic groups other than native Hawaiians may be reviewed every ten years and revised based on the best available epidemiological and public health data. |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect the objectives and policies for socio-cultural advancement related to health.  |   |   |    |     |
| <b>§226-21 Objective and policies for socio-cultural advancement--education.</b><br>(a) Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.<br>(b) To achieve the education objective, it shall be the policy of this State to:   |   |   |    |     |

| <b>Table 5-1: The Hawai'i State Plan Part I</b>   |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|--|----------|-----------|------------|
| (1)   | Support educational programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups.  | <b>X</b> |           |            |
| (2)   | Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.  |          |           | <b>X</b>   |
| (3)   | Provide appropriate educational opportunities for groups with special needs.   |          |           | <b>X</b>   |
| (4)   | Promote educational programs which enhance understanding of Hawaii's cultural heritage.  |          |           | <b>X</b>   |
| (5)   | Provide higher educational opportunities that enable Hawaii's people to adapt to changing employment demands.  |          |           | <b>X</b>   |
| (6)   | Assist individuals, especially those experiencing critical employment problems or barriers, or undergoing employment transitions, by providing appropriate employment training programs and other related educational opportunities.   | <b>X</b> |           |            |
| (7)   | Promote programs and activities that facilitate the acquisition of basic skills, such as reading, writing, computing, listening, speaking, and reasoning.  |          |           | <b>X</b>   |
| (8)   | Emphasize quality educational programs in Hawaii's institutions to promote academic excellence.  |          |           | <b>X</b>   |
| (9)   | Support research programs and activities that enhance the education programs of the State.   |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action supports the objective of and policies for socio-cultural advancement related to education. Among other things, Mahi Pono intends to provide agricultural plots for research and offer an internship program for high school and college students. |  |          |           |            |
| <b>§226-22 Objective and policies for socio-cultural advancement--social services.</b>  |  |          |           |            |
| (a)   | Planning for the State's socio-cultural advancement with regard to social services shall be directed towards the achievement of the objective of improved public and private social services and activities that enable individuals, families, and groups to become more self-reliant and confident to improve their well-being. |          |           |            |
| (b)   | To achieve the social services objective, it shall be the policy of this State to:   |          |           |            |
| (1)   | Assist individuals, especially those in need of attaining a minimally adequate standard of living and those confronted by social and economic hardship conditions, through social services and activities within the State's fiscal capacities.  |          |           | <b>X</b>   |
| (2)   | Promote coordination and integrative approaches among public and private agencies and programs to jointly address social problems that will enable individuals, families, and groups to deal effectively with social problems and to enhance their participation in society.   |          |           | <b>X</b>   |
| (3)   | Facilitate the adjustment of new residents, especially recently arrived immigrants, into Hawaii's communities  |          |           | <b>X</b>   |
| (4)   | Promote alternatives to institutional care in the provision of long-term care for elder and disabled populations.  |          |           | <b>X</b>   |
| (5)   | Support public and private efforts to prevent domestic abuse and child molestation, and assist victims of abuse and neglect.   |          |           | <b>X</b>   |
| (6)   | Promote programs which assist people in need of family planning services to enable them to meet their needs.   |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will not affect the objectives and policies for socio-cultural advancement related to social services.   |  |          |           |            |
| <b>§226-23 Objective and policies for socio-cultural advancement--leisure.</b>  |  |          |           |            |

| Table 5-1: The Hawai'i State Plan Part I   |   | S | NS | N/A |
|--|---|---|----|-----|
| (a) Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.   |   |   |    |     |
| (b) To achieve the leisure objective, it shall be the policy of this State to:   |   |   |    |     |
| (1) Foster and preserve Hawai'i's multi-cultural heritage through supportive cultural, artistic, recreational, and humanities-oriented programs and activities.  |   |   |    | X   |
| (2) Provide a wide range of activities and facilities to fulfill the cultural, artistic, and recreational needs of all diverse and special groups effectively and efficiently.   |   |   |    | X   |
| (3) Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.   |   |   |    | X   |
| (4) Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved  |   |   |    | X   |
| (5) Ensure opportunities for everyone to use and enjoy Hawai'i's recreational resources.   | X |   |    |     |
| (6) Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs   |   |   |    | X   |
| (7) Provide adequate and accessible physical fitness programs to promote the physical and mental well-being of Hawai'i's people.   |   |   |    | X   |
| (8) Increase opportunities for appreciation and participation in the creative arts, including the literary, theatrical, visual, musical, folk, and traditional art forms.  |   |   |    | X   |
| (9) Encourage the development of creative expression in the artistic disciplines to enable all segments of Hawai'i's population to participate in the creative arts.   |   |   |    | X   |
| (10) Assure adequate access to significant natural and cultural resources in public ownership.   | X |   |    |     |
| <p><b>Discussion:</b> The Proposed Action will support the objectives and policies for socio-cultural advancement related to leisure.</p> <p>The Ko'olau Forest Reserve Hunting Unit encompasses portions of the License Area. The Hunting Unit is administered the DLNR, Division of Forestry and Wildlife. To hunt within the License Area, hunters must obtain a license from the DLNR and an EMI Permit/Waiver. Hunting grounds are limited to one hunting party per hunting area, as regulated by the DLNR. Hunters enter the hunting unit every Saturday and Sunday, as well as holidays observed by EMI. Prior to entering, hunting parties must sign in their license number they obtained from the DLNR, and log in any game that are taken. Access to the hunting grounds is managed by EMI through eight existing EMI access roads. Hunting is permitted year round. Hunting parties may enter the License Areas by vehicular access, however, must traverse by foot in most areas.</p> <p>Hiking is also a permitted recreational use within the License Area, and is limited to hiking clubs. Access to the License Area lands for hiking is acquired through a Hiking Waiver from EMI. Only two hiking clubs currently enter the License Area lands approximately four to six times a year; the Sierra Club Maui Group and Mauna Ala Hiking Club. They enter on foot, and are guided by a club hiking expert with a manageable number of people</p> <p>Other recreational uses are not permitted on the License Area lands for safety reasons.</p> <p>The Proposed Action would allow EMI staff to continue to manage appropriate access into the License Area so that the public may continue to use and enjoy the License Area's recreational and natural resources.</p> |   |   |    |     |
| <p><b>§226-24 Objective and policies for socio-cultural advancement--individual rights and personal well-being.</b></p> <p>(a) Planning for the State's socio-cultural advancement with regard to individual rights and personal well-being shall be directed towards achievement of the objective of increased opportunities and protection of individual rights to enable individuals to fulfill their socio-economic needs and aspirations.</p>   |   |   |    |     |

| Table 5-1: The Hawai'i State Plan Part I  |   | S | NS | N/A |
|---|---|---|----|-----|
| (b) To achieve the individual rights and personal wellbeing objective, it shall be the policy of this State to:   |   |   |    |     |
| (1) Provide effective services and activities that protect individuals from criminal acts and unfair practices and that alleviate the consequences of criminal acts in order to foster a safe and secure environment.   |   |   |    | X   |
| (2) Uphold and protect the national and state constitutional rights of every individual.  |   |   |    | X   |
| (3) Assure access to, and availability of, legal assistance, consumer protection, and other public services which strive to attain social justice.  |   |   |    | X   |
| (4) Ensure equal opportunities for individual participation in society.   |   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect the objectives and policies for socio-cultural advancement related to individual rights and personal well-being.   |   |   |    |     |
|   |   |   |    |     |
| <b>§226-25 Objective and policies for socio-cultural advancement--culture.</b>  |   |   |    |     |
| (a) Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawai'i's people.  |   |   |    |     |
| (b) To achieve the culture objective, it shall be the policy of this State to:  |   |   |    |     |
| (1) Foster increased knowledge and understanding of Hawai'i's ethnic and cultural heritages and the history of Hawai'i.   |   |   |    | X   |
| (2) Support activities and conditions that promote cultural values, customs, and arts that enrich the life styles of Hawai'i's people and which are sensitive and responsive to family and community needs.   | X |   |    |     |
| (3) Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community life styles in Hawai'i.  |   |   |    | X   |
| (4) Encourage the essence of the aloha spirit in people's daily-activities to promote harmonious relationships among Hawai'i's people and visitors.   |   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support the objectives and policies for socio-cultural advancement related to culture.  |   |   |    |     |
| A recent action taken by the CWRM ordered full restoration for 10 streams. These streams are categorized as "Kalo and Community Streams" and were restored due to the streams historically supporting and currently supporting communities for taro cultivation. The Proposed Action will be in compliance with the CWRM D&O.   |   |   |    |     |
| Earthplan prepared a report to assess the social impacts of the Proposed Action (See Appendix G). The report found that the modification or removal of several diversion structures to complete the restoration of diverted streams designated for full flow as part of the CWRM D&O would have positive social value for East Maui. Stream restoration would address physical mitigation and support cultural and food gathering practices by increasing kalo production. The Proposed Action will be in compliance with the CWRM D&O. |   |   |    |     |
|   |   |   |    |     |
| <b>§226-26 Objectives and policies for socio-cultural advancement--public safety.</b>   |   |   |    |     |
| (a) Planning for the State's socio-cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:   |   |   |    |     |
| (1) Assurance of public safety and adequate protection of life and property for all people.   |   |   |    |     |
| (2) Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, and social and economic well-being of the community in the event of civil disruptions, wars, natural disasters, and other major disturbances.  |   |   |    |     |
| (3) Promotion of a sense of community responsibility for the welfare and safety of Hawai'i's  |   |   |    |     |
| (b) To achieve the public safety programs objectives, it shall be the policy of this State to:  |   |   |    |     |

| Table 5-1: The Hawai'i State Plan Part I   |  | S | NS | N/A |
|--|--|---|----|-----|
| (1)  | Ensure that public safety programs are effective and responsive to community needs.  | X |    |     |
| (2)  | Encourage increased community awareness and participation in public safety programs.   |   |    | X   |
| (c) To achieve the public safety programs objectives, it shall be the policy of this State to:   |  |   |    |     |
| (1)  | Support criminal justice programs aimed at preventing and curtailing criminal activities.  |   |    | X   |
| (2)  | Develop a coordinated, systematic approach to criminal justice administration among all criminal justice agencies.   |   |    | X   |
| (3)  | Provide a range of correctional resources which may include facilities and alternatives to traditional incarceration in order to address the varied security needs of the community and successfully reintegrate offenders into the community. |   |    | X   |
| (d) To further achieve public safety objectives related to emergency management, it shall be the policy of this State to:  |  |   |    |     |
| (1)  | Ensure that responsible organizations are in a proper state of readiness to respond to major war related, natural, or technological disasters and civil disturbances at all times.   | X |    |     |
| (2)  | Enhance the coordination between emergency management programs throughout the State.   |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action will support the objectives and policies for socio-cultural advancement – public safety.</p> <p>On the agricultural fields in Central Maui, there are a number of reservoirs, in which a portion of the water conveyed from the EMI Aqueduct System is stored in. A&amp;B had a working relationship with the Maui County Fire Department and in times of need the Maui County Fire Department can draw water from the storage to fight fires.</p> <p>The long-term average daily use by the MDWS from the EMI Aqueduct System has been 7.1 mgd (CWRM, FOF 551, 2018), which accounts for a major portion of the water supplied to the Upcountry Water System. Nāhiku draws up 20,000 – 45,000 gallons of water daily directly from the EMI Aqueduct System from the Ko'olau Ditch through a development tunnel. Should fires ever breakout in these areas, the water conveyed from the EMI Aqueduct System can be tapped into to fight the fires.</p> |  |   |    |     |
| <p><b>§226-27 Objectives and policies for socio-cultural advancement--government.</b></p> <p>(a) Planning the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the following objectives:</p> <p>(1) Efficient, effective, and responsive government services at all levels in the State.</p> <p>(2) Fiscal integrity, responsibility and efficiency in the state government and county governments.</p> <p>(b) To achieve the government objectives, it shall be the policy of this State to:</p>   |  |   |    |     |
| (1)  | Provide for necessary public goods and services not assumed by the private sector.   |   |    | X   |
| (2)  | Pursue an openness and responsiveness in government that permits the flow of public information, interaction, and response.  |   |    | X   |
| (3)  | Minimize the size of government to that necessary to be effective.   |   |    | X   |
| (4)  | Stimulate the responsibility in citizens to productively participate in government for a better Hawai'i.   |   |    | X   |
| (5)  | Assure that government attitudes, actions, and services are sensitive to community needs and concerns.   |   |    | X   |
| (6)  | Provide for a balanced fiscal budget.  |   |    | X   |



| <b>Table 5-1: The Hawai'i State Plan Part I</b>  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|----------|-----------|------------|
| (7) Improve the fiscal budgeting and management system of the State.   |          |           | <b>X</b>   |
| (8) Promote the consolidation of state and county governmental functions to increase the effective and efficient delivery of government programs and services and to eliminate duplicative services wherever feasible. |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will not affect the objectives and policies for socio-cultural advancement related to government.   |          |           |            |

### **PART III. PRIORITY GUIDELINES**

Part III of the Hawai'i State Plan establishes the overall priority guidelines to address areas of statewide concern. Under HRS § 226-102, "The State shall strive to improve the quality of life for Hawaii's present and future population through the pursuit of desirable courses of action in seven major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, quality education, principles of sustainability, and climate change adaptation."

| <b>Table 5-2: The Hawai'i State Plan Part III</b>  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|----------|-----------|------------|
| <b>§226-103 Economic priority guidelines.</b>  |          |           |            |
| (a) Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawai'i's people and achieve a stable and diversified economy:  |          |           |            |
| (1) Seek a variety of means to increase the availability of investment capital for new and expanding enterprises.  |          |           | <b>X</b>   |
| (2) Encourage the expansion of technological research to assist industry development and support the development and commercialization of technological advancements.  |          |           | <b>X</b>   |
| (3) Improve the quality, accessibility, and range of services provided by government to business, including data and reference services and assistance in complying with governmental regulations.   |          |           | <b>X</b>   |
| (4) Seek to ensure that state business tax and labor laws and administrative policies are equitable, rational, and predictable.  |          |           | <b>X</b>   |
| (5) Streamline the building and development permit and review process, and eliminate or consolidate other burdensome or duplicative governmental requirements imposed on business, where public health, safety, and welfare would not be adversely affected.   |          |           | <b>X</b>   |
| (6) Encourage the formation of cooperatives and other favorable marketing or distribution arrangements at the regional or local level to assist Hawai'i's small-scale producers, manufacturers, and distributors.  | <b>X</b> |           |            |
| (7) Continue to seek legislation to protect Hawai'i from transportation interruptions between Hawai'i and the continental United States.   |          |           | <b>X</b>   |
| (8) Provide public incentives and encourage private initiative to develop and attract industries which promise long-term growth potentials and which have the following characteristics: <ul style="list-style-type: none"> <li>(a) An industry that can take advantage of Hawai'i's unique location and available physical and human resources.</li> <li>(b) A clean industry that would have minimal adverse effects on Hawai'i's environment.</li> <li>(c) An industry that is willing to hire and train Hawai'i's people to meet the industry's labor needs.</li> <li>(d) An industry that would provide reasonable income and steady employment.</li> </ul> | <b>X</b> |           |            |

| Table 5-2: The Hawai'i State Plan Part III  |   | S | NS | N/A |
|---|---|---|----|-----|
| (9)   | Support and encourage, through educational and technical assistance programs and other means, expanded opportunities for employee ownership and participation in Hawai'i business.  | X |    |     |
| (10)  | Enhance the quality of Hawai'i's labor force and develop and maintain career opportunities for Hawai'i's people through the following actions:<br><br>(a) Expand vocational training in diversified agriculture, aquaculture, and other areas where growth is desired and feasible.<br>(b) Encourage more effective career counseling and guidance in high schools and post-secondary institutions to inform students of present and future career opportunities.<br>(c) Allocate educational resources to career areas where high employment is expected and where growth of new industries is desired.<br>(d) Promote career opportunities in all industries for Hawai'i's people by encouraging firms doing business in the State to hire residents.<br>(e) Promote greater public and private sector cooperation in determining industrial training needs and in developing relevant curricula and on-the-job training opportunities.<br>(f) Provide retraining programs and other support services to assist entry of displaced workers into alternative employment. | X |    |     |
| (b) Priority guidelines to promote the economic health and quality of the visitor industry:               |   |   |    |     |
| (1)   | Promote visitor satisfaction by fostering an environment which enhances the Aloha Spirit and minimizes inconveniences to Hawai'i's residents and visitors.  |   |    | X   |
| (2)   | Encourage the development and maintenance of well-designed, adequately serviced hotels and resort destination areas which are sensitive to neighboring communities and activities and which provides for adequate shoreline setbacks and beach access.  |   |    | X   |
| (3)   | Support appropriate capital improvements to enhance the quality of existing resort destination areas and provide incentives to encourage investment in upgrading, repair, and maintenance of visitor facilities.  |   |    | X   |
| (4)   | Encourage visitor industry practices and activities which respect, preserve, and enhance Hawai'i's significant natural, scenic, historic, and cultural resources.   |   |    | X   |
| (5)   | Develop and maintain career opportunities in the visitor industry for Hawai'i's people, with emphasis on managerial positions.  |   |    | X   |
| (6)   | Support and coordinate tourism promotion abroad to enhance Hawai'i's share of existing and potential visitor markets.   |   |    | X   |
| (7)   | Maintain and encourage a more favorable resort investment climate consistent with the objectives of this chapter.   |   |    | X   |
| (8)   | Support law enforcement activities that provide a safer environment for both visitors and residents alike.  |   |    | X   |
| (c) Priority guidelines to promote the continued viability of the sugar and pineapple industries:         |   |   |    |     |
| (1)   | Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries.  |   |    | X   |
| (2)   | Continue efforts to maintain federal support to provide stable sugar prices high enough to allow profitable operations in Hawai'i.  |   |    | X   |
| (3)   | Support research and development, as appropriate, to improve the quality and production of sugar and pineapple crops.   |   |    | X   |
| (d) Priority guidelines to promote the growth and development of diversified agriculture and aquaculture: |   |   |    |     |
| (1)   | Identify, conserve, and protect agricultural and aquacultural lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquacultural uses of such lands.  | X |    |     |
| (2)   | Assist in providing adequate, reasonably priced water for agricultural activities.  | X |    |     |
| (3)   | Encourage public and private investment to increase water supply and to improve transmission, storage, and irrigation facilities in support of diversified agriculture and aquaculture.   | X |    |     |
| (4)   | Assist in the formation and operation of production and marketing associations and cooperatives to reduce production and marketing costs.   | X |    |     |

| Table 5-2: The Hawai'i State Plan Part III   |   | S | NS | N/A |
|--|---|---|----|-----|
| (5)  | Encourage and assist with the development of a waterborne and airborne freight and cargo system capable of meeting the needs of Hawai'i's agricultural community  |   |    | X   |
| (6)  | Seek favorable freight rates for Hawai'i's agricultural products from interisland and overseas transportation operators.  |   |    | X   |
| (7)  | Encourage the development and expansion of agricultural and aquacultural activities which offer long-term economic growth potential and employment opportunities.   | X |    |     |
| (8)  | Continue the development of agricultural parks and other programs to assist small independent farmers in securing agricultural lands and loans.   | X |    |     |
| (9)  | Require agricultural uses in agricultural subdivisions and closely monitor the uses in these subdivisions.  |   |    | X   |
| (e) Priority guidelines for water use and development:   |   |   |    |     |
| (1)  | Maintain and improve water conservation programs to reduce the overall water consumption rate.  | X |    |     |
| (2)  | Encourage the improvement of irrigation technology and promote the use of non-potable water for agricultural and landscaping purposes.  | X |    |     |
| (3)  | Increase the support for research and development of economically feasible alternative water sources.   |   |    | X   |
| (4)  | Explore alternative funding sources and approaches to support future water development programs and water system improvements.  |   |    | X   |
| (f) Priority guidelines for energy use and development:  |   |   |    |     |
| (1)  | Encourage the development, demonstration, and commercialization of renewable energy sources.  | X |    |     |
| (2)  | Initiate, maintain, and improve energy conservation programs aimed at reducing energy waste and increasing public awareness of the need to conserve energy.   | X |    |     |
| (3)  | Provide incentives to encourage the use of energy conserving technology in residential, industrial, and other buildings.  |   |    | X   |
| (4)  | Encourage the development and use of energy conserving and cost-efficient transportation systems.   |   |    | X   |
| (g) Priority guidelines to promote the development of the information industry:  |   |   |    |     |
| (1)  | Establish an information network, with an emphasis on broadband and wireless infrastructure and capability that will serve as the foundation of and catalyst for overall economic growth and diversification in Hawaii.   |   |    | X   |
| (2)  | Encourage the development of services such as financial data processing, a products and services exchange, foreign language translations, telemarketing, teleconferencing, a twenty-four-hour international stock exchange, international banking, and a Pacific Rim management center.                                   |   |    | X   |
| (3)  | Encourage the development of small businesses in the information field such as software development; the development of new information systems, peripherals, and applications; data conversion and data entry services; and home or cottage services such as computer programming, secretarial, and accounting services. |   |    | X   |
| (4)  | Encourage the development or expansion of educational and training opportunities for residents in the information and telecommunications fields.  |   |    | X   |
| (5)  | Encourage research activities, including legal research in the information and telecommunications fields.   |   |    | X   |
| (6)  | Support promotional activities to market Hawaii's information industry services.  |   |    | X   |
| (7)  | Encourage the location or co-location of telecommunication or wireless information relay facilities in the community, including public areas, where scientific evidence indicates that the public health, safety, and welfare would not be adversely affected.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action supports the Economic Priority Guidelines.<br><br>The Proposed Action will enable for the continued conveyance of water to support conversion of currently fallow lands to diversified agriculture. Mahi Pono plans to convert the agricultural lands in Central Maui generally to community farms, orchards (citrus, mac nuts, and beverage crops), tropical fruits, row and annual crops, energy crops, irrigated and nonirrigated pasture, and green energy crops. Re-establishing these 30,000 acres of the land in |   |   |    |     |

| Table 5-2: The Hawai'i State Plan Part III   | S | NS | N/A |
|--|---|----|-----|
| <p>farming would provide employment opportunities and significantly expand the agriculture sector of Maui's economy, as well as for the State of Hawai'i. Currently the agricultural land is mostly fallow with initial start-up diversified agricultural activity. Should the Water Lease not be issued, the ongoing agricultural activities and planned cultivation of the entire Central Valley may be unfeasible. Issuance of the Water Lease would facilitate the transition of the agricultural fields in Central Maui to a productive and viable diversified agricultural operation.</p> <p>Moreover, the diversified agriculture operation will aid in achieving the State's goal of doubling local food production. In the event of a major catastrophe, limiting overseas supplies, this diversified agriculture initiative, because of its ultimate goal, could help supply the State with significant amounts of food.</p> <p>Mahi Pono intends to offer approximately 800 acres of various sized community farm blocks in Central Maui to local farmers. Farmers also would have access to Mahi Pono's equipment, management, budgeting and marketing services, thus supporting entrepreneurship by residents and assisting small scale producers, manufacturers, and distributors. Mahi Pono also intends to lease some of its property to other agricultural organizations and provide plots for research and offer an internship program for high school and college students.</p> <p>Local farmers have expressed interest in planting kalo on a community farming block, and Mahi Pono has had discussions with various people regarding utilizing certain Native Hawaiian farming practices. Mahi Pono has learned and intends to employ the practice of planting ulu trees to use as shade for cattle, and is open to other practices, although Mahi Pono itself does not intend to grow kalo.</p> <p>Mahi Pono's irrigation engineering team is also designing a high-efficiency irrigation system. The new irrigation system will reduce water usage by: (1) using automatic, real-time irrigation sensors to deliver precise amounts of water efficiently; (2) recycle and re-use all water used in Mahi Pono's processing plants; and (3) integrate various live technology feeds to constantly monitor plant, soil, and tree health. Reducing water usage through effective irrigation assures the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.</p> <p>Mahi Pono intends to use power from two hydro-electric facilities to provide power to pumps and wells, and other infrastructure. Additionally, Mahi Pono is committing land to the production of solar energy for the public utility system.</p> <p>The EMI Aqueduct System conveys water to the MDWS, which in turn provides water for domestic and agricultural needs in Upcountry Maui, including KAP and the planned 262-acre KAP expansion.</p> <p>Presently, the MDWS serves the KAP with non-potable water from diversion of the same streams that serve the Kamole-Weir Water Treatment Plant through the Wailoa Ditch. KAP currently consists of 31 farm lots, ranging in size from 7 to 29 acres, for a total of approximately 445 acres, supporting 26 farmers, and is planned to expand by 262 acres. Issuance of the Water Lease would ensure that KAP, and the planned expansion, have a reliable source of water to meet its water demands.</p> |   |    |     |
| <b>§226-104 Population growth and land resources priority guidelines.</b>  |   |    |     |
| (a) Priority guidelines to effect desired statewide growth and distribution:   |   |    |     |
| (1) Encourage planning and resource management to insure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawai'i's people.  | X |    |     |
| (2) Manage a growth rate for Hawai'i's economy that will parallel future employment needs for Hawai'i's people.  | X |    |     |
| (3) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.   |   |    | X   |
| (4) Encourage major state and federal investments and services to promote economic development and private investment to the neighbor islands, as appropriate.   |   |    | X   |
| (5) Explore the possibility of making available urban land, low-interest loans, and housing subsidies to encourage the provision of housing to support selective economic and population growth on the neighbor islands.   |   |    | X   |
| (6) Seek federal funds and other funding sources outside the State for research, program development, and training to provide future employment opportunities on the neighbor islands.   | X |    |     |

| Table 5-2: The Hawai'i State Plan Part III   |  | S | NS | N/A |
|--|--|---|----|-----|
| (7) Support the development of high technology parks on the neighbor islands.  |  |   |    | X   |
| (b) Priority guidelines for regional growth distribution and land resource utilization:  |  |   |    |     |
| (1) Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.  |  | X |    |     |
| (2) Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.  |  | X |    |     |
| (3) Restrict development when drafting of water would result in exceeding the sustainable yield or in significantly diminishing the recharge capacity of any groundwater area.   |  | X |    |     |
| (4) Encourage restriction of new urban development in areas where water is insufficient from any source for both agricultural and domestic use.  |  |   |    | X   |
| (5) In order to preserve green belts, give priority to state capital improvement funds which encourage location of urban development within existing urban areas except where compelling public interest dictates development of a non-contiguous new urban core.  |  |   |    | X   |
| (6) Seek participation from the private sector for the cost of building infrastructure and utilities, and maintaining open spaces.   |  | X |    |     |
| (7) Pursue rehabilitation of appropriate urban areas.  |  |   |    | X   |
| (8) Support the redevelopment of Kaka'ako into a viable residential, industrial, and commercial community.   |  |   |    | X   |
| (9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.   |  | X |    |     |
| (10) Identify critical environmental areas in Hawai'i to include but not be limited to the following: watershed and recharge areas; wildlife habitats (on land and in the ocean); areas with endangered species of plants and wildlife; natural streams and water bodies; scenic and recreational shoreline resources; open space and natural areas; historic and cultural sites; areas particularly sensitive to reduction in water and air quality; and scenic resources.  |  | X |    |     |
| (11) Identify all areas where priority should be given to preserving rural character and lifestyle.  |  | X |    |     |
| (12) Utilize Hawai'i's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.  |  | X |    |     |
| (13) Protect and enhance Hawai'i's shoreline, open spaces, and scenic resources.   |  | X |    |     |
| <p><b>Discussion:</b> The Proposed Action supports the Population Growth and Land Resources Priority Guidelines.</p> <p>The Water Lease will allow for the transition of approximately 30,000 acres of former sugar cane land in Central Maui to diversified agriculture. The proposed diversified agriculture operation will contribute toward achieving the State's goal of increasing food self-sufficiency to reduce dependence on oversea sources. Moreover, putting the Central Maui fields back into operation will increase economic activities and employment opportunities for the population by creating more jobs on the island of Maui.</p> <p>Irrigating the fields in Central Maui, a region with very little natural rainfall, would maintain existing open space and preserve existing vistas, as the land will be in cultivated green space rather than remaining fallow or being developed. Overall, having the Central Maui lands remain in agriculture will help maintain the rural socio-economic lifestyle on Maui, enjoyed by so many.</p> <p>The EMI Aqueduct System is a resource that provides water to communities in East Maui as well as Upcountry Maui. It delivers water to the MDWS, which in turn provides water for domestic and agricultural needs in Upcountry Maui, including KAP and the planned 262-acre KAP expansion. The Upcountry Maui Water System is the second largest on the island and the County anticipates the population dependent on the water system will grow to approximately 43,675 by 2030. The Proposed Action will ensure the County has a reliable water source to provide for Upcountry Maui and to adequately plan for population growth as there are insufficient alternative water sources and</p> |  |   |    |     |



| Table 5-2: The Hawai'i State Plan Part III   |  |  | S | NS | N/A |
|--|--|--|---|----|-----|
| <p>infrastructure to meet present and future demands (Draft Maui Island Water Use and Development Plan, March 2019).</p> <p>The EMI Aqueduct System conveys water directly to the Nāhiku community via the EMI Aqueduct System's West Makapipi Tunnel 2, Well No. 4806-07. According to the Draft Maui Island Water Use and Development Plan (March 2019), the water conveyed from the EMI Aqueduct System serves about 43 water meters currently, and there is sufficient source to accept new water meter service applications to meet future demands of the community.</p> <p>The Proposed Action and the issuance of a Water Lease will also include a requirement that a Watershed Management Plan be developed and implemented for East Maui. In addition, EMI was a founding member of the EMWP and continues to be an active member.</p> |  |  |   |    |     |
| <b>§226-105 Crime and criminal justice</b>   |  |  |   |    |     |
| Priority guidelines in the area of crime and criminal justice:   |  |  |   |    |     |
| (1) Support law enforcement activities and other criminal justice efforts that are directed to provide a safer environment.  |  |  |   |    | X   |
| (2) Target state and local resources on efforts to reduce the incidence of violent crime and on programs relating to the apprehension and prosecution of repeat offenders.   |  |  |   |    | X   |
| (3) Support community and neighborhood program initiatives that enable residents to assist law enforcement agencies in preventing criminal activities.   |  |  |   |    | X   |
| (4) Reduce overcrowding or substandard conditions in correctional facilities through a comprehensive approach among all criminal justice agencies which may include sentencing law revisions and use of alternative sanctions other than incarceration for persons who pose no danger to their community.  |  |  |   |    | X   |
| (5) Provide a range of appropriate sanctions for juvenile offenders, including community-based programs and other alternative sanctions.   |  |  |   |    | X   |
| (6) Increase public and private efforts to assist witnesses and victims of crimes and to minimize the costs of victimization.  |  |  |   |    | X   |
| <b>Discussion:</b> The priority guidelines related to crime and criminal justice are not applicable to the Proposed Action.  |  |  |   |    |     |
| <b>§226-106 Affordable housing</b>   |  |  |   |    |     |
| Priority guidelines for the provision of affordable housing:   |  |  |   |    |     |
| (1) Seek to use marginal or non-essential agricultural land and public land to meet housing needs of low and moderate-income and gap-group households.   |  |  |   |    | X   |
| (2) Encourage the use of alternative construction and development methods as a means of reducing production costs.   |  |  |   |    | X   |
| (3) Improve information and analysis relative to land availability and suitability for housing.  |  |  |   |    | X   |
| (4) Create incentives for development which would increase home ownership and rental opportunities for Hawai'i's low and moderate-income households, gap-group households, and residents with special needs.   |  |  |   |    | X   |
| (5) Encourage continued support for government or private housing programs that provide low interest mortgages to Hawai'i's people for the purchase of initial owner-occupied housing.   |  |  |   |    | X   |
| (6) Encourage public and private sector cooperation in the development of rental housing alternatives.   |  |  |   |    | X   |
| (7) Encourage improved coordination between various agencies and levels of government to deal with housing policies and regulations.   |  |  |   |    | X   |
| (8) Give higher priority to the provision of quality housing that is affordable for Hawai'i's residents and less priority to development of housing intended primarily for individuals outside of Hawai'i.   |  |  |   |    | X   |
| <b>Discussion:</b> The priority guidelines related to the provision of affordable housing are not applicable to the Proposed Action.   |  |  |   |    |     |

| Table 5-2: The Hawai'i State Plan Part III  |   | S | NS | N/A |
|---|---|---|----|-----|
| <b>§226-107 Quality education.</b>  |   |   |    |     |
| Priority guidelines to promote quality education:   |   |   |    |     |
| (1) Pursue effective programs which reflect the varied district, school, and student needs to strengthen basic skills achievement.  |   |   |    | X   |
| (2) Continue emphasis on general education "core" requirements to provide common background to students and essential support to other university programs.   |   |   |    | X   |
| (3) Initiate efforts to improve the quality of education by improving the capabilities of the education work force.   |   |   |    | X   |
| (4) Promote increased opportunities for greater autonomy and flexibility of educational institutions in their decision-making responsibilities.   |   |   |    | X   |
| (5) Increase and improve the use of information technology in education by the availability of telecommunications equipment for:<br>(A) The electronic exchange of information;<br>(B) Statewide electronic mail; and<br>(C) Access to the Internet.<br>Encourage programs that increase the public's awareness and understanding of the impact of information technologies on our lives.   |   |   |    | X   |
| (6) Pursue the establishment of Hawai'i's public and private universities and colleges as research and training centers of the Pacific.   |   |   |    | X   |
| (7) Develop resources and programs for early childhood education.   |   |   |    | X   |
| (8) Explore alternatives for funding and delivery of educational services to improve the overall quality of education.  |   |   |    | X   |
| (9) Strengthen and expand educational programs and services for students with special needs.  |   |   |    | X   |
| <b>Discussion:</b> The priority guidelines related to promoting quality education are generally not applicable to the Proposed Action. However, Mahi Pono intends to provide agricultural plots for research and offer an internship program for high school and college students.  |   |   |    |     |
|   |   |   |    |     |
| <b>§226-108 Sustainability.</b>   |   |   |    |     |
| Priority guidelines and principals to promote sustainability:   |   |   |    |     |
| (1) Encouraging balanced economic, social, community, and environmental priorities.   | X |   |    |     |
| (2) Encouraging planning that respects and promotes living within the natural resources and limits of the State.  | X |   |    |     |
| (3) Promoting a diversified and dynamic economy.  | X |   |    |     |
| (4) Encouraging respect for the host culture.   | X |   |    |     |
| (5) Promoting decisions based on meeting the needs of the present without compromising the needs of future generations.   | X |   |    |     |
| (6) Considering the principles of the ahupua'a system.  |   |   |    | X   |
| (7) Emphasizing that everyone, including individuals, families, communities, businesses, and government, has the responsibility for achieving a sustainable Hawai'i.  | X |   |    |     |
| <b>Discussion:</b> The Proposed Action supports the Priority Guidelines and principles supporting sustainability.<br><br>Diversified agriculture creates varied farming landscapes, increases opportunities for local products, and provides possibilities for a variety of scales, from small family ranches and farms to corporate agricultural operations. The Proposed Action would also support food self-sufficiency for the island community by ensuring a reliable and accessible food supply, thereby creating viable diversified agriculture and agricultural products that cater to local markets and eateries and support local farmers and ranchers. |   |   |    |     |

| Table 5-2: The Hawai'i State Plan Part III  |  | S | NS | N/A |
|---|--|---|----|-----|
| <p>Moreover, in reference to setting the IIFS, the CWRM stated:</p> <p><i>"The Commission first evaluated each stream individually, looking at their flow characteristics, instream uses, habitat restoration potential for fish and other stream animals, recreation opportunities, and scenic values. We then looked at all of the affect streams in an integrated manner with consideration for the overall ecological ramifications of our decision. We used those factors to align instream flow standards with our public trust responsibilities."</i></p> <p>The CWRM then considered offstream uses and weighed the importance of those uses against instream uses. In addition to the recognized public trust use for drinking water, the CWRM acknowledged the importance of diversified agriculture in Central Maui for both food sustainability and for ecological reasons.</p> <p>The Proposed Action will be in compliance with the CWRM D&amp;O.</p> |  |   |    |     |
| <p><b>§226-109 Climate change adaption.</b></p> <p>Priority guidelines for climate change adaption:</p>   |  |   |    |     |
| (1) Ensure that Hawaii's people are educated, informed, and aware of the impacts climate change may have on their communities.  |  |   |    | X   |
| (2) Encourage community stewardship groups and local stakeholders to participate in planning and implementation of climate change policies.   |  |   |    | X   |
| (3) Invest in continued monitoring and research of Hawaii's climate and the impacts of climate change on the State.   |  |   |    | X   |
| (4) Consider native Hawaiian traditional knowledge and practices in planning for the impacts of climate change.   |  |   |    | X   |
| (5) Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change.  |  |   |    | X   |
| (6) Explore adaptation strategies that moderate harm or exploit beneficial opportunities in response to actual or expected climate change impacts to the natural and built environments.  |  |   |    | X   |
| (7) Promote sector resilience in areas such as water, roads, airports, and public health, by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options.  |  |   |    | X   |
| (8) Foster cross-jurisdictional collaboration between county, state, and federal agencies and partnerships between government and private entities and other nongovernmental entities, including nonprofit entities.  |  |   |    | X   |
| (9) Use management and implementation approaches that encourage the continual collection, evaluation, and integration of new information and strategies into new and existing practices, policies, and plans.   |  |   |    | X   |
| (10) Encourage planning and management of the natural and built environments that effectively integrate climate change policy.  |  |   |    | X   |
| <p><b>Discussion:</b> The Priority Guidelines related to climate change adaptation are not applicable to the Proposed Action.</p> <p>In general, the Proposed Action will maintain existing conditions, in compliance with the CWRM D&amp;O and any reservations in favor of the DHHL. No significant impacts on climate in the region are anticipated. Moreover, the exact nature of how the climate will change and impacts from any changes is unknown. New information will continually need to be incorporated within future assessments to identify where efforts should be focused when developing adaption strategies to climatic changes.</p>  |  |   |    |     |

### 5.1.2 State Functional Plans

The Hawai'i State Plan directs appropriate State agencies to prepare Functional Plans which address statewide needs, problems, and issues, and recommend policies and actions to mitigate those problems. The Functional Plans are prepared to further define and implement statewide goals, objectives, policies, and priority guidelines contained in the Hawai'i State Plan. Thirteen Functional Plans were prepared to implement the State Plan provisions in the areas of agriculture, conservation lands, education, employment, energy, health, higher education, historic preservation, housing, human services, recreation, tourism, and transportation.

| Table 5-3: Hawai'i State Functional Plans   |  | S | NS | N/A |
|---|--|---|----|-----|
| 1   | <b>Agricultural State Functional Plan (1991)</b>       |   |    |     |
| <b>Purpose:</b> Continued viability of agriculture throughout the State   |  | X |    |     |
| <b>Discussion:</b> The Proposed Action will support the Agriculture State Functional Plan.<br><br>The Proposed Action will allow for the development of the agricultural fields in Central Maui into a diversified agricultural operation with irrigated and unirrigated cattle pasture and a broad range of food and non-food crops for local consumption and export, including orchard crops (citrus, macadamia nuts, beverage crops, etc.), tropical fruits, row crops, annual crops, energy crops, and grass-fed cattle. At full production, 30,000 acres of Central Maui fields will be in productive diversified agriculture, resulting in significant volumes of food products that will be marketed both locally and out-of-state, putting more Hawaii-branded agricultural products on the market, and expanding agricultural industries in Hawaii.<br><br>In addition, Mahi Pono plans to lease some of its land to other farmers at favorable terms, including relatively low rents for long-term periods. |  |   |    |     |
| 2   | <b>Conservation Lands State Functional Plan (1991)</b> |   |    |     |
| <b>Purpose:</b> Addresses issues of population and economic growth and its strain on current natural resources; broadening public use of natural resources while protecting lands and shorelines from overuse; additionally, promotes the aquaculture industry  |  | X |    |     |
| <b>Discussion:</b> The Proposed Action will affect the Conservation Lands State Functional Plan.<br><br>The Proposed Action encompasses three different regions that may potentially be impacted on the island of Maui: East Maui, Central Maui, and Upcountry Maui. The License Area (East Maui) is entirely in the Conservation State Land Use District. Conservation District lands contain important natural resources essential to the preservation of the State's fragile natural ecosystems and the sustainability of the State's water supply. Thus, the intent is to conserve, protect, and preserve these lands through appropriate management and use to promote their long-term sustainability and the public health, safety and welfare.<br><br>The Proposed Action is consistent with the intent and uses allowed in the Conservation District as set forth by the State Land Use Law, Chapter 205, HRS.  |  |   |    |     |
| 3   | <b>Education State Functional Plan (1989)</b>          |   |    |     |
| <b>Purpose:</b> Improvements to Hawai'i's educational curriculum, quality of educational staff, and access to adequate facilities   |  |   |    | X   |
| <b>Discussion:</b> The Education State Functional Plan is not applicable to the Proposed Action.  |  |   |    |     |
| 4   | <b>Employment State Functional Plan (1990)</b>         |   |    |     |

| Table 5-3: Hawai'i State Functional Plans   |   | S | NS | N/A |
|---|---|---|----|-----|
| <b>Purpose:</b> Improve the qualifications, productivity, and effectiveness of the State's workforce through better education and training of workers as well as efficient planning of economic development, employment opportunities, and training activities  |   | X |    |     |
| <b>Discussion:</b> The Proposed Action will support the Employment State Functional Plan.<br><br>The issuance of the Water Lease will allow for the conversion of the agricultural fields in Central Maui to a diversified agricultural operation. Reopening up the agricultural fields for cultivation would increase employment directly and indirectly for the island of Maui and the State. It is projected that approximately 790 jobs would be created from the implementation of the Proposed Action at full operation, and the period preceding full operation is expected to generate some 326 direct and indirect jobs. Actual employment would vary over time.   |   |   |    |     |
| 5   | <b>Energy State Functional Plan (1991)</b>                |   |    |     |
| <b>Purpose:</b> Lessen the reliance on petroleum and other fossil fuels in favor of alternative sources of energy so as to keep up with the State's increasing energy demands while also becoming a more sustainable island state; achieving dependable, efficient, and economical statewide energy systems   |   | X |    |     |
| <b>Discussion:</b> The Proposed Action will support the Energy State Functional Plan.<br><br>As part of the Proposed Action, about 250 acres will be used for green energy, which would be sufficient space for a 37.5 mW solar farm with storage batteries. Additionally the Proposed Action will include the production of energy crops and would allow for the continued operation of two hydroelectric generation facilities. Therefore the proposed solar farm and energy crops and hydroelectric facilities will help to reduce the State's reliance on fossil fuels.   |   |   |    |     |
| 6   | <b>Health State Functional Plan</b>                       |   |    |     |
| <b>Purpose:</b> Improve the health care system by providing for those who do not have access to private health care providers; increasing preventative health measures; addressing 'quality of care' elements in private and public sectors to cut increasing costs   |   |   |    | X   |
| <b>Discussion:</b> The Health State Functional Plan is not applicable to the Proposed Action.   |   |   |    |     |
| 7   | <b>Higher Education Functional Plan (1984)</b>            |   |    |     |
| <b>Purpose:</b> Prepare Hawai'i's citizens for the demands of an increasingly complex world through providing technical and intellectual tools  |   |   |    | X   |
| <b>Discussion:</b> The Higher Education Functional Plan is not applicable to the Proposed Action.   |   |   |    |     |
| 8   | <b>Historic Preservation State Functional Plan (1991)</b> |   |    |     |
| <b>Purpose:</b> Preservation of historic properties, records, artifacts and oral histories; provide public with information/education on the ethnic and cultural heritages and history of Hawai'i   |   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support the Historic Preservation State Functional Plan.<br><br>No significant impacts to historic resources are anticipated for the Proposed Action. The agricultural fields are heavily disturbed from over 100 years of sugarcane operations. The Proposed Action will not include partial or total destruction or alteration of historic properties, detrimental alteration of the surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with chance of resulting damage, nor neglect resulting in deterioration or destruction. The Proposed Action does not include ground disturbance within the License Area. In connection with this EIS, a Cultural Impact Assessment and Archaeological Literature Review and Field Inspection Report were prepared by Cultural Surveys Hawai'i, and a Historic Structure Assessment was prepared by Mason Architect, Inc. to assess the historic significance of the EMI Aqueduct System. As such, the Proposed Action, through this EIS process, is consistent with the Historic Preservation State Functional Plan. |   |   |    |     |
| 9   | <b>Housing State Functional Plan (1989)</b>               |   |    |     |



| Table 5-3: Hawai'i State Functional Plans  |  | S        | NS | N/A      |
|--|--|----------|----|----------|
| <b>Purpose:</b> Provide affordable rental and for-sale housing; increase homeownership and amount of rental housing units; acquiring public and privately-owned lands for future residential development; maintain a statewide housing data system   |  |          |    | <b>X</b> |
| <b>Discussion:</b> The Housing State Functional Plan is not applicable to the Proposed Action.   |  |          |    |          |
| 10   | <b>Human Services State Functional Plan (1991)</b> |          |    |          |
| <b>Purpose:</b> Refining support systems for families and individuals by improving elderly care, increasing preventative measures to combat child/spousal abuse and neglect; providing means for 'self-sufficiency'  |  |          |    | <b>X</b> |
| <b>Discussion:</b> The Human Services State Functional Plan is not applicable to the Proposed Action.  |  |          |    |          |
| 11   | <b>Recreation State Functional Plan (1991)</b>     |          |    |          |
| <b>Purpose:</b> Manage the use of recreational resources via addressing issues: (1) ocean and shoreline recreation, (2) mauka, urban, and other recreation, (3) public access to shoreline and upland recreation areas, (4) resource conservation and management, (5) management of recreation programs/facilities/areas, and (6) wetlands protection and management   |  | <b>X</b> |    |          |
| <b>Discussion:</b> The Proposed Action will not significantly affect the Recreation State Functional Plan.   |  |          |    |          |
| <p>In general, the permitted recreational activities (hunting and hiking) in the License Area are not dependent upon the volume of water flowing in the East Maui streams. Nevertheless, with an increase in base streamflow, the subjective experience of individuals participating in hunting or hiking could be enhanced by the aesthetic of increased stream flows. In the lower reaches of streams below the License Area, streams with higher base flow would enhance recreational sightseeing, swimming and fishing/gathering activities. Increased streamflow could also impact the physical safety of those entering streams as well as their health if it increases their exposure to waterborne pathogens.</p> <p>The waysides and parks along Hāna Highway in East Maui will benefit aesthetically as increased streamflow have been ordered by the CWRM D&amp;O, as discussed previously, and may also result in an increase of recreational use of the streams such as swimming or fishing.</p> <p>The Ko'olau Forest Reserve Hunting Unit encompasses portions of the License Area. The Hunting Unit is administered the DLNR, Division of Forestry and Wildlife. To hunt within the License Area, hunters must obtain a license from the DLNR and an EMI Permit/Waiver. Hunting grounds are limited to one hunting party per hunting area, as regulated by the DLNR. Hunters enter the hunting unit every Saturday and Sunday, as well as holidays observed by EMI. Prior to entering, hunting parties must sign in their license number they obtained from the DLNR, and log in any game that are taken. Access to the hunting grounds is managed by EMI through eight existing EMI access roads. Hunting is permitted year round. While hunting parties may enter the License Areas by vehicular access, most areas area must then be traversed by foot.</p> <p>Hiking is also a permitted recreational use within the License Area, and is limited to hiking clubs. Access to the License Area lands for hiking is acquired through a Hiking Waiver from EMI. Only two hiking clubs currently enter the License Area lands approximately four to six times a year; the Sierra Club Maui Group and Mauna Ala Hiking Club. They enter on foot, and are guided by a club hiking expert with a manageable number of people. Other recreational uses are not permitted on the License Area lands for safety reasons.</p> <p>Issuance of the Water Lease under the Proposed Action would allow EMI staff to continue to manage appropriate access into the License Area so that the public may continue to use and enjoy the License Area's recreational and natural resources.</p> |  |          |    |          |
| 12   | <b>Tourism State Functional Plan (1991)</b>        |          |    |          |
| <b>Purpose:</b> Balance tourism/economic growth with environmental and community concerns; development that is cognizant of the limited land and water resources of the islands; maintaining friendly relations between tourists and community members; development of a   |  |          |    | <b>X</b> |

| Table 5-3: Hawai'i State Functional Plans  |   | S | NS | N/A |
|--|---|---|----|-----|
| productive workforce and enhancement of career and employment opportunities in the visitor industry  |   |   |    |     |
| <b>Discussion:</b> The Tourism State Functional Plan is not applicable to the Proposed Action.   |   |   |    |     |
|  |   |   |    |     |
| 13   | Transportation State Functional Plan (1991) |   |    |     |
| <b>Purpose:</b> Development of a safer, more efficient transportation system that also is consistent with planned physical and economic growth of the state; construction of facility and infrastructure improvements; develop a transportation system balanced with new alternatives; pursue land use initiatives which help reduce travel demand |   |   |    | X   |
| <b>Discussion:</b> The Transportation State Functional Plan is not applicable to the Proposed Action.  |   |   |    |     |

### 5.1.3 State Land Use District

The State Land Use Law, Chapter 205, HRS, establishes an overall framework of land use management whereby all lands in the State of Hawai'i are classified into one of four land use districts: Urban District, Agricultural District, Conservation District, and Rural District. The State Land Use Commission (LUC) is responsible for preserving and protecting Hawai'i's lands and encouraging those uses to which lands are best suited.

#### **Discussion:**

The Proposed Action encompasses three different regions that may potentially be impacted on the island of Maui: East Maui, Central Maui, and Upcountry Maui.

The License Area is entirely in the Conservation State Land Use District (See Figure 5-1). Conservation District lands contain important natural resources essential to the preservation of the State's fragile natural ecosystems and the sustainability of the State's water supply. Therefore, the intent is to conserve, protect, and preserve these lands through appropriate management and use to promote their long-term sustainability and the public health, safety and welfare. Conservation Districts include areas necessary for protecting watersheds and water sources; preserving scenic and historic areas; providing park lands, wilderness, and beach reserves; conserving indigenous or endemic plants, fish, and wildlife, including those which are threatened or endangered; preventing floods and soil erosion; forestry; open space areas whose existing openness, natural condition, or present state of use, if retained, would enhance the present or potential value of abutting or surrounding communities, or would maintain or enhance the conservation of natural or scenic resources; areas of value for recreational purposes; other related activities; and other permitted uses not detrimental to a multiple use conservation concept, and also include areas for geothermal resources exploration and geothermal resources development. Land use regulations in the Conservation District are administered by the BLNR under Hawai'i Administrative Rules. No use except a nonconforming use shall be made within the Conservation District unless the use is in accordance with the HARs.

The majority of the approximately 30,000-acre Central Maui agricultural fields are in the Agricultural State Land Use District (See Figure 5-2). Some portions of the agricultural fields in Central Maui are also in the Urban State Land Use District. However, those portions in the Urban State Land Use District will be used for agricultural purposes and are associated with the Proposed Action. One objective of the Proposed Action is for the continued conveyance of water to the agricultural fields in Central Maui. Permissible uses in the Agricultural District are set forth in Chapter 205 and include, among other uses, activities or uses as characterized by the cultivation of crops, crops for bioenergy, orchards, forage, the raising of livestock, forestry and

farming activities or uses related to animal husbandry, game and fish propagation, and some renewable energy options.

The EMI Aqueduct System also delivers water to Upcountry Maui to meet domestic and agricultural demands. Upcountry Maui includes lands within all four State Land Use District, with the majority being within the Agricultural District (See Figure 5-3). The Urban District generally includes lands characterized by “city-like” concentrations of people, structures, streets, urban level of services and other related land uses, and also includes vacant areas foreseeable urban growth. Jurisdiction for this District lies primarily with the counties. The Rural District is composed primarily of small farms intermixed with low-density residential lots with a minimum size of one-half acre. Jurisdiction over Rural Districts is shared by the LUC and county governments.

The Proposed Action is consistent with the intent and uses allowed in the four State Land Use Districts as set forth by the State Land Use Law, Chapter 205, HRS.

#### **5.1.4 Important Agricultural Lands**

Under Article XI, Section 3, of the Constitution of Hawai‘i, the State is required to conserve and protect agricultural lands, promote diversified agriculture, increase agricultural self-sufficiency and assure the availability of agriculturally suitable lands. HRS Chapter, 205, sections 205-41 through 205-52, provides for the designation of Important Agricultural Lands (IAL). As stated in HRS Chapter 205: “The objective for the identification of important agricultural lands is to identify and plan for the maintenance of a strategic agricultural land resource base that can support a diversity

of agricultural activities and opportunities that expand agricultural income and job opportunities and increase agricultural self-sufficiency for current and future generations.” IAL designation facilitates the long-term dedication of lands for future agricultural use so long as there is a sufficient supply of water to allow for profitable farming.

IAL is defined as lands that: “(1) Are capable of producing sustained high agricultural yields when treated and managed according to accepted farming methods and technology; (2) Contribute to the State’s economic base and produce agricultural commodities for export or local consumption; or (3) Are needed to promote the expansion of agricultural activities and income for the future, even if currently not in production.” The IAL designation provides the farmer access to incentives that promote profitable agricultural operations. Incentives include the approval to construct on-site farm dwellings and employee housing, income tax credits for agricultural costs, financing opportunities, loan guarantees, and expedited State-level permitting for agricultural processing facilities. Approximately 23,000 of the 30,000 acres of agricultural fields in Central Maui are designated as IAL (See Figure 5-4).

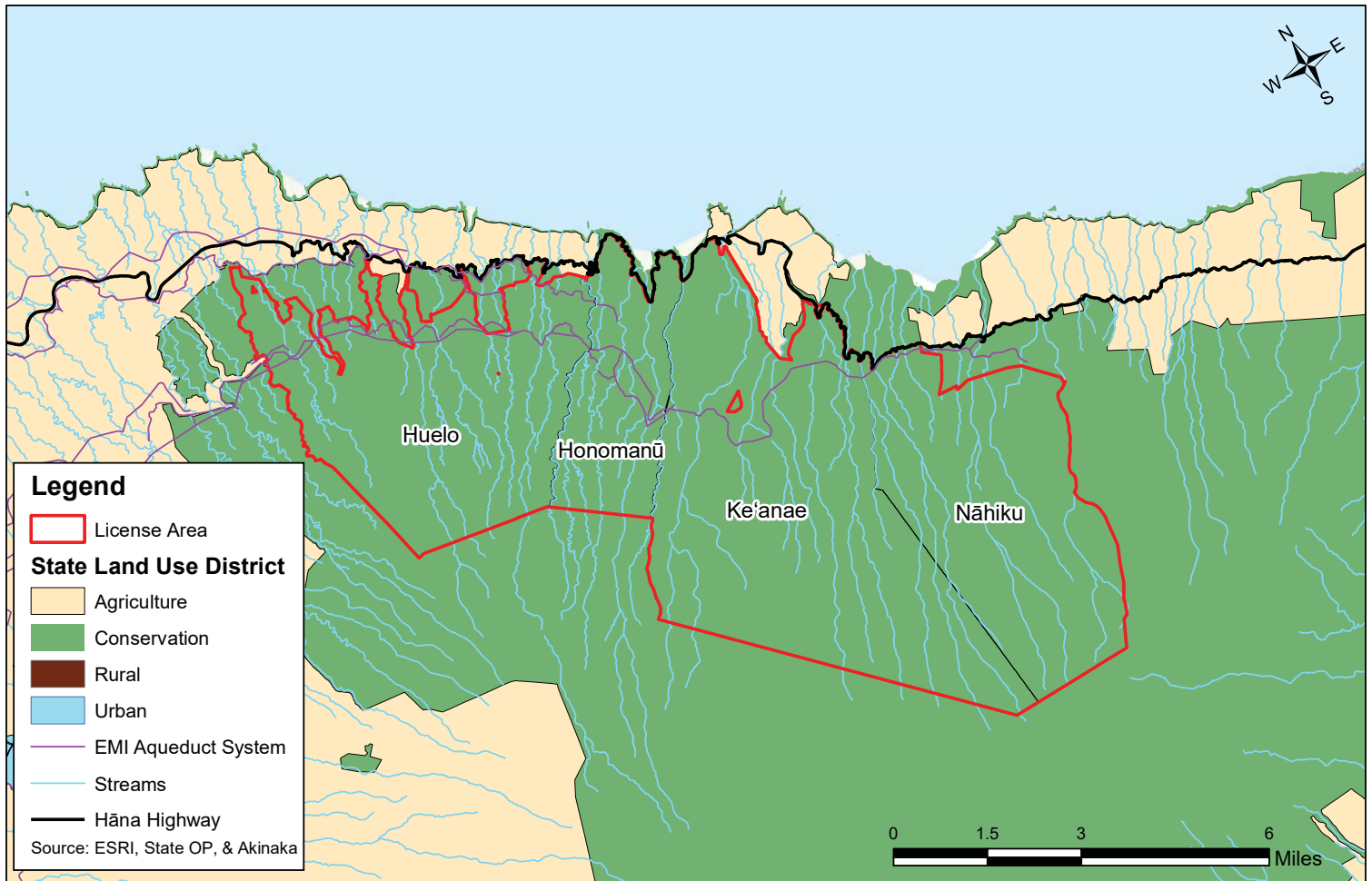


FIGURE 5-1

## East Maui State Land Use District Map

*PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS*



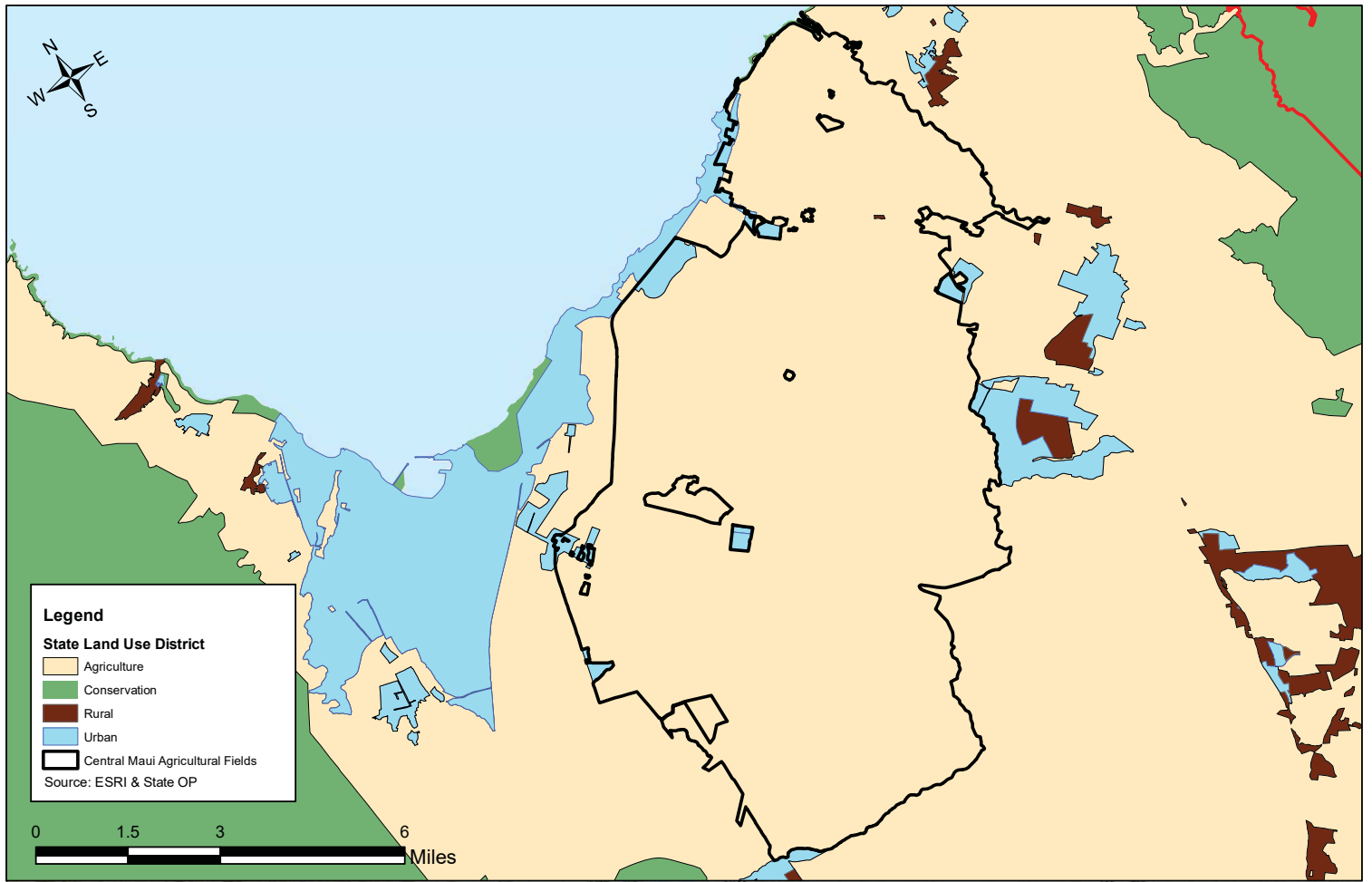


FIGURE 5-2

## Central Maui State Land Use District Map

*PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS*







FIGURE 5-3

# Upcountry Maui State Land Use District Map

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



of agricultural activities and opportunities that expand agricultural income and job opportunities and increase agricultural self-sufficiency for current and future generations.” IAL designation facilitates the long-term dedication of lands for future agricultural use so long as there is a sufficient supply of water to allow for profitable farming.

IAL is defined as lands that: “(1) Are capable of producing sustained high agricultural yields when treated and managed according to accepted farming methods and technology; (2) Contribute to the State’s economic base and produce agricultural commodities for export or local consumption; or (3) Are needed to promote the expansion of agricultural activities and income for the future, even if currently not in production.” The IAL designation provides the farmer access to incentives that promote profitable agricultural operations. Incentives include the approval to construct on-site farm dwellings and employee housing, income tax credits for agricultural costs, financing opportunities, loan guarantees, and expedited State-level permitting for agricultural processing facilities. Approximately 23,000 of the 30,000 acres of agricultural fields in Central Maui are designated as IAL (See Figure 5-4).

| Table 5-4: Important Agricultural Lands  |  | S | NS | N/A |
|--|--|---|----|-----|
| <b>§205-43 Important Agricultural Lands; Policies</b>  |  |   |    |     |
| (1) Promote the retention of important agricultural lands in blocks of contiguous, intact, and functional land units large enough to allow flexibility in agricultural production and management;  |  | X |    |     |
| (2) Discourage the fragmentation of important agricultural lands and the conversion of these lands to nonagricultural uses;  |  | X |    |     |
| (3) Direct nonagricultural uses and activities from important agricultural lands to other areas and ensure that uses on important lands are actually agricultural uses;  |  | X |    |     |
| (4) Limit physical improvements on important agricultural lands to maintain affordability of these lands for agricultural purposes   |  | X |    |     |
| (5) Provide a basic level of infrastructure and services on important agricultural lands limited to the minimum necessary to support agricultural uses and activities;   |  | X |    |     |
| (6) Facilitate the long-term dedication of important agricultural lands for future agricultural use through the use of incentives;   |  | X |    |     |
| (7) Facilitate the access of farmers to important agricultural lands for long-term viable agricultural use; and  |  | X |    |     |
| (8) Promote the maintenance of essential agricultural infrastructure systems, including irrigation systems   |  | X |    |     |
| <p><b>Discussion:</b> The Proposed Action will ensure the long-term availability and use of the agricultural fields in Central Maui of which approximately 23,000 of the 30,000 acres of agricultural lands in Central Maui are designated as IAL.</p> <p>The Proposed Action will enable for the continued conveyance of water to support conversion of currently fallow lands to diversified agriculture. Mahi Pono plans to convert the agricultural lands in Central Maui generally to community farms, orchards (citrus, mac nuts, and beverage crops), tropical fruits, row and annual crops, energy crops, irrigated and nonirrigated pasture, and green energy crops. Re-establishing these 30,000 acres of the land in farming would provide employment opportunities and significantly expand the agriculture sector of Maui’s economy, as well as for the State of Hawai’i. Currently the agricultural land is mostly fallow with initial start-up diversified agricultural activity. Should the Water Lease not be issued, the ongoing agricultural activities and planned cultivation of the entire Central Valley may be unfeasible. Issuance of the Water Lease would facilitate the transition of the agricultural fields in Central Maui to a productive and viable diversified agricultural operation.</p> |  |   |    |     |

| <b>Table 5-4: Important Agricultural Lands</b>   | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|----------|-----------|------------|
| <p>Additionally, Mahi Pono intends to offer approximately 800 acres of various sized community farm blocks in Central Maui to local farmers. Farmers also would have access to Mahi Pono's equipment, management, budgeting and marketing services.</p> <p>Moreover, the agricultural fields in Central Maui are supplied surface water through the EMI Aqueduct System. The Proposed Action will ensure the continued use and maintenance of this system.</p> |          |           |            |

### 5.1.5 Hawai'i Forest Reserves

Much of the License Area is within the Ko'olau Forest Reserve. Hawai'i's Forest Reserve system was established in 1903. Act 44 was "an Act to provide for the encouragement and protection of agriculture, horticulture and forestry." The Forest Reserve Act authorized the governor to place vast amounts of public land, plus private lands temporarily surrendered by their owners, into forest reserves for the primary purpose of protecting water supplies and preventing erosion. Ralph Sheldon Hosmer was appointed to administer the program in 1904. By 1914 he had succeeded in putting 798,214 acres (68% of which belonged to the Territory) into 37 forest reserves. He believed that forest reserves were useful for two primary purposes: water production for the Territory's agricultural industries, and timber production to meet the growing demand for wood products. The forest reserve system, he said, should not lead to "the locking up from economic use of a certain forest area." Even in critical watersheds the harvesting of old trees "is a positive advantage, in that it gives the young trees a chance to grow, while at the same time producing a profit from the forests (Frame and Horwitz, 1965). In its current form, HRS § 183-11 provides:

The governor may, with the approval of the department of land and natural resources, after a hearing or hearings as hereinafter provided, from time to time set apart any government land or lands, whether under lease or not, as forest reserves. On lands under lease the reserve shall not take effect until the expiration of the existing lease, or in any way affect the rights acquired under the lease. Any land or lands while so set apart shall not be leased or sold by the government or used in any way for any purposes inconsistent with this chapter. The governor may from time to time, with the approval of the department, after a hearing or hearings as hereinafter provided, revoke, modify, or suspend any and all the orders and proclamations or any part thereof, which set apart the lands.

The Hawai'i Administrative Rules governing Hawai'i Forest Reserves are found in Title 13, chapter 104. HAR Title 13 chapter 104 provides regulations for the administration of forest reserves in general. It contains various restrictions on activities within a forest reserve. Building fires on the ground or in any structure is prohibited, as is the use of fireworks. Hunting, fishing, trapping or disturbing any fish, animal, or bird is prohibited, except as allowed by DLNR's hunting or fishing rules. Swimming, driving, and cats, dogs, and other animals are allowed but subject to limitations. No person can remain in the same forest reserve for more than 7 continuous days. Particular rules regarding prohibitions and access permits are discussed below.

| <b>Table 5-5: Hawai'i Forest Reserves</b> | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|----------|-----------|------------|
|   |          |           |            |

| Table 5-5: Hawai'i Forest Reserves  |   | S | NS | N/A |
|---|---|---|----|-----|
| <b>HAR §13-104-4. The following activities are prohibited within a forest reserve:</b>  |   |   |    |     |
| (1) To remove, injure, or kill any form of plant or animal life, either in whole or in part, except as authorized by the Board or authorized representative or as provided by rules of the Board;   | X |   |    |     |
| (2) To remove, damage, or disturb any natural feature or resource (e.g. natural stream beds) except as authorized by the board or its authorized representative;  | X |   |    |     |
| (3) To remove, damage, or disturb any historic or prehistoric remains;  | X |   |    |     |
| (4) To remove, damage, or disturb any notice, marker, or structure;   | X |   |    |     |
| (5) To enter, occupy, or use any building, structure, facility, motorized vehicle, machine, equipment, or tool within or on forest reserve except as authorized by the board or its representative;   | X |   |    |     |
| (6) To engage in any construction or improvement except as authorized by the board.   | X |   |    |     |
| (7) To sell, peddle, solicit, or offer for sale any merchandise or service except with written authorization from the board.  |   |   |    | X   |
| (8) To distribute or post handbills, circulars, or other notices.   |   |   |    | X   |
| (9) To introduce any plant or animal except as approved by the Board.   |   |   |    | X   |
| (10) To enter or remain within forest reserves when under the influence of alcohol, narcotics, or drugs, to a degree that may endanger oneself or endanger or cause annoyance to other persons or property. The use or possession of narcotics, drugs or alcohol within forest reserves is prohibited.  |   |   |    | X   |
| <b>Discussion:</b> The Proposed Action is consistent with the limitations under HAR § 13-104-4. The Water Lease proposes a continuation of water collection and distribution that started in the 1870s. However, the Proposed Action involves a significant reduction in the amount of water that can be diverted from the License Area due to the IIFS requirements set forth under the CWRM D&O. Any modifications to the EMI Aqueduct System required under the CWRM D&O will be done in compliance with applicable rules of the BLNR. The issuance of the Water Lease itself does not propose any additional changes to the EMI Aqueduct System or the use of the License Area. |   |   |    |     |
| <b>HAR § 13-104-5. The following activities are prohibited within a forest reserve:</b>   |   |   |    |     |
| (1) To drain, dump, or leave any litter, animal waste or remains, or any other material which pollutes or is likely to cause pollution in the forest reserve including streams and other water sources;   | X |   |    |     |
| (2) To deposit any body waste in areas without comfort stations without digging a hole and covering all signs of the waste;   | X |   |    |     |
| (3) To deposit any body waste within 150 feet of a spring, stream, lake, or reservoir;  | X |   |    |     |
| (4) To leave or abandon a vehicle or any other large refuse such as refrigerators or stoves, household garbage or trash or other forms of waste or debris.  |   |   |    | X   |
| <b>Discussion:</b> The Proposed Action is supportive of the regulations governing the use of forest reserves. No new actions that would generate litter or human waste are proposed in connection with the Water Lease. Maintaining the streams and water sources within the License Area is vital to the objectives of the Proposed Action, such as the ability to continue to deliver water to domestic and agricultural users in Upcountry Maui, Nahiku, and Central Maui.   |   |   |    |     |
| HAR Title 13 Chapter 104 also provides a permitting scheme for access to forest reserves. Access permits shall be obtained from the district offices of the Division of Forestry and Wildlife during regular working hours. Persons applying for an access permit must provide their names and addresses and produce satisfactory identification.   | X |   |    |     |
| <b>Discussion:</b> To hunt within the Hunting Units of the Ko'olau Forest Reserve hunters must obtain a license from the DLNR and an EMI Permit/Waiver. Hunting grounds are limited to one hunting party per hunting area, as   |   |   |    |     |

| <b>Table 5-5: Hawai'i Forest Reserves</b>   | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|----------|-----------|------------|
| regulated by the DLNR. Hunters enter the hunting unit every Saturday and Sunday, as well as holidays observed by EMI. Prior to entering, hunting parties must sign in with the license number obtained from the DLNR, and upon exiting must log in any game that are taken. Access to the hunting grounds is managed by EMI through eight existing EMI access roads. Hunting is permitted year round. Hunting parties may enter the License Area by vehicular access, however, must traverse by foot in most areas. |          |           |            |
| HAR § 13-104-23: Permits for access to or entry into forest reserves may be required by the board or its authorized representative for the following purpose:   |          |           |            |
| (1) To comply with the requirements of private landowners or lessees who permit access to forest reserves through their land;   | <b>X</b> |           |            |
| (2) To control the number of people using a forest reserve or an area within a forest reserve in order to minimize the impact upon environmentally sensitive area;  | <b>X</b> |           |            |
| (3) To control the types of uses of a forest reserve or an area within a forest reserve in order to minimize the dangers of incompatible uses in the same area (e.g. horseback riding and motorcycle riding);   | <b>X</b> |           |            |
| (4) To control periods of use of a forest reserve, especially during periods when fire danger levels are high.  | <b>X</b> |           |            |
| (5) To collect plants or animals for scientific purposes.   |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action is consistent with the regulations governing access to or entry into forest reserves.  |          |           |            |

#### 5.1.6 Hawai'i Natural Area Reserves

The Hanawā Natural Area Reserve (NAR) consists of approximately 7,500 acres. Large portions of the Hanawā NAR are within the Nāhiku portion of the License Area. However, no portion of the EMI Aqueduct System is within the Hanawā NAR. The NAR system is established under HRS Chapter 195. The purpose of the establishment of the NAR system is set forth in HRS § 195-1 as follows:

The legislature finds and declares that (1) the State of Hawai'i possesses unique natural resources, such as geological and volcanological features and distinctive marine and terrestrial plants and animals, many of which occur nowhere else in the world, that are highly vulnerable to loss by the growth of population and technology; (2) these unique natural assets should be protected and preserved, both for the enjoyment of future generations, and to provide base lines against which changes which are being made in the environments of Hawai'i can be measured; (3) in order to accomplish these purposes the present system of preserves, sanctuaries and refuges must be strengthened, and additional areas of land and shoreline suitable for preservation should be set aside and administered solely and specifically for the aforesaid purposes; and (4) that a statewide natural area reserves system should be established to preserve in perpetuity specific land and water areas which support communities, as relatively unmodified as possible, of the natural flora and fauna, as well as geological sites, of Hawai'i.

The Hawai'i Administrative Rules regulating activities within the NAR system are found in Title 13, chapter 209. Applicable rules regarding prohibited activities within the NAR include the following:

| <b>Table 5-6: Hawai'i Natural Area Reserves</b>   | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|----------|-----------|------------|
| <b>HAR § 13-209-4. The following activities are prohibited within a natural area reserve:</b> |          |           |            |



| <b>Table 5-6: Hawai'i Natural Area Reserves</b>   | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|----------|-----------|------------|
| (1) To remove, injure, or kill any form of plant or animal life, except game mammals and birds hunted according to department rules;  |          |           | <b>X</b>   |
| (2) To introduce any form of plant or animal life, except dogs when permitted by hunting rules of the department and service animals accompanying their handlers;   |          |           | <b>X</b>   |
| (3) To remove, damage, or disturb any geological or paleontological features or substances;   |          |           | <b>X</b>   |
| (4) To remove, damage, or disturb any historic or prehistoric remains;  |          |           | <b>X</b>   |
| (5) To remove, damage, or disturb any notice, marker, or structure;   |          |           | <b>X</b>   |
| (6) To engage in any construction or improvement;   |          |           | <b>X</b>   |
| (7) To engage in any camping activity or to establish a temporary or permanent residence;   |          |           | <b>X</b>   |
| (8) To start or maintain a fire;  |          |           | <b>X</b>   |
| (9) To litter, or to deposit refuse or any other substance;   |          |           | <b>X</b>   |
| (10) To operate any motorized or unmotorized land vehicle or air conveyance of any shape or form in any area, including roads or trails, not designated for its use;  |          |           | <b>X</b>   |
| (11) To operate any motorized water vehicle of any shape or form in freshwater environments, including bogs, ponds, and streams, or marine waters, except as otherwise provided in the boating rules of the department;   |          |           | <b>X</b>   |
| (12) To enter into, place any vessel or material in or on, or otherwise disturb a lake or pond;   |          |           | <b>X</b>   |
| (13) To engage in commercial activities of any kind in a natural area reserve without a written special-use permit from the board or its authorized representative;   |          |           | <b>X</b>   |
| (14) To have or possess the following tools, equipment, or implements: fishing gear or devices within Ahihi-Kinau natural area reserve, including but not limited to any hook-and-line, rod, reel, spear, trap, net, crowbar, or other device that may be used for the taking, injuring, or killing of marine life; cutting or harvesting tools or gear, including but not limited to chainsaws, axes, loppers, any mechanized or manual sawtooth tool, seed pickers, or machete, that may be used for the taking, injuring, or killing of plant life; and hunting gear or tools that may be used for the taking, injuring, or killing of wildlife, except as permitted by the hunting rules of the department; |          |           | <b>X</b>   |
| (15) To hike, conduct nature study, or conduct any activity with a group larger than ten in size;   |          |           | <b>X</b>   |
| (16) To be present in an area closed pursuant to section 13-209-4.5 or after visiting hours established pursuant to section 13-209-4.6;   |          |           | <b>X</b>   |
| (17) To anchor any motorized or nonmotorized water vehicle of any shape or form in the marine waters of Ahihi-Kinau natural area reserve;   |          |           | <b>X</b>   |

| <b>Table 5-6: Hawai'i Natural Area Reserves</b>   | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|----------|-----------|------------|
| (18) To enter into any cave, as defined in <a href="#">section 6D-1, Hawaii Revised Statutes</a> , or any portion thereof;  |          |           | <b>X</b>   |
| (19) To conduct any other activity inconsistent with the purpose and intent of the natural area reserves system;  |          |           | <b>X</b>   |
| (20) To use or possess narcotics or drugs except as provided by Federal or State laws. No person shall enter or remain within the premises when under the influence of alcohol or illegal narcotics or drugs;   |          |           | <b>X</b>   |
| (21) To use or possess alcohol, except with the written permission of the board or its authorized representative.   |          |           | <b>X</b>   |
| <b>Discussion:</b> Although a portion of the water Collection Area and License Area is within the Hanawi NAR, the EMI Aqueduct System is not within the NAR. Maintaining the NAR in a relatively unmodified state is consistent with the area being a source of water distributed for domestic and agricultural purposes through the EMI Aqueduct System. The Proposed Action (issuance of a Water Lease) does not involve any prohibited activities under Title 13, Chapter 200. |          |           |            |

### 5.1.7 Hawai'i Coastal Zone Management Program

The National Coastal Zone Management (CZM) Program was created through passage of the Coastal Zone Management Act of 1972. The U.S. Congress enacted the CZM Act to assist states in better managing coastal and estuarine environments. The Act provides grants to states that develop and implement federally-approved CZM plans. The goal of the CZM Act is to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone." Hawai'i's CZM Act, adopted as Chapter 205A, HRS, provides a basis for protecting, restoring and responsibly developing coastal communities and resources. In Hawaii, the "coastal zone management area" means all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the territorial sea.

The Proposed Action's conformance with the ten objectives and numerous policies of the State of Hawai'i CZMP is set forth in Table 5-7 below. The Proposed Action does not include the use of any land that is within the Special Management Area designated by the County of Maui in East Maui (See Figure 5-5). However, portions of the Central Maui agricultural fields in Pā'ia are situated within the Special Management Area (See Figure 5-6). Should the Water Lease be issued in accordance with the Proposed Action, surface water will become available for the various domestic and agricultural uses. This would, in turn, lead to anticipated secondary effects including construction activities such as for building facilities in support of diversified agriculture in Central Maui. Such activities would be subject to various permits and approvals, depending on its location, proposed use and type of construction activity involved, but such permits and approvals are not required for the issuance of the Water Lease, including a Special Management Area Permit.

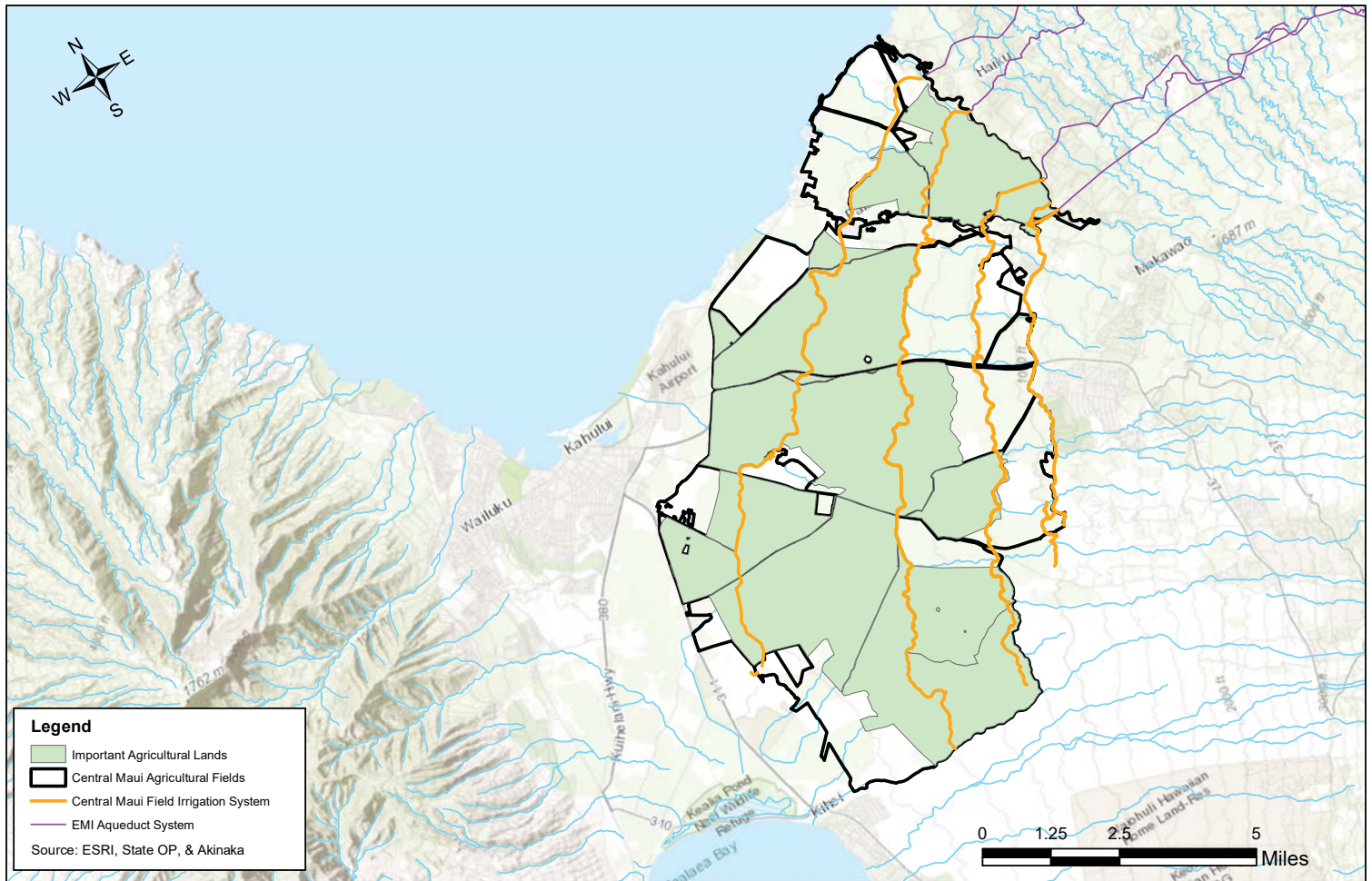


FIGURE 5-4

## Important Agricultural Lands Map

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS



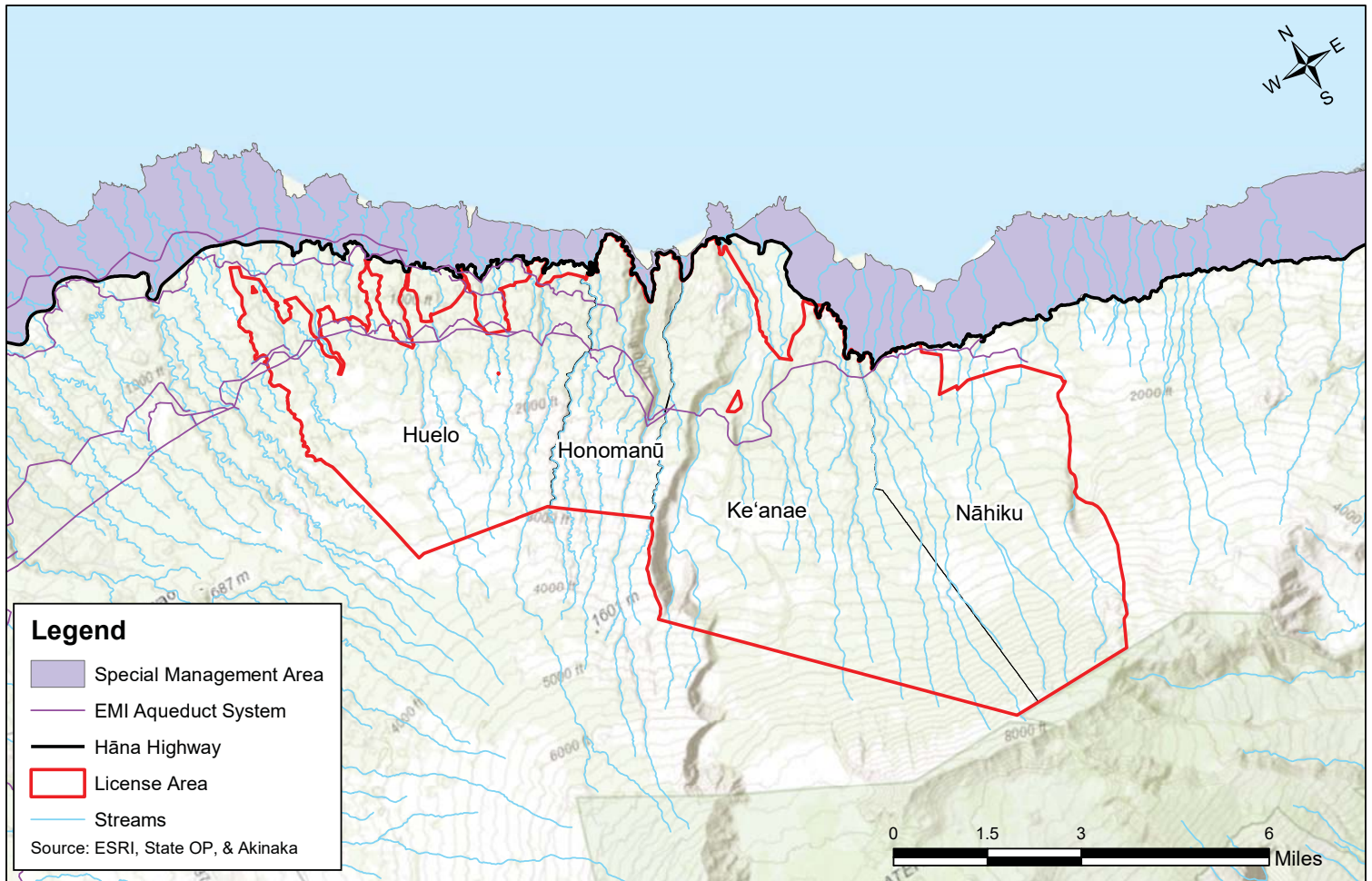


FIGURE 5-5

## East Maui Special Management Area Map

*PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS*





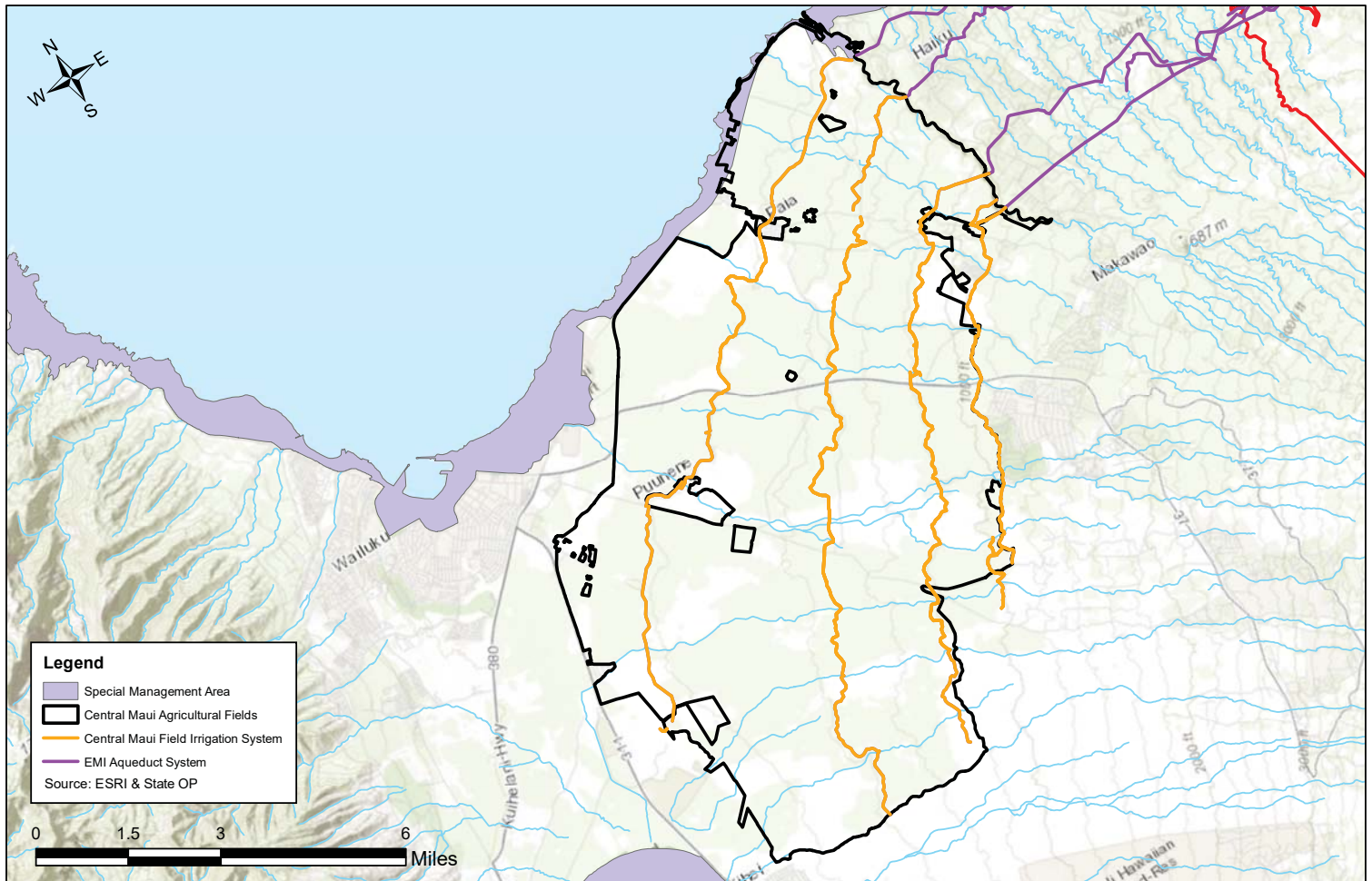


FIGURE 5-2

## Central Maui Special Management Area Map

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS





| Table 5-7: Hawai'i Coastal Zone Management Act  |   | S | NS | N/A |
|---|---|---|----|-----|
| <b>Recreational Resources</b>   |   |   |    |     |
| <b>Objective:</b> Provide coastal recreational opportunities accessible to the public.  |   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| (A) Improve coordination and funding of coastal recreational planning and management; and   |   |   |    | X   |
| (B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:  |   |   |    | X   |
| i. Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;   |   |   |    | X   |
| ii. Requiring replacement of coastal resources having significant recreational value including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;  |   |   |    | X   |
| iii. Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;   |   |   |    | X   |
| iv. Providing an adequate supply of shoreline parks and other recreational facilities suitable public recreation;   |   |   |    | X   |
| v. Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;  |   |   |    | X   |
| vi. Adopting water quality standards and regulating point and nonpoint sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;   | X |   |    |     |
| vii. Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and  |   |   |    | X   |
| viii. Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6.  |   |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action does will not adversely impact the shoreline and as such would not affect coastal recreational opportunities accessible to the public.</p> <p>The License Area in East Maui is as close as 500 feet from the shoreline. However, the Proposed Action does not include any development or construction. The CWRM D&amp;O may require some modification or complete removal of specific diversions in the EMI Aqueduct System, but will not impact coastal recreational opportunities that are accessible to the public as the License Area does not encompass the shoreline. Moreover, coastal resources, such as fishponds and shoreline parks, may be enhanced with the implementation of the IIFS.</p> <p>Some of the agricultural fields in Central Maui are within 300 feet of the shoreline. However, the Proposed Action would allow for the continued conveyance of water from East Maui to the agricultural fields in Central Maui for the transition to a diversified agricultural farming model. The various operations that occur within these fields as a result of the Proposed Action will adopt water quality standards and regulate point and nonpoint sources of pollution to protect coastal waters where feasible.</p> |   |   |    |     |

| Table 5-7: Hawai'i Coastal Zone Management Act   |  | S | NS | N/A |
|--|--|---|----|-----|
| <p>The Proposed Action would allow for the continued conveyance of water through the EMI Aqueduct System, which is supplied to the MDWS which is in turn supplied to Upcountry Maui to meet their domestic and agricultural demands. The approximate area of the MDWS Upcountry Water System does include areas of Ha'ikū and Pā'ia. Issuance of the Water Lease would ensure that the MDWS has a reliable source of water to supply the Upcountry Water System with, which may enhance the coastal recreational opportunities by providing for recreational facilities.</p>   |  |   |    |     |
| <b>Historic Resources</b>  |  |   |    |     |
| <b>Objective:</b> Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.   |  |   |    |     |
| <b>Policies:</b>   |  |   |    |     |
| (A) Identify and analyze significant archaeological resources;   |  | X |    |     |
| (B) Maximize information retention through preservation of remains and artifacts or salvage operations; and  |  |   |    | X   |
| (C) Support state goals for protection, restoration, interpretation, and display of historic resources.  |  | X |    |     |
| <p><b>Discussion:</b> The Proposed Action will have no significant impact on historic and cultural resources.</p> <p>For the subject DEIS, CSH prepared an Archaeological LRFI report of the License Area to identify and analyze resources. No potential archaeological sites were observed during field inspections.</p> <p>Implementation of the CWRM D&amp;O may require modification or complete removal of specific diversion in the EMI Aqueduct System. Mason Architects prepared a Historic Structure Assessment report for the subject Water Lease. It was determined that the EMI Aqueduct System is eligible to be placed on the NRHP. Historically significant structures to be modified or removed will be documented photographically and with location sketch plans conforming to the Historic American Engineering Survey (HAER) standards. Any future developments will need to be in conformance with the goals, policies, and objectives of the State of Hawai'i CZMP.</p> <p>In Central Maui, the agricultural fields have been producing sugarcane for over a century up until 2013 when A&amp;B ceased its sugar cane operations and began to transition towards a diversified agriculture farming model. Should any archeological sites such as walls, platforms, pavements or mounds, or remains such as artifacts, burials, concentrations of shell or charcoal be encountered during the transition to diversified agriculture, the State Historic Preservation Division will be contacted immediately.</p> |  |   |    |     |
| <b>Scenic and Open Space Resources</b>   |  |   |    |     |
| <b>Objective:</b> Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.  |  |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| (A) Identify valued scenic resources in the coastal zone management area;  |  |   |    | X   |
| (B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural land forms and existing public views to and along the shoreline;   |  |   |    | X   |
| (C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and   |  | X |    |     |
| (D) Encourage those developments that are not coastal dependent to locate in inland areas.   |  |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action, with the implementation of the CWRM D&amp;O, will improve the quality of coastal scenic and open space resources.</p>   |  |   |    |     |

| Table 5-7: Hawai'i Coastal Zone Management Act  |   | S | NS | N/A |
|---|---|---|----|-----|
| <p>In the License Area, the CWRM D&amp;O requires specific streams to be fully restored with no diversions in the streams, while other streams, designated as "habitat restoration" streams, will be very limited in the amount of water that can be diverted. According to the CWRM D&amp;O, ensuring water connectivity in "fully restored" and "habitat restoration" streams will enhance the scenic value and improve the natural resources of the region. Moreover, Trutta Environmental Solutions, LLC assessed 33 streams and the impacts of the Proposed Action. Generally, the assessment found that the Proposed Action, in compliance with the CWRM D&amp;O, increased the overall amount of habitat units regionally when compared to when sugar operations were in full effect.</p> <p>The issuance of the Water Lease will allow for the continued conveyance of water to supply the agricultural fields in Central Maui. The Water Lease would allow for the transition of the agricultural fields to a diversified agriculture farming operation. However, currently the fields are mostly fallow and not being utilized to their full potential. Irrigating the fields will enhance the scenic value of these fields as some are within 300 feet of the coastline.</p> <p>The Proposed Action will allow for the continued operation of the EMI Aqueduct System and conveyance of water to the MDWS which is in turn supplied to Upcountry Maui, as well as Nāhiku. The issuance of the Water Lease would ensure that the MDWS has a reliable source of water to provide these water systems with. Those open space and scenic resources along the coast that depend upon these water systems and require irrigation to be maintained would have a reliable source of water, preserving the scenic value of these resources.</p>                                     |   |   |    |     |
| <b>Coastal Ecosystems</b>   |   |   |    |     |
| <b>Objective:</b> Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.   |   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;   |   |   |    | X   |
| (B) Improve the technical basis for natural resource management;  |   |   |    | X   |
| (C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;  |   |   |    | X   |
| (D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and  | X |   |    |     |
| (E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.   |   |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action with the implementation of the IIFS will protect the coastal ecosystems and is not expected to have any adverse effects on coastal ecosystems.</p> <p>In the License Area, the CWRM D&amp;O orders that specific streams be fully restored with no diversions in the streams, while other streams will be very limited to amount of water that can be diverted as specific streams are designated as "habitat restoration" streams. Other streams were ordered to have a wetted pathway maintaining the "mauka to makai" connection. This would allow for the various animal species that have diadromous life cycle to complete their life cycles, benefiting coastal water ecosystems.</p> <p>Sea Engineering, Inc. and Marine Research Consultants, Inc. jointly prepared a report assessing the streams and ocean water chemistry to depict the effects of stream discharge of the East Maui streams on the nearshore ocean environment. Results of the investigation indicate that the effects of stream water on marine waters must be considered minor in the nearshore habitats of East Maui. This result is supported by the physical processes associated with relatively small input of stream water to the vastly larger ocean environment. The prevailing condition of extreme mixing by physical forces is the most important factor in diminishing the zone of influence of stream water in the marine setting. Observations of the habitats in these transition zones indicated that they were composed primarily of sand and barren rock. Owing to continual, intense wave energy, these nearshore areas do not constitute important habitats for coral reef communities and associated marine species. Beyond the narrow transition zone, the influence of stream water is minimal owing to rapid and intense mixing.</p> |   |   |    |     |

| Table 5-7: Hawai'i Coastal Zone Management Act   |  | S | NS | N/A |
|--|--|---|----|-----|
| <b>Economic Uses</b>   |  |   |    |     |
| <b>Objective:</b> Provide public or private facilities and improvements important to the State's economy in suitable locations.  |  |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| (A) Concentrate coastal dependent development in appropriate areas;  |  |   |    | X   |
| (B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and   |  |   |    | X   |
| (C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when: <ul style="list-style-type: none"> <li>i. Use of presently designated locations is not feasible;</li> <li>ii. Adverse environmental effects are minimized; and</li> <li>iii. The development is important to the State's economy;</li> </ul>   |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action does not involve the development of, and is not expected to have any adverse effects on, any public or private facilities in coastal areas that are important to the State's economy.   |  |   |    |     |
| <b>Coastal Hazards</b>   |  |   |    |     |
| <b>Objective:</b> Reduce hazard to life and property from tsunamis, storm waves, stream flooding, erosion, subsidence, and pollution.  |  |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| (A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;   |  |   |    | X   |
| (B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards;   |  |   |    | X   |
| (C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and  |  |   |    | X   |
| (D) Prevent coastal flooding from inland projects.   |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action is not expected to exacerbate natural levels of flooding or affect flood zone areas.  |  |   |    |     |
| <p>The issuance of the Water Lease will allow for the EMI Aqueduct System to continue to divert stream surface water from multiple streams in East Maui after the implementation of the IIFS under the CWRM D&amp;O. Natural flooding events are not expected to increase due to the Water Lease under the Proposed Action.</p> <p>The issuance of the Water Lease will allow for the continued conveyance of water to the agriculture fields in Central Maui for the transition to a diversified agriculture farming model. Currently a majority of the fields are in a fallow state. If the fields are left in a fallow state for prolonged periods of time, this will increase the amount of windblown erosion that will occur. Irrigating the fields to a cultivated state will decrease the amount of windblown erosion that would occur in contrast.</p> <p>The Proposed Action will allow for the continued operation of the EMI Aqueduct System and conveyance of water to the MDWS which is in turn supplied to Upcountry Maui, as well as Nāhiku to meet their domestic and agricultural water demands. Issuance of the Water Lease would not increase hazards to life and property from tsunamis, storm waves, stream flooding, erosion, subsidence, and pollution.</p> |  |   |    |     |

| Table 5-7: Hawai'i Coastal Zone Management Act  |   | S | NS | N/A |
|---|---|---|----|-----|
| <b>Managing Development</b>   |   |   |    |     |
| <b>Objective:</b> Improve the development review process, communication, and public participation in the management of coastal resources and hazards.   |   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| (A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;  |   |   |    | X   |
| (B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and  |   |   |    | X   |
| (C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.   | X |   |    |     |
| <p><b>Discussion:</b> This EIS has been prepared under the procedural provisions of HRS, Chapter 343, and HAR, Title 11, Chapter 200, which allows for public review and participation. Accordingly, the preparation of this EIS, and disclosure of anticipated effects of the Proposed Action, will comply with the policy on managing development.</p> <p>Prior to the publication of the EISPN for the Proposed Action, several outreach meetings were held to notify and initiate consultation with the community for the preparation of a Chapter 343, HRS, EIS (see Sections 9.1 and 9.2). The purpose of this outreach process was to inform and obtain input from the community on relevant issues or concerns that should be considered in the preparation of the EIS documentation for the Proposed Action.</p> <p>The State Office of Environmental Quality Control (OEQC) published the EISPN on February 8, 2017. A 30-day public comment period ensued and this DEIS responds to and documents all relevant public comments received.</p> <p>This DEIS will inform interested parties of the Proposed Action and seek relevant public comment on subjects of concern for EIS documentation. The filing and publication of this DEIS with the OEQC will be followed by a 45-day public comment period. All relevant public comments received during the 45-day public comment period will receive a written response for inclusion and use in the preparation in the forthcoming FEIS.</p> |   |   |    |     |
| <b>Public Participation</b>   |   |   |    |     |
| <b>Objective:</b> Stimulate public awareness, education, and participation in coastal management.   |   |   |    |     |
| <b>Policies:</b>  |   |   |    |     |
| (A) Promote public involvement in coastal zone management processes;  | X |   |    |     |
| (B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and  | X |   |    |     |
| (C) Organize workshops, policy dialogues, and site-specific mitigation to respond to coastal issues and conflicts.  |   |   |    | X   |
| <p><b>Discussion:</b> Public involvement will consist of public notice of the Proposed Action during the State EIS process through public scoping, publication in the State OEQC Bulletin, and coordination with agencies, organizations, and individuals. See Section 11.0 for a list of the agencies, organizations and individuals that have been or will be consulted for the Proposed Action.</p> <p>Two EIS public scoping meetings were held to notify and initiate consultation with the community for the preparation of a Chapter 343, HRS. In addition, following the publication of the EISPN through the State OEQC Bulletin on February 8, 2017, a 30-day public comment period followed.</p> <p>The publication of this DEIS will be followed by a 45-day public comment period and those comments and responses thereto will be included in the FEIS to be presented to BLNR for review and acceptance.</p>   |   |   |    |     |
| <b>Beach Protection</b>   |   |   |    |     |



| Table 5-7: Hawai'i Coastal Zone Management Act   |  | S | NS | N/A |
|--|--|---|----|-----|
| <b>Objective:</b> Protect beaches for public use and recreation.   |  |   |    |     |
| <b>Policies:</b>   |  |   |    |     |
| (A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;  |  |   |    | X   |
| (B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and   |  |   |    | X   |
| (C) Minimize the construction of public erosion-protection structures seaward of the shoreline.  |  |   |    | X   |
| (D) Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor; and   |  |   |    | X   |
| (E) Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere or encroach upon a beach transit corridor.  |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action is not anticipated to have a significant impact on beach and shoreline processes.   |  |   |    |     |
| <b>Marine Resources</b>  |  |   |    |     |
| <b>Objective:</b> Promote the protection, use, and development of marine and coastal resources to assure their sustainability.   |  |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| (A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;  |  |   |    | X   |
| (B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;  |  |   |    | X   |
| (C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;   |  |   |    | X   |
| (D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and  |  |   |    | X   |
| (E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.   |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action is not anticipated to adversely affect marine or aquatic resources.<br><br>Sea Engineering, Inc. and Marine Research Consultants, Inc. jointly prepared a report assessing the streams and ocean water chemistry to depict the effects of stream discharge of the East Maui streams on the nearshore ocean environment. Results of the investigation indicate that the effects of stream water on marine waters must be considered minor in the nearshore habitats of East Maui. This result is supported by the physical processes associated with relatively small input of stream water to the vastly larger ocean environment. The prevailing conditions of extreme mixing by physical forces is the most important factor in diminishing the zone of influence of stream water in the marine setting. Observations of the habitats in these transition zones indicated that they were composed primarily of sand and barren rock. Owing to continual, intense wave energy, these nearshore areas do not constitute important habitats for coral reef communities and associated marine species. Beyond the narrow transition zone, the influence of stream water is minimal owing to rapid and intense mixing. |  |   |    |     |

## 5.2 Governor Ige's Sustainability Initiative

As part of the effort to protect and preserve Hawai'i's natural resources, Governor Ige has introduced the Sustainable Hawai'i Initiative. This initiative aims to double local food production by 2020, implement an interagency biosecurity plan by 2027, protect 30% of priority watershed by 2030, effectively manage 30% of nearshore ocean waters by 2030, and achieve 100% renewable electricity by 2045.

The Proposed Action will support Governor Ige's Sustainability Initiative by increasing local food production through diversified agriculture. Full development of the Mahi Pono Farm Plan is expected to result in a substantial amount of crop production in Central Maui, as well as increase kalo production in East Maui. The Proposed Action would produce about 8 million pounds per year from the Community Farm, 321 million pounds per year from orchards and 9 million pounds per year of tropical fruits, in addition to production from row crops, annual crops, energy crops, and kalo in East Maui over the course of the 30-year Water Lease. The proposed solar farm in Central Maui would also support the Governor's plan to achieve 100% renewable electricity by generating potentially 82,100 mW of electricity per year.

According to the Draft Maui Island Water Use and Development Plan drafted in March 2019, East Maui has a watershed protection priority of I, meaning it has "Potentially High Recharge" and "Potentially High Production/High Chloride." The EMWP consists of approximately 120,000 acres and provides the largest harvested source of surface water in the state. The Proposed Action supports the protection of East Maui's priority watershed by supporting stream restoration and increased use of kalo lands.

## 5.3 Hawai'i Environmental Policy Act

The Hawai'i Environmental Policy Act, codified as Chapter 344, HRS, was enacted to establish a policy to encourage productive and enjoyable harmony between people and their environment, promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, and enrich the understanding of the ecological systems and natural resources important to the people of Hawai'i.

| Table 5-8: Hawai'i Environmental Policy Act   |   | S | NS | N/A |
|---|---|---|----|-----|
| <b>§344-4 Guidelines.</b> In pursuance of the state policy to conserve the natural resources and enhance the quality of life, all agencies, in the development of programs, shall, insofar as practicable, consider the following guidelines: |   |   |    |     |
| <b>(1) Population</b>   |   |   |    |     |
| (A) Recognize population impact as a major factor in environmental degradation and adopt guidelines to alleviate this impact and minimize future degradation.   |   |   |    | X   |
| (B) Recognize optimum population levels for counties and districts within the State, keeping in mind that these will change with technology and circumstance, and adopt guidelines to limit population to the levels determined.              |   |   |    | X   |
| <b>Discussion:</b> The guidelines related to population are inapplicable to the Proposed Action.  |   |   |    |     |
|   |   |   |    |     |
| <b>(2) Land, water, mineral, visual, air, and other natural resources</b>   |   |   |    |     |
| (A) Encourage management practices which conserve and fully utilize all natural resources.  | X |   |    |     |
| (B) Promote irrigation and waste water management practices which conserve and fully utilize vital water resources.   | X |   |    |     |

| <b>Table 5-8: Hawai'i Environmental Policy Act</b>   |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| (C)  | Promote the recycling of waste water.  |          |           | <b>X</b>   |
| (D)  | Encourage management practices which conserve and protect watersheds and water sources, forest, and open space areas.  | <b>X</b> |           |            |
| (E)  | Establish and maintain natural area preserves, wildlife preserves, forest reserves, marine preserves, and unique ecological preserves.                                       | <b>X</b> |           |            |
| (F)  | Maintain an integrated system of state land use planning which coordinates the state and county general plans.   |          |           | <b>X</b>   |
| (G)  | Promote the optimal use of solid wastes through programs of waste prevention, energy resource recovery, and recycling so that all our wastes become utilized.                |          |           | <b>X</b>   |
| <p><b>Discussion:</b> The Proposed Action supports the guidelines related to land, water, mineral, visual, air, and other natural resources.</p> <p>The Proposed Action and the issuance of a Water Lease will include a requirement that a Watershed Management Plan be developed and implemented for East Maui. In addition, EMI was a founding member of the EMWP and continues to be an active member.</p> <p>The Ko'olau Forest Reserve Hunting Unit encompasses portions of the License Area. Limited hunting and hiking within the License Area is permitted, and access for these recreational activities is controlled by EMI. Issuance of the Water Lease under the Proposed Action would allow EMI staff to continue to manage appropriate access into the License Area so that the public may continue to use and enjoy the License Area's recreational and natural resources.</p> <p>Mahi Pono's irrigation engineering team is also designing a high-efficiency irrigation system. The new irrigation system will reduce water usage by: (1) using automatic, real-time irrigation sensors to deliver precise amounts of water efficiently; (2) recycle and re-use all water used in Mahi Pono's processing plants; and (3) integrate various live technology feeds to constantly monitor plant, soil, and tree health. Reducing water usage through effective irrigation assures the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.</p> |  |          |           |            |
| <b>(3) Flora and fauna</b>   |  |          |           |            |
| (A)  | Protect endangered species of indigenous plants and animals and introduce new plants or animals only upon assurance of negligible ecological hazard.                         |          |           | <b>X</b>   |
| (B)  | Foster the planting of native as well as other trees, shrubs, and flowering plants compatible to the enhancement of our environment.   |          | <b>X</b>  |            |
| <p><b>Discussion:</b> The Proposed Action supports the guidelines related to flora and fauna.</p> <p>The Proposed Action does not require vegetation removal except for routine maintenance purposes in the License Area. Therefore, the amount of each vegetation cover type currently present would remain substantially the same.</p> <p>The Proposed Action anticipates a greater introduction of diversified agricultural crops and activities. Such changes may have an effect on the existing non-native grasses and vegetation, but replacing existing vegetation with diversified agriculture is not expected to have any significant adverse effect.</p>   |  |          |           |            |
| <b>(4) Parks, recreation, and open space</b>   |  |          |           |            |
| (A)  | Establish, preserve and maintain scenic, historic, cultural, park and recreation areas, including the shorelines, for public recreational, educational, and scientific uses. | <b>X</b> |           |            |
| (B)  | Protect the shorelines of the State from encroachment of artificial improvements, structures, and activities.  |          |           | <b>X</b>   |
| (C)  | Promote open space in view of its natural beauty not only as a natural resource but as an ennobling, living environment for its people.                                      | <b>X</b> |           |            |

| Table 5-8: Hawai'i Environmental Policy Act   |  | S | NS | N/A |
|---|--|---|----|-----|
| <p><b>Discussion:</b> The Proposed Action does not involve parks or recreation facilities. However, as discussed, the License Area is used for appropriate recreational activities, including hiking and hunting. EMI manages access to the hunting grounds and the Proposed Action would allow EMI staff to continue to manage that access so that the public may continue to use and enjoy the License Area's recreational and natural resources.</p> <p>The Proposed Action also will not affect uses at the shoreline because the License Area and the agricultural fields in Central Maui are not shoreline properties.</p> <p>Regarding open space, the Proposed Action would allow for the continued conveyance of water to the agricultural fields in Central Maui. Irrigating the fields in Central Maui, a region with very little natural rainfall, would promote the scenic beauty of the region and preserve existing vistas, as the land will be in cultivated green space rather than remaining fallow or being developed.</p> |  |   |    |     |
| <b>(5) Economic development</b>   |  |   |    |     |
| (A) Encourage industries in Hawai'i which would be in harmony with our environment.   |  | X |    |     |
| (B) Promote and foster the agricultural industry of the State; and preserve and conserve productive agricultural lands.   |  | X |    |     |
| (C) Encourage federal activities in Hawai'i to protect the environment.   |  |   |    |     |
| (D) Encourage all industries including the fishing, aquaculture, oceanography, recreation, and forest products industries to protect the environment.   |  |   |    | X   |
| (E) Establish visitor destination areas with planning controls which shall include but not be limited to the number of rooms.   |  |   |    | X   |
| (F) Promote and foster the aquaculture industry of the State; and preserve and conserve productive aquacultural lands.  |  |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action will support the guidelines related to economic development.</p> <p>The Proposed Action will enable the continued conveyance of water to support conversion to diversified agriculture. Mahi Pono plans to convert the agricultural lands in Central Maui generally to community farms, orchards (citrus, mac nuts, and beverage crops), tropical fruits, row and annual crops, energy crops, irrigated and nonirrigated pasture, and green energy crops. Reopening the land for farming would provide employment opportunities and expand the agriculture sector of Maui's economy, as well as for the State of Hawai'i. Currently the agricultural land is mostly fallow, with minimal agricultural activity. Should the Water Lease not be issued, the ongoing agricultural activities may not be feasible. Issuance of the Water Lease would facilitate the transition of the agricultural fields in Central Maui to a productive diversified agricultural operation.</p>                       |  |   |    |     |
| <b>(6) Transportation</b>   |  |   |    |     |
| (A) Encourage transportation systems in harmony with the lifestyle of the people and environment of the State.  |  |   |    | X   |
| (B) Adopt guidelines to alleviate environmental degradation caused by motor vehicles.   |  |   |    | X   |
| (C) Encourage public and private vehicles and transportation systems to conserve energy, reduce pollution emission, including noise, and provide safe and convenient accommodations for their users.  |  |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action will not cause environmental degradation related to transportation.</p>   |  |   |    |     |
| <b>(7) Energy</b>   |  |   |    |     |
| (A) Encourage the efficient use of energy resources.  |  | X |    |     |
| <p><b>Discussion:</b> The Proposed Action incorporates and encourages the efficient use of energy resources.</p>  |  |   |    |     |

| Table 5-8: Hawai'i Environmental Policy Act  |   | S | NS | N/A |
|--|---|---|----|-----|
| Mahi Pono plans to convert 500 acres of the agricultural lands in Central Maui to energy crops. The company also anticipates the installation of a 250 acre solar farm that is projected to create 82,125 mWh/year. Transitioning portions of the land to encourage renewable energy resources would promote the use of green energy on Maui, as well as for the State of Hawai'i.   |   |   |    |     |
| <b>(8) Community life and housing</b>  |   |   |    |     |
| (A) Foster lifestyles compatible with the environment; preserve the variety of lifestyles traditional to Hawai'i through the design and maintenance of neighborhoods which reflect the culture and mores of the community.   |   |   |    | X   |
| (B) Develop communities which provide a sense of identity and social satisfaction in harmony with the environment and provide internal opportunities for shopping, employment, education, and recreation.  |   |   |    | X   |
| (C) Encourage the reduction of environmental pollution which may degrade a community.  |   |   |    | X   |
| (D) Foster safe, sanitary, and decent homes.   |   |   |    | X   |
| (E) Recognize community appearances as major economic and aesthetic assets of the counties and the State; encourage green belts, plantings, and landscape plans and designs in urban areas; and preserve and promote mountain-to-ocean vistas.   |   |   |    | X   |
| <b>Discussion:</b> The guidelines related to community life and housing are not applicable to the Proposed Action.   |   |   |    |     |
| <b>(9) Education and culture</b>   |   |   |    |     |
| (A) Foster culture and the arts and promote their linkage to the enhancement of the environment.   | X |   |    |     |
| (B) Encourage both formal and informal environmental education to all age groups.  | X |   |    |     |
| <b>Discussion:</b> The guidelines related to education and culture are not significant to the Proposed Action.<br><br>In addition to providing land, water, equipment, management, budgeting and marketing services to local farmers, the community plan under the Proposed Action will also provide plots for research and offer an internship program for local high school and college students.  |   |   |    |     |
| <b>(10) Citizen participation</b>  |   |   |    |     |
| (A) Encourage all individuals in the State to adopt a moral ethic to respect the natural environment; to reduce waste and excessive consumption; and to fulfill the responsibility as trustees of the environment for the present and succeeding generations.  |   |   |    | X   |
| (B) Provide for expanding citizen participation in the decision making process so it continually embraces more citizens and more issues.   | X |   |    |     |
| <b>Discussion:</b> Public involvement related to the Proposed Action includes public notice of the Proposed Action during the State EIS process through public scoping, publication in the State OEQC Bulletin, and coordination with agencies, organizations, and individuals. See Section 11.0 for a list of the agencies, organizations and individuals that have been or will be consulted as part of the EIS process.<br><br>Two EIS community-scoping meetings were held to notify and initiate consultation with the community for the preparation of a Chapter 343, HRS. In addition, following the publication of the EISPN through the State OEQC Bulletin on February 8, 2017, a 30-day public comment period followed.<br><br>The publication of this DEIS will be followed by a 45-day public comment period and those comments and responses thereto will be included in the FEIS to be presented to BLNR for review and acceptance. |   |   |    |     |



## 5.4 Maui County Land Use Plans and Policies

### 5.4.2 Countywide Policy Plan

The Countywide Policy Plan is the first component of the decennial General Plan update. The current plan, approved on March 24, 2010, is an over-arching statement that provides a policy framework for the Maui Island Plan (MIP) (discussed in Section 5.4.2) and community plans. The Countywide Policy Plan provides broad goals, objectives, policies, and implementing actions that portray the desired direction of the County's future.

The sections of the approved Countywide Policy Plan directly applicable to the Proposed Action are discussed further below in Table 5-9:

| Table 5-9: Countywide Policy Plan   |   | S | NS | N/A |
|---|---|---|----|-----|
| <b>A. Protect The Natural Environment</b>   |   |   |    |     |
| <b>Goal:</b> Maui County's natural environment and distinctive open spaces will be preserved, managed, and cared for in perpetuity.   |   |   |    |     |
| <b>Objective:</b>   |   |   |    |     |
| 1. Improve the opportunity to experience the natural beauty and native biodiversity of the islands for present and future generations.  |   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| a. Perpetuate native Hawaiian biodiversity by preventing the introduction of invasive species, containing or eliminating existing noxious pests, and protecting critical habitat areas.   | X |   |    |     |
| b. Preserve and reestablish indigenous and endemic species' habitats and their connectivity.  | X |   |    |     |
| c. Restore and protect forests, wetlands, watersheds, and stream flows, and guard against wildfires, flooding, and erosion.   | X |   |    |     |
| d. Protect baseline stream flows for perennial streams, and support policies that ensure adequate stream flow to support Native Hawaiian aquatic species, traditional kalo cultivation, and self-sustaining ahupua'a.   | X |   |    |     |
| e. Protect undeveloped beaches, dunes, and coastal ecosystems, and restore natural shoreline processes.   |   |   |    | X   |
| f. Protect the natural state and integrity of unique terrain, valued natural environments, and geological features.   |   |   |    | X   |
| g. Preserve and provide ongoing care for important scenic vistas, view planes, landscapes, and open-space resources.  | X |   |    |     |
| h. Expand coordination with the State and nonprofit agencies and their volunteers to reduce invasive species, replant indigenous species, and identify critical habitat.  |   |   |    | X   |
| <b>Implementing Actions:</b> Develop island-wide networks of greenways, watercourses, and habitat corridors.  | X |   |    |     |
| <b>Discussion:</b> The Proposed Action will support the policies of Objective 1 to protect the natural environment.   |   |   |    |     |
| <p>The Proposed Action will be compliant with, and not contrary to, the recent action taken by the CWRM under the CWRM D&amp;O. The CWRM ordered that certain streams, designated as "kalo and community streams", will be fully restored, protecting those special areas that depend upon these streams. These streams support communities that depend upon kalo cultivation, an element of Hawai'i's cultural heritage. Other streams are designated as "habitat restoration" streams, which will be limited in the amount of stream surface water that can be diverted as these streams primary function is to support native habitat restoration. Other streams were ordered to have a wetted pathway maintaining the "mauka to makai" connection. This would allow for the various animal species that have diadromous life cycle to complete their life cycles, benefiting coastal water ecosystems.</p> <p>Moreover, an objective of the Proposed Action is to maintain and continue the operation of the EMI Aqueduct System, which has been in place for over 100 years. The EMI staff will be trained by qualified individuals on appropriate conduct and measures to take within the License Area during future maintenance work. This will encourage the protection of the rare and endangered plant and animal species and habitats native to Hawai'i that</p> |   |   |    |     |

| Table 5-9: Countywide Policy Plan   |   | S | NS | N/A |
|---|---|---|----|-----|
| <p>have been identified in the region. The EMI Aqueduct System will be maintained in a way that is compatible with the existing environment and natural resources in the region.</p> <p>Irrigating the fields in Central Maui, a region with very little natural rainfall, would also maintain existing open space and preserve existing vistas, as the land will be in cultivated green space rather than remaining fallow or being developed. Overall, having the Central Maui lands remain in agriculture will help maintain the rural socio-economic lifestyle on Maui, enjoyed by so many.</p>   |   |   |    |     |
| <b>Objective:</b>   |   |   |    |     |
| 2. Improve the quality of environmentally sensitive, locally valued natural resources and native ecology of each island.  |   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| a. Protect and restore nearshore reef environments and water quality.   |   |   |    | X   |
| b. Protect marine resources and valued wildlife.  |   |   |    | X   |
| c. Improve the connection between urban environments and the natural landscape, and incorporate natural features of the land into urban design.   | X |   |    |     |
| d. Utilize land-conservation tools to ensure the permanence of valued open spaces.  |   |   |    | X   |
| e. Mitigate the negative effects of upland uses on coastal wetlands, marine life, and coral reefs.  |   |   |    | X   |
| f. Strengthen coastal-zone management, re-naturalization of shorelines, where possible, and filtration or treatment of urban and agricultural runoff.   |   |   |    | X   |
| g. Regulate the use and maintenance of stormwater-treatment systems that incorporate the use of native vegetation and mimic natural systems.  |   |   |    | X   |
| h. Advocate for stronger regulation of fishing, boating, cruise ship, and ecotourism activities.  |   |   |    | X   |
| i. Restore watersheds and aquifer-recharge areas to healthy and productive status, and increase public knowledge about the importance of watershed stewardship, water conservation, and groundwater protection.   | X |   |    |     |
| <b>Implementing Actions:</b> Develop regulations to minimize runoff of pollutants into nearshore waters and reduce nonpoint and point source pollution.   |   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 2 to protect the natural environment.   |   |   |    |     |
| <p>The Proposed Action will be compliant, and not contrary to the recent action taken by the CWRM. The CWRM D&amp;O ordered that certain streams, designated as “kalo and community streams”, will be fully restored, protecting those special areas that depend upon these streams. These streams support communities that depend upon kalo cultivation, an element of Hawai'i's cultural heritage improving the connection between urban environments and the natural landscape.</p> <p>A stream and ocean water chemistry assessment was conducted by SE and MRC in 2018 (Appendix B). In general, no significant impacts on coastal water in the region are anticipated. The study concluded that the effects of stream water on marine waters is minor in these habitats owing to the naturally occurring rapid and intense mixing.</p> <p>Moreover, the EMI Aqueduct System is attributed to approximately 22.7% of system losses on the Central Maui side of the EMI Aqueduct System. This loss provides a significant amount of recharge to the Central Maui aquifers.</p> <p>The Proposed Action includes a requirement that the Water Lease address watershed management.</p> |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 3. Improve the stewardship of the natural environment.  |   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| a. Preserve and protect natural resources with significant scenic, economic, cultural, environmental, or recreational value.  | X |   |    |     |
| b. Improve communication, coordination, and collaboration among government agencies, nonprofit organizations, communities, individuals, and land owners that work for the protection of the natural environment.  |   |   |    | X   |
| c. Evaluate development to assess potential short-term and long-term impacts on land, air, aquatic, and marine environments.  |   |   |    | X   |
| d. Improve efforts to mitigate and plan for the impact of natural disasters, human influenced emergencies, and global warming.  |   |   |    | X   |

| Table 5-9: Countywide Policy Plan  |  | S | NS | N/A |
|--|--|---|----|-----|
| e.   | Regulate access to sensitive ecological sites and landscapes.  | X |    |     |
| f.   | Reduce air, noise, light, land, and water pollution, and reduce Maui County's contribution to global climate change.   |   |    | X   |
| g.   | Plan and prepare for and educate visitors and residents about the possible effects of global warming.  |   |    | X   |
| h.   | Provide public access to beaches and shorelines for recreational and cultural purposes where appropriate.  |   |    | X   |
| i.   | Educate the construction and landscape industries and property owners about the use of best management practices to prevent erosion and nonpoint source pollution. |   |    | X   |
| j.   | Support the acquisition of resources with scenic, environmental, and recreational value, and encumber their use.   |   |    | X   |
| k.   | Improve enforcement activities relating to the natural environment.  |   |    | X   |
| l.   | For each shoreline community, identify and prioritize beach-conservation objectives, and develop action plans for their implementation.                            |   |    | X   |
| <b>Implementing Actions:</b>   |  | X |    |     |
| a.   | Document, record, and monitor existing conditions, populations, and locations of flora and fauna communities.  |   |    |     |
| b.   | Implement Federal and State policies that require a reduction of greenhouse-gas emissions.   |   |    |     |
| c.   | Establish a baseline inventory of available natural resources and their respective carrying capacities.  |   |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 3 to protect the natural environment.  |  |   |    |     |
| The Proposed Action and the issuance of a Water Lease will include a requirement that a Watershed Management Plan be developed and implemented for East Maui. In addition, EMI was a founding member of the EMWP and continues to be an active member.   |  |   |    |     |
| The Ko'olau Forest Reserve Hunting Unit encompasses portions of the License Area. The Hunting Unit is administered the DLNR, Division of Forestry and Wildlife. To hunt within the License Area, hunters must obtain a license from the DLNR and an EMI Permit/Waiver. Hunting grounds are limited to one hunting party per hunting area, as regulated by the DLNR. Access to the hunting grounds is managed by EMI through eight existing EMI access roads. Other recreational uses are not permitted on the License Area lands for safety reasons. |  |   |    |     |
| The Proposed Action would allow EMI staff to continue to manage appropriate access into the License Area so that the public may continue to use and enjoy the License Area's recreational and natural resources.   |  |   |    |     |
| Moreover, SWCA Environmental Consultants, Inc. prepared a terrestrial flora and fauna assessment report assessing the impacts of the Proposed Action. During the field and ground surveys of portions of the License Area and the agricultural fields in Central Maui, SWCA documented various species of flora and fauna. The impacts are discussed in Section 4.4 and the report is Appendix C.  |  |   |    |     |
|  |  |   |    |     |
| Objective  |  |   |    |     |
| 4.   | Educate residents and visitors about responsible stewardship practices and the interconnectedness of the natural environment and people.                           |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| a.   | Expand education about native flora, fauna, and ecosystems.  |   |    | X   |
| b.   | Align priorities to recognize that the health of the natural environment and the health of people are inextricably linked.   |   |    | X   |
| c.   | Promote programs and incentives that decrease greenhouse-gas emissions and improve environmental stewardship.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 4 to protect the natural environment.   |  |   |    |     |
|  |  |   |    |     |
| <b>B. Preserve Local Cultures and Traditions</b>   |  |   |    |     |
| <b>Goal:</b> Maui County will foster a spirit of pono and protect, perpetuate, and reinvigorate its residents' multi-cultural values and traditions to ensure that current and future generations will enjoy the benefits of their rich island heritage.   |  |   |    |     |
| <b>Objective</b>   |  |   |    |     |
| 1.   | Perpetuate the Hawaiian culture as a vital force in the lives of residents.  |   |    |     |
| <b>Policies</b>  |  |   |    |     |

| Table 5-9: Countywide Policy Plan  |  | S | NS | N/A |
|--|--|---|----|-----|
| a.   | Protect and preserve access to mountain, ocean, and island resources for traditional Hawaiian cultural practices.  |   |    | X   |
| b.   | Prohibit inappropriate development of cultural lands and sites that are important for traditional Hawaiian cultural practices, and establish mandates for the special protection of these lands in perpetuity. |   |    | X   |
| c.   | Promote the use of ahupua'a and moku management practices.   |   |    | X   |
| d.   | Encourage the use of traditional Hawaiian architecture and craftsmanship.  |   |    | X   |
| e.   | Promote the use of the Hawaiian language.  |   |    | X   |
| f.   | Recognize and preserve the unique natural and cultural characteristics of each ahupua'a or district.   | X |    |     |
| g.   | Encourage schools to promote broader incorporation of Hawaiian and other local cultures' history and values lessons into curriculum.   |   |    | X   |
| h.   | Ensure the protection of Native Hawaiian rights.   | X |    |     |
| i.   | Promote, encourage, and require the correct use of traditional place names, particularly in government documents, signage, and the tourism industry.   |   |    | X   |
| <b>Implementing Actions:</b>   |  |   |    |     |
| a.   | Establish alternative land use and overlay zoning designations that recognize and preserve the unique natural and cultural characteristics of each ahupua'a or district.                                       |   |    | X   |
| b.   | Develop requirements for all County applicants to perpetuate and use proper traditional place names in all applications submitted.   |   |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 1 to perpetuate the Hawaiian culture as a vital force in the lives of residents.   |  |   |    |     |
| The Proposed Action will be compliant with, and not contrary to, the recent action taken by the CWRM. Under the CWRM D&O, streams, designated as "kalo and community streams", be fully restored, thereby protecting those special areas that depend upon these streams. These streams support communities that depend upon kalo cultivation, an element of Hawaii's cultural heritage.                |  |   |    |     |
|  |  |   |    |     |
| <b>Objective</b>   |  |   |    |     |
| 2. Emphasize respect for our island lifestyle and our unique local cultures, family, and natural environment.  |  |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| a.   | Acknowledge the Hawaiian culture as the host culture, and foster respect and humility among residents and visitors toward the Hawaiian people and their practices.   |   |    | X   |
| b.   | Perpetuate a respect for diversity, and recognize the historic blending of cultures and ethnicities.   |   |    | X   |
| c.   | Encourage the perpetuation of each culture's unique cuisine, attire, dance, music, and folklore, and other unique island traditions and recreational activities.   |   |    | X   |
| d.   | Recognize the interconnectedness between the natural environment and the cultural heritage of the islands.   | X |    |     |
| e.   | Protect and prioritize funding for recreational activities that support local cultural practices, such as surfing, fishing, and outrigger-canoe paddling.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 2 to preserve local lifestyle, including local cultures, family and natural environment.   |  |   |    |     |
| The Proposed Action will be compliant with, and not contrary to, the recent action taken by the CWRM. The CWRM D&O ordered that certain streams, designated as "kalo and community streams", be fully restored, thereby protecting those special areas that depend upon these streams. These streams support communities that depend upon kalo cultivation, an element of Hawai'i's cultural heritage. |  |   |    |     |
|  |  |   |    |     |
| <b>Objective</b>   |  |   |    |     |
| 3. Preserve for present and future generations the opportunity to know and experience the arts, culture, and history of Maui County.   |  |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| a.   | Foster teaching opportunities for cultural practitioners to share their knowledge and skills.  |   |    | X   |
| b.   | Support the development of cultural centers.   |   |    | X   |

| Table 5-9: Countywide Policy Plan  |  | S | NS | N/A |
|--|--|---|----|-----|
| c.   | Broaden opportunities for public art and the display of local artwork.   |   |    | X   |
| d.   | Foster the Aloha Spirit by celebrating the Hawaiian host culture and other Maui County cultures through support of cultural-education programs, festivals, celebrations, and ceremonies.   |   |    | X   |
| e.   | Support the perpetuation of Hawaiian arts and culture.   |   |    | X   |
| f.   | Support programs and activities that record the oral and pictorial history of residents.   |   |    | X   |
| g.   | Support the development of repositories for culture, history, genealogy, oral history, film, and interactive learning.   |   |    | X   |
| Implementing Actions:  |  |   |    | X   |
| a.   | Establish incentives for the display of public art.  |   |    |     |
| b.   | Establish centers and programs of excellence for the perpetuation of Hawaiian arts and culture.  |   |    |     |
| Discussion: The Proposed Action will not affect Objective 3 to preserve the arts, culture, and history of Maui.  |  |   |    |     |
| Objective  |  |   |    |     |
| 4.   | Preserve and restore significant historic architecture, structures, cultural sites, cultural districts, and cultural landscapes.   |   |    |     |
| Policies   |  |   |    |     |
| a.   | Support the development of island-wide historic, archaeological, and cultural resources inventories.   |   |    | X   |
| b.   | Promote the rehabilitation and adaptive reuse of historic sites, buildings, and structures to perpetuate a traditional sense of place.   | X |    |     |
| c.   | Identify a sustainable rate of use and set forth specific policies to protect cultural resources.  |   |    | X   |
| d.   | Protect and preserve lands that are culturally or historically significant.  |   |    | X   |
| e.   | Support programs that protect, record, restore, maintain, provide education about, and interpret cultural districts, landscapes, sites, and artifacts in both natural and museum settings. |   |    | X   |
| f.   | Perpetuate the authentic character and historic integrity of rural communities and small towns.  |   |    | X   |
| g.   | Seek solutions that honor the traditions and practices of the host culture while recognizing the needs of the community.   | X |    |     |
| h.   | Support the development of an Archaeological District Ordinance.   |   |    | X   |
| i.   | Protect summits, slopes, and ridgelines from inappropriate development.  |   |    | X   |
| j.   | Support the registering of important historic sites on the State and Federal historic registers.   |   |    | X   |
| k.   | Provide opportunities for public involvement with restoration and enhancement of all types of cultural resources.  |   |    | X   |
| l.   | Foster partnerships to identify and preserve or revitalize historic and cultural sites.  |   |    | X   |
| Implementing Actions:  |  | X |    |     |
| a.   | Identify, develop, map, and maintain an inventory of locally significant natural, cultural, and historical resources for protection.   |   |    |     |
| b.   | Prepare, continually update, and implement a cultural-management plan for cultural sites, districts, and landscapes, where appropriate.  |   |    |     |
| c.   | Enact an Archaeological District Ordinance.  |   |    |     |
| d.   | Nominate important historic sites to the State and Federal historic registers.   |   |    |     |
| Discussion: The Proposed Action will support Objective 4 to preserve significant historic architecture, structure, and cultural sites, districts and landscapes.   |  |   |    |     |
| The Proposed Action will be compliant with, and not contrary to, the recent action taken by the CWRM. The CWRM D&O ordered that certain streams, designated as “kalo and community streams”, will be fully restored, thereby protecting those special areas that depend upon these streams. These streams support communities that depend upon kalo cultivation, an element of Hawai’i’s cultural heritage.  |  |   |    |     |
| In addition, continued utilization of the EMI Aqueduct System, which has been in place for over one hundred years, to provide water for diversified agriculture in Central Maui will maintain this unique historic resource. The Proposed Action, in itself, does not propose any modifications to the EMI Aqueduct System, and will therefore have negligible impact on historic properties. Mason Architects, Inc. prepared a historic structure assessment report documenting various |  |   |    |     |



| Table 5-9: Countywide Policy Plan   |  | S | NS | N/A |
|---|--|---|----|-----|
| features and components of the EMI Aqueduct System. The impacts of the Proposed Action to the EMI Aqueduct System is discussed in Section 4.5 and the report can be found in Appendix D.  |  |   |    |     |
| <b>C. Improve Education</b>   |  |   |    |     |
| Goal: Residents will have access to lifelong formal and informal educational options enabling them to realize their ambitions.  |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 1. Encourage the State to attract and retain school administrators and educators of the highest quality.  |  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| a. Encourage the State to provide teachers with nationally competitive pay and benefit packages.  |  |   |    | X   |
| b. Encourage the State to ensure teachers will have the teaching tools and support staff needed to provide students with an excellent education.  |  |   |    | X   |
| c. Explore Maui County district- and school-based decision making in public education.  |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 1 to improve education.  |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 2. Provide nurturing learning environments that build skills for the 21st century.  |  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| a. Expand professional-development opportunities in disciplines that support the economic-development goals of Maui County.   |  |   |    | X   |
| b. Plan for demographic, social, and technological changes in a timely manner.  |  |   |    | X   |
| c. Encourage collaborative partnerships to improve conditions of learning environments.   |  |   |    | X   |
| d. Promote development of neighborhood schools and educational centers.   |  |   |    | X   |
| e. Integrate schools, community parks, and playgrounds, and expand each community's use of these facilities.  |  |   |    | X   |
| f. Support coordination between land use and school-facility planning agencies.   |  |   |    | X   |
| g. Encourage the upgrade and ongoing maintenance of public-school facilities.   |  |   |    | X   |
| h. Encourage the State Department of Education to seek reliable, innovative, and alternative methods to support a level of per-pupil funding that places Hawai'i among the top tier of states nationally for its financial support of public schools. |  |   |    | X   |
| i. Encourage the State to promote healthier, more productive learning environments, including by providing healthy meals, more physical activity, natural lighting, and passive cooling.  |  |   |    | X   |
| j. Encourage the State to support the development of benchmarks to measure the success of Hawai'i's public-education system and clarify lines of accountability.  |  |   |    | X   |
| k. Design school and park facilities in proximity to residential areas.   |  |   |    | X   |
| l. Support technology- and natural-environment-based learning.  |  |   |    | X   |
| m. Encourage the State to support lower student-teacher ratios in public schools.   |  |   |    | X   |
| n. Encourage alternative learning and educational opportunities.  |  |   |    | X   |
| <b>Implementing Actions:</b> Develop safe walking and bicycling programs for school children.   |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 2 to improve education and learning environments.  |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 3. Provide all residents with educational opportunities that can help them better understand themselves and their surroundings and allow them to realize their ambitions.   |  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| a. Encourage the State to improve Maui Community College as a comprehensive community college that will serve each community.   |  |   |    | X   |
| b. Broaden the use of technology and telecommunications to improve educational opportunities throughout the County  |  |   |    | X   |
| c. Attract graduate-level research programs and institutions.   |  |   |    | X   |

| <b>Table 5-9: Countywide Policy Plan</b>   |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| d.   | Promote the teaching of traditional practices, including aquaculture; subsistence agriculture; Pacific Island, Asian, and other forms of alternative health practices; and indigenous Hawaiian architecture. |          |           | <b>X</b>   |
| e.   | Integrate cultural and environmental values in education, including self-sufficiency and sustainability.   |          |           | <b>X</b>   |
| f.   | Foster a partnership and ongoing dialogue between business organizations, formal educational institutions, and vocational training centers to tailor learning and mentoring programs to County needs.        |          |           | <b>X</b>   |
| g.   | Ensure teaching of the arts to all ages.   |          |           | <b>X</b>   |
| h.   | Expand and develop vocational learning opportunities by establishing trade schools.  |          |           | <b>X</b>   |
| i.   | Encourage the State to integrate financial and economic literacy in elementary, secondary, and higher-education levels.  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b> Encourage the State to establish a four-year university, and support the development of other higher-education institutions to enable residents to obtain bachelor degrees and postgraduate degrees in Maui County. |  |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 3 to improve education.   |  |          |           |            |
| <b>Objective</b>   |  |          |           |            |
| 4. Maximize community-based educational opportunities.   |  |          |           |            |
| <b>Policies</b>  |  |          |           |            |
| a.   | Encourage the State and others to expand pre-school, after-school, and homebased (parent-child) learning.  |          |           | <b>X</b>   |
| b.   | Support public-private partnerships to develop youth-internship, -apprenticeship, and -mentoring programs.   |          |           | <b>X</b>   |
| c.   | Support the development of a wide range of informal educational and cultural programs for all residents.   |          |           | <b>X</b>   |
| d.   | Improve partnerships that utilize the skills and talents at Hawai'i's colleges and universities to benefit the County.   |          |           | <b>X</b>   |
| e.   | Support career-development and job-recruitment programs and centers.   |          |           | <b>X</b>   |
| f.   | Attract learning institutions and specialty schools to diversify and enhance educational opportunities.  |          |           | <b>X</b>   |
| g.   | Expand education of important life skills for the general public.  |          |           | <b>X</b>   |
| h.   | Support community facilities such as museums, libraries, nature centers, and open spaces that provide interactive-learning opportunities for all ages.   |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 4 to improve education.   |  |          |           |            |
| <b>D. Strengthen Social Healthcare Services</b>  |  |          |           |            |
| <b>Goal:</b> In cooperation with the Federal and State governments and nonprofit agencies, broaden access to social and healthcare services and expand options to improve the overall wellness of the people of Maui County.                     |  |          |           |            |
| <b>Objective</b>   |  |          |           |            |
| 1. In cooperation with the Federal and State governments and nonprofit agencies, broaden access to social and healthcare services and expand options to improve the overall wellness of the people of Maui County.                               |  |          |           |            |
| <b>Policies</b>  |  |          |           |            |
| a.   | Work with other levels of government and the nonprofit sector to expand services to address hunger, homelessness, and poverty.   |          |           | <b>X</b>   |
| b.   | Support the improvement of opportunities for disadvantaged youth, encourage the tradition of hanai relatives, and support expanded opportunities for foster care.  |          |           | <b>X</b>   |
| c.   | Support expanded long-term-care options, both in institutions and at home, for patients requiring ongoing assistance and medical attention.  |          |           | <b>X</b>   |
| d.   | Encourage the expansion and improvement of local hospitals, facilitate the establishment of new healthcare facilities, and facilitate prompt and high quality emergency- and urgent-care services for all.   |          |           | <b>X</b>   |
| e.   | Support broadened access to affordable health insurance and health care, and recognize the unique economic challenges posed to families when healthcare services are provided off-island.                    |          |           | <b>X</b>   |
| f.   | Encourage equal access to social and healthcare services through both technological and traditional means.   |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 1 to strengthen social healthcare services.   |  |          |           |            |

| Table 5-9: Countywide Policy Plan   |  | S | NS | N/A |
|---|--|---|----|-----|
| <b>Objective</b>  |  |   |    |     |
| 2. Encourage the Federal and State governments and the private sector to improve the quality and delivery of social and healthcare services.  |  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| a. Strengthen partnerships with government, nonprofit, and private organizations to provide funding and to improve counseling and other assistance to address substance abuse, domestic violence, and other pressing social challenges.   |  |   |    | X   |
| b. Encourage the State to improve the quality of medical personnel, facilities, services, and equipment.  |  |   |    | X   |
| c. Encourage investment to improve the recruitment of medical professionals and the quality of medical facilities and equipment throughout Maui County.   |  |   |    | X   |
| d. Promote the development of continuum-of-care facilities that provide assisted living, hospice, home-care, and skilled-nursing options allowing the individual to be cared for in a manner congruent with his or her needs and desires.   |  |   |    | X   |
| e. Support improved social, healthcare, and governmental services for special needs populations.  |  |   |    | X   |
| f. Plan for the needs of an aging population and the resulting impacts on social services, housing, and healthcare delivery.  |  |   |    | X   |
| g. Improve coordination among the police, the courts, and the public in the administration of social and healthcare services.   |  |   |    | X   |
| h. Support programs that address needs of veterans.   |  |   |    | X   |
| i. Support programs that address the needs of immigrants.   |  |   |    | X   |
| <b>Implementing Actions:</b>  |  |   |    |     |
| a. Invest in programs designed to improve the general welfare and quality of life of Native Hawaiians.  |  |   |    | X   |
| b. Assist and facilitate the State Department of Public Safety and others in efforts to strengthen programs and facilities that will improve the mental and social health of incarcerated people and assist in prison inmates' successful transition back into Maui County communities.   |  |   |    |     |
| c. Develop and maintain a comprehensive index that will measure the health and wellness needs of families.  |  |   |    |     |
| d. Provide heliports countywide for emergency health and safety purposes.   |  |   |    |     |
| <b>Discussion:</b> The Proposed Action will not affect Objective 2 to strengthen social and healthcare services.  |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 3. Strengthen public-awareness programs related to healthy lifestyles and social and medical services.  |  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| a. Expand public awareness about personal safety and crime prevention.  |  |   |    | X   |
| b. Encourage residents to pursue education and training for careers in the healthcare, social services, and community-development fields.   |  |   |    | X   |
| c. Expand public awareness and promote programs to achieve healthy eating habits and drug-free lifestyles.  |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 3 to strengthen social healthcare services.  |  |   |    |     |
| <b>E. Expand Housing Opportunities for Residents</b>  |  |   |    |     |
| <b>Goal:</b> Quality, island-appropriate housing will be available to all residents   |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 1. Reduce the affordable housing deficit for residents.   |  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| a. Ensure that an adequate and permanent supply of affordable housing, both new and existing units, is made available for purchase or rental to our resident and/or workforce population, with special emphasis on providing housing for low- to moderate-income families, and ensure that all affordable housing remains affordable in perpetuity. |  |   |    | X   |
| b. Seek innovative ways to lower housing costs without compromising the quality of our island lifestyle.  |  |   |    | X   |

| Table 5-9: Countywide Policy Plan  |   | S | NS | N/A |
|--|---|---|----|-----|
| c.   | Seek innovative methods to secure land for the development of low- and moderate-income housing.   |   |    | X   |
| d.   | Provide the homeless population with emergency and transitional shelter and other supportive programs.  |   |    | X   |
| e.   | Provide for a range of senior-citizen and special needs housing choices on each island that affordably facilitates a continuum of care and services.  |   |    | X   |
| f.   | Support the Department of Hawaiian Home Lands' development of homestead lands.  | X |    |     |
| g.   | Manage property-tax burdens to protect affordable resident homeownership.   |   |    | X   |
| h.   | Explore taxation mechanisms to increase and maintain access to affordable housing.  |   |    | X   |
| i.   | Improve awareness regarding available affordable homeowner's insurance.   |   |    | X   |
| j.   | Redevelop commercial areas with a mixture of affordable residential and business uses, where appropriate.   |   |    | X   |
| k.   | Ensure residents are given priority to obtain affordable housing units developed in their communities, consistent with all applicable regulations.  |   |    | X   |
| l.   | Establish pricing for affordable housing that is more reflective of Maui County's workforce than the United States Housing and Urban Development's median-income estimates for Maui County. |   |    | X   |
| m.   | Develop neighborhoods with a mixture of accessible and integrated community facilities and services.  | X |    |     |
| n.   | Provide alternative regulatory frameworks to facilitate the use of Kuleana lands by the descendants of Native Hawaiians who received those lands pursuant to the Kuleana Act of 1850.       |   |    | X   |
| o.   | Work with lending institutions to expand housing options and safeguard the financial security of homeowners.  |   |    | X   |
| p.   | Promote the use of the community land trust model and other land-lease and land-financing options.  |   |    | X   |
| q.   | Support the opportunity to age in place by providing accessible and appropriately designed residential units.   |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action will support Objective 1 to expand housing opportunities for residents.</p> <p>Issuance of the Water Lease would allow for the continued conveyance of water through the EMI Aqueduct System to the MDWS, which supplies water to Upcountry Maui, as well as the Nāhiku community, to meet their domestic and agricultural water demands. The Water Lease will ensure the County has a reliable water source to provide for Upcountry Maui, as well as Nāhiku, and to adequately plan, as well as make sound investments, for growth as there is a lack of alternative water sources and infrastructure to meet present and future demands currently. The County anticipates the Upcountry Maui population, which is dependent on the Upcountry Water System, will grow to approximately 43,675 by 2030. The Water Lease allows for the opportunity for Upcountry Maui, as well as Nāhiku, for growth and development, supporting County objectives.</p> <p>In addition, the Water Lease will include a reservation of water for the DHHL. Non-potable water needs for the DHHL's lands in Ke'anae-Wailuānui amount to 6,868,000 gpd. Although the DHHL holds a reservation for 3,000 gpd of potable water for this area for development over the next 20 years, another 7,000 gpd of potable water may be required for longer-term development. Thus, a potential reservation for this area amounts to 6,875,000 gpd. For its agricultural and residential lots in Keokea-Waiohuli, the DHHL has already secured a potable water reservation from the CWRM. Non-potable water demand amounts to 10,428,000 gpd for which a water reservation would have to be secured.</p> <p>The DHHL's current plans for its Pulehunui lands in Central Maui include agricultural, commercial, industrial and civic uses. A reservation of 1,734,000 gpd of ground water has already been secured from the CWRM. A non-potable water demand of 1,027,510 gpd has been identified, and water delivered through the EMI Aqueduct System has been identified as a potential source of this water.</p> <p>The DHHL staff has identified 11,455,510 gpd (10,428,000 gpd for Keokea-Waiohuli + 1,027,510 gpd for Pulehunui) of water as their recommendation for a reservation of water rights sufficient to support current and future homestead needs related to this proposed Water Lease.</p> |   |   |    |     |

| Table 5-9: Countywide Policy Plan  |   | S | NS | N/A |
|--|---|---|----|-----|
| The DHHL has indicated that reserved water may be available for other purposes until the DHHL has an actual need for the water. In addition, for its Keokea-Waiohuli and Pulehunui lands, the DHHL will be dependent on the EMI Aqueduct System collecting and transporting East Maui stream waters, in order to get waters to these lands.  |   |   |    |     |
| <b>Objective</b>   |   |   |    |     |
| 2. Increase the mix of housing types in towns and neighborhoods to promote sustainable land use planning, expand consumer choice, and protect the County's rural and small town character.   |   |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| a. Seek innovative ways to develop 'ohana cottages and accessory-dwelling units as affordable housing.   |   |   |    | X   |
| b. Design neighborhoods to foster interaction among neighbors.   |   |   |    | X   |
| c. Encourage a mix of social, economic, and age groups within neighborhoods.   |   |   |    | X   |
| d. Promote infill housing in urban areas at scales that capitalize on existing infrastructure, lower development costs, and are consistent with existing or desired patterns of development.   | X |   |    |     |
| e. Encourage the building industry to use environmentally sustainable materials, technologies, and site planning.  |   |   |    | X   |
| f. Develop workforce housing in proximity to job centers and transit facilities.   |   |   |    | X   |
| g. Provide incentives to developers and owners who incorporate green building practices and energy-efficient technologies into their housing developments.   |   |   |    | X   |
| <b>Implementing Actions:</b> Revise laws to support neighborhood designs that incorporate a mix of housing types that are appropriate for island living.   |   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 2 to expand housing opportunities for residents.   |   |   |    |     |
| Issuance of the Water Lease would allow for the continued conveyance of water through the EMI Aqueduct System to the MDWS, which supplies water to Upcountry Maui, as well as the Nāhiku community, to meet their domestic and agricultural water demands. The Water Lease will ensure the County has a reliable water source to provide for Upcountry Maui, as well as Nāhiku, and to adequately plan, as well as make sound investments, for growth as there are a lack of alternative water sources and infrastructure to meet present and future demands currently. The County anticipates the Upcountry Maui population, which is dependent on the Upcountry Water System, will grow to approximately 43,675 by 2030. The Water Lease allows for the opportunity for Upcountry Maui, as well as Nāhiku, for growth and development, supporting County objectives. |   |   |    |     |
| <b>Objective</b>   |   |   |    |     |
| 3. Increase and maintain the affordable housing inventory.   |   |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| a. Recognize housing as a basic human need, and work to fulfill that need.   |   |   |    | X   |
| b. Prioritize available infrastructure capacity for affordable housing.  | X |   |    |     |
| c. Improve communication, collaboration, and coordination among housing providers and social-service organizations.  |   |   |    | X   |
| d. Study future projected housing needs, monitor economic cycles, and prepare for future conditions on each island.  |   |   |    | X   |
| e. Develop public-private and nonprofit partnerships that facilitate the construction of quality affordable housing.   |   |   |    | X   |
| f. Streamline the review process for high-quality, affordable housing developments that implement the goals, objectives, and policies of the General Plan.   |   |   |    | X   |
| g. Minimize the intrusion of housing on prime, productive, and potentially productive agricultural lands and regionally valuable agricultural lands.   |   |   |    | X   |
| h. Encourage long-term residential use of existing and future housing to meet residential needs.   |   |   |    | X   |
| <b>Implementing Actions:</b> Develop policies to even out the peaks and valleys in Maui County's construction-demand cycles.   |   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 3 to expand housing opportunities for residents.   |   |   |    |     |
| Issuance of the Water Lease would allow for the continued conveyance of water through the EMI Aqueduct System to the MDWS, which supplies water to Upcountry Maui, as well as the Nāhiku community, to meet their domestic and agricultural water demands. The Water Lease will ensure the County has a reliable water source to provide for   |   |   |    |     |

| Table 5-9: Countywide Policy Plan  |   | S | NS | N/A |
|--|---|---|----|-----|
| Upcountry Maui, as well as Nāhiku, and to adequately plan, as well as make sound investments, for growth as there are a lack of alternative water sources and infrastructure to meet present and future demands currently. The County anticipates the Upcountry Maui population, which is dependent on the Upcountry Water System, will grow to approximately 43,675 by 2030. The Water Lease allows for the opportunity for Upcountry Maui, as well as Nāhiku, for growth and development, supporting County objectives.  |   |   |    |     |
| <b>Objective</b>   |   |   |    |     |
| 4. Expand access to education related to housing options, homeownership, financing, and residential construction.  |   |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| a. Broaden access to information about County, State, and Federal programs that provide financial assistance to renters and home buyers.   |   |   |    | X   |
| b. Expand access to information about opportunities for homeownership and self-help housing.   |   |   |    | X   |
| c. Educate residents about making housing choices that support their individual needs, the needs of their communities, and the health of the islands' natural systems.   |   |   |    | X   |
| d. Improve home buyers' education on all aspects of homeownership.   |   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 4 to expand housing opportunities for residents.  |   |   |    |     |
| <b>F. Strengthen the Local Economy</b>   |   |   |    |     |
| <b>Goal:</b> Maui County's economy will be diverse, sustainable, and supportive of community values.   |   |   |    |     |
| <b>Objective</b>   |   |   |    |     |
| 1. Promote an economic climate that will encourage diversification of the County's economic base and a sustainable rate of economic growth.  |   |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| a. Support economic decisions that create long-term benefits.  | X |   |    |     |
| b. Promote lifelong education, career development, and technical training for existing and emerging industries.  |   |   |    | X   |
| c. Invest in infrastructure, facilities, and programs that foster economic diversification.  | X |   |    |     |
| d. Support and promote locally produced products and locally owned operations and businesses that benefit local communities and meet local demand.   | X |   |    |     |
| e. Support programs that assist industries to retain and attract more local labor and facilitate the creation of jobs that offer a living wage.  | X |   |    |     |
| f. Encourage work environments that are safe, rewarding, and fulfilling to employees.  | X |   |    |     |
| g. Support home-based businesses that are appropriate for and in character with the community.   |   |   |    | X   |
| h. Encourage businesses that promote the health and well-being of the residents, produce value-added products, and support community values.   |   |   |    | X   |
| i. Foster an understanding of the role of all industries in our economy.   |   |   |    | X   |
| j. Support efforts to improve conditions that foster economic vitality in our historic small towns.  |   |   |    | X   |
| k. Support and encourage traditional host-culture businesses and indigenous agricultural practices.  |   |   |    | X   |
| l. Support public and private entities that assist entrepreneurs in establishing locally operated businesses.  |   |   |    | X   |
| <b>Implementing Actions:</b>   |   |   |    |     |
| a. Develop regulations and programs that support opportunities for local merchants, farmers, and small businesses to sell their goods and services directly to the public.   |   |   |    | X   |
| b. Monitor the carrying capacity of the islands' social, ecological, and infrastructure systems with respect to the economy.   |   |   |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 1 to strengthen the local economy.   |   |   |    |     |
| Issuance of the Water Lease will allow for the transition of the agricultural fields in Central Maui to a diversified agricultural operation. Generally speaking, under the Proposed Action, the farms in East Maui that depend on stream water would generate about \$1.4 million per year in direct sales, and about \$2.9 million per year in direct and indirect sales, the farms that depend on water from the EMI Aqueduct System would generate direct sales of about \$14.1 million per year. Direct and indirect sales would total about \$31.8 million per year, and converting Central Maui from growing sugarcane to diversified farm operations would entail an investment of about \$214.7 million spread out over |   |   |    |     |



| Table 5-9: Countywide Policy Plan   |  | S | NS | N/A |
|---|--|---|----|-----|
| <p>10 years or so. During this period, expenditures and indirect sales would average about \$39.9 million per year. The direct sales of \$160.7 million per year exceeds sales during sugar operations: about \$100.7 million per year for Typical Sugar, and about \$115.6 million for Recent Sugar. The Proposed Action will also create approximately 1,140 direct and indirect jobs.</p> <p>At full operations, under the Proposed Action, farm sales would total about \$160.7 million per year, of which about \$104.4 million would be Hawai'i sales and \$56.2 million would be export sales. Adding energy sales of about \$8.2 million results in total direct sales of about \$168.9 million per year. Direct and indirect sales would total about \$329.5 million per year.</p> <p>Additionally, Mahi Pono intends to offer approximately 800 acres of various sized community farm blocks in Central Maui to local farmers. Farmers also would have access to Mahi Pono's equipment, management, budgeting and marketing services.</p> <p>Issuance of the Water Lease under the Proposed Action would also allow for the continued conveyance of water through the EMI Aqueduct System to the MDWS, which supplies water to Upcountry Maui, as well as the Nāhiku community, to meet their domestic and agricultural water demands. The Water Lease will ensure the County has a reliable water source to provide for Upcountry Maui, as well as Nāhiku, and to adequately plan, as well as make sound investments, for growth as there are a lack of alternative water sources and infrastructure to meet present and future demands currently.</p> |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 2. Diversify and expand sustainable forms of agriculture and aquaculture.   |  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| a. Support programs that position Maui County's agricultural products as premium export products.   |  | X |    |     |
| b. Prioritize the use of agricultural land to feed the local population, and promote the use of agricultural lands for sustainable and diversified agricultural activities.   |  | X |    |     |
| c. Capitalize on Hawai'i's economic opportunities in the ecologically sensitive aquaculture industries.   |  |   |    | X   |
| d. Assist farmers to help make Maui County more self-sufficient in food production.   |  | X |    |     |
| e. Support ordinances, programs, and policies that keep agricultural land and water available and affordable to farmers.  |  | X |    |     |
| f. Support a tax structure that is conducive to the growth of the agricultural economy.   |  |   |    | X   |
| g. Enhance County efforts to monitor and regulate important agricultural issues.  |  |   |    | X   |
| h. Support education, research, and facilities that strengthen the agricultural industry.   |  | X |    |     |
| i. Maintain the genetic integrity of existing food crops.   |  | X |    |     |
| j. Encourage healthy and organic farm practices that contribute to land health and regeneration.  |  |   |    | X   |
| k. Support cooperatives and other types of nontraditional and communal farming efforts.   |  |   |    | X   |
| l. Encourage methods of monitoring and controlling genetically modified crops to prevent adverse effects.   |  |   |    | X   |
| m. Work with the State to ease the permitting process for the revitalization of traditional fish ponds.   |  |   |    | X   |
| <b>Implementing Actions:</b>  |  |   |    |     |
| a. Redirect efforts in the Office of Economic Development to further facilitate the development of the agricultural section and to monitor agricultural legislation and issues.   |  |   |    | X   |
| b. Publicly identify, with signage and other means, the field locations of all genetically modified crops.  |  |   |    |     |
| c. Create agricultural parks in areas distant from genetically modified crops.  |  |   |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 2 to strengthen the local economy.  |  |   |    |     |
| <p>The Proposed Action will enable for the continued conveyance of water to support conversion of the agricultural fields in Central Maui to diversified agriculture. Mahi Pono plans to convert the agricultural lands in Central Maui generally to community farms, orchards (citrus, mac nuts, and beverage crops), tropical fruits, row and annual crops, energy crops, irrigated and nonirrigated pasture, and green energy crops. Reopening the land for farming would provide employment opportunities and expand the agriculture sector of Maui's economy, as well as for the State of Hawai'i. Currently the</p>   |  |   |    |     |

| Table 5-9: Countywide Policy Plan   |  | S | NS | N/A |
|---|--|---|----|-----|
| <p>agricultural land is mostly fallow with minimal agricultural activity. Should the Water Lease not be issued, the ongoing agricultural activities may be unfeasible. Issuance of the Water Lease would facilitate the transition of the agricultural fields in Central Maui to a productive diversified agricultural operation.</p> <p>Moreover, the diversified agriculture operation will aid in achieving the State's goal of doubling local food production. In the event of a major catastrophe, limiting overseas supplies, this diversified agriculture initiative could help supply the State with food.</p> <p>Mahi Pono will not be planting genetically modified crops. Mahi Pono also intends to provide plots for research and offer an internship program for high school and college students.</p> <p>The EMI Aqueduct System also conveys water to the MDWS, which in turn provides water for domestic and agricultural needs in Upcountry Maui, including KAP. Presently, the MDWS serves the KAP with non-potable water from diversions of the same streams that serve the Kamole-Weir Water Treatment Plant through the Wailoa Ditch. KAP currently consists of 31 farm lots, ranging in size from 7 to 29 acres, for a total of approximately 445 acres, supporting 26 farmers, and is planned to expand by 262 acres. Issuance of the Water Lease under the Proposed Action would ensure that KAP, and the planned expansion, have a reliable source of water to meet its water demands.</p> |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 3. Support a visitor industry that respects the resident culture and the environment.   |  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| a. Promote traditional Hawaiian practices in visitor-related facilities and activities.   |  |   |    | X   |
| b. Encourage and educate the visitor industry to be sensitive to island lifestyles and cultural values.   |  |   |    | X   |
| c. Encourage a spirit of welcome for residents at visitor facilities, such as by offering kama'āina incentives and discount programs.   |  |   |    | X   |
| d. Support the renovation and enhancement of existing visitor facilities.   |  |   |    | X   |
| e. Support policies, programs, and a tax structure that redirect the benefits of the visitor industry back into the local community.  |  |   |    | X   |
| f. Encourage resident ownership of visitor-related businesses and facilities.   |  |   |    | X   |
| g. Develop partnerships to provide educational and training facilities to residents employed in the visitor industry.   |  |   |    | X   |
| h. Foster an understanding of local cultures, customs, and etiquette, and emphasize the importance of the Aloha Spirit as a common good for all.  |  |   |    | X   |
| i. Support the diversification, development, evolution, and integration of the visitor industry in a way that is compatible with the traditional, social, economic, spiritual, and environmental values of island residents.  |  |   |    | X   |
| j. Improve collaboration between the visitor industry and the other sectors of Maui County's economy.   |  |   |    | X   |
| k. Perpetuate an authentic image of the Hawaiian culture and history and an appropriate recognition of the host culture.  |  |   |    | X   |
| l. Support the programs and initiatives outlined in the Maui County Tourism Strategic Plan 2006-2015.   |  |   |    | X   |
| m. Promote water conservation, beach conservation, and open-space conservation in areas providing services for visitors.  |  |   |    | X   |
| n. Recognize the important contributions that the visitor industry makes to the County's economy, and support a healthy and vibrant visitor industry.   |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 3 to strengthen the local economy.   |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 4. Expand economic sectors that increase living-wage job choices and are compatible with community values.  |  |   |    |     |
| <b>Policies</b>   |  |   |    |     |

| Table 5-9: Countywide Policy Plan  |  | S | NS | N/A |
|--|--|---|----|-----|
| a. Support emerging industries, including the following: <ul style="list-style-type: none"> <li>• Health and wellness industry;</li> <li>• Sports and recreation industry;</li> <li>• Film and entertainment industry;</li> <li>• Arts and culture industry;</li> <li>• Renewable-energy industry;</li> <li>• Research and development industry;</li> <li>• High-technology and knowledge-based industries;</li> <li>• Education and training industry;</li> <li>• Ecotourism industry; and</li> <li>• Agritourism industry.</li> </ul>  |  | X |    |     |
| <p><b>Discussion:</b> The Proposed Action will support Object 4 to strengthen the local economy.</p> <p>Issuance of the Water Lease will allow for the transition of the agricultural fields in Central Maui to a diversified agricultural operation. Generally speaking, under the Proposed Action, the farms in East Maui that depend on stream water would generate about \$1.4 million per year in direct sales, and about \$2.9 million per year in direct and indirect sales, the farms that depend on water from the EMI Aqueduct System would generate direct sales of about \$14.1 million per year. Direct and indirect sales would total about \$31.8 million per year, and converting Central Maui from growing sugarcane to diversified farm operations would entail an investment of about \$214.7 million spread out over 10 years or so. During this period, expenditures and indirect sales would average about \$39.9 million per year. The direct sales of \$160.7 million per year exceeds sales during sugar operations: about \$100.7 million per year for Typical Sugar, and about \$115.6 million for Recent Sugar. The Proposed Action will also create approximately 1,140 direct and indirect jobs.</p> <p>Additionally, Mahi Pono intends to offer approximately 800 acres of various sized community farm blocks in Central Maui to local farmers. Farmers also would have access to Mahi Pono's equipment, management, budgeting and marketing services.</p> <p>Issuance of the Water Lease under the Proposed Action would also allow for the continued conveyance of water through the EMI Aqueduct System to the MDWS, which supplies water to Upcountry Maui, as well as the Nāhiku community, to meet their domestic and agricultural water demands. The Water Lease will ensure the County has a reliable water source to provide for Upcountry Maui, as well as Nāhiku, and to adequately plan, as well as make sound investments, for growth as there are a lack of alternative water sources and infrastructure to meet present and future demands currently.</p> |  |   |    |     |
|  |  |   |    |     |
| <b>G. Improve Parks and Public Facilities</b>  |  |   |    |     |
| <b>Goal:</b> A full range of island-appropriate public facilities and recreational opportunities will be provided to improve the quality of life for residents and visitors.   |  |   |    |     |
| <b>Objective</b>   |  |   |    |     |
| 1. Expand access to recreational opportunities and community facilities to meet the present and future needs of residents of all ages and physical abilities.  |  |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| a. Protect, enhance, and expand access to public shoreline and mountain resources.   |  |   |    | X   |
| b. Expand and enhance the network of parks, multi-use paths, and bikeways.   |  |   |    | X   |
| c. Assist communities in developing recreational facilities that promote physical fitness.   |  |   |    | X   |
| d. Expand venue options for recreation and performances that enrich the lifestyles of Maui County's people.  |  |   |    | X   |
| e. Expand affordable recreational and after-school programs for youth.   |  |   |    | X   |
| f. Encourage and invest in recreational, social, and leisure activities that bring people together and build community pride.  |  |   |    | X   |
| g. Promote the development and enhancement of community centers, civic spaces, and gathering places throughout our communities.  |  |   |    | X   |
| h. Expand affordable access to recreational opportunities that support the local lifestyle.  |  |   |    | X   |
| <b>Implementing Actions:</b> Identify and reserve lands for cemeteries, and preserve existing cemeteries on all islands, appropriately accommodating varying cultural and faith-based lifestyle.   |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 1 to improve parks and public facilities.   |  |   |    |     |

| Table 5-9: Countywide Policy Plan   |  | S | NS | N/A |
|---|--|---|----|-----|
| <b>Objective</b><br>2. Improve the quality and adequacy of community facilities.  |  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| a.  | Provide an adequate supply of dedicated shelters and facilities for disaster relief.   |   |    | X   |
| b.  | Provide and maintain community facilities that are appropriately designed to reflect the traditions and customs of local cultures.                   |   |    | X   |
| c.  | Ensure that parks and public facilities are safe and adequately equipped for the needs of all ages and physical abilities to the extent reasonable.  |   |    | X   |
| d.  | Maintain, enhance, expand, and provide new active and passive recreational facilities in ways that preserve the natural beauty of their locations.   |   |    | X   |
| e.  | Redesign or retrofit public facilities to adapt to major shifts in environmental or urban conditions to the extent reasonable.                       |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 2 to improve parks and public facilities.  |  |   |    |     |
| Issuance of the Water Lease under the Proposed Action would allow for the continued conveyance of water through the EMI Aqueduct System to the MDWS, which supplies water to Upcountry Maui, as well as the Nāhiku community. The Proposed Action will ensure the County has a reliable water source to provide for Upcountry Maui, as well as Nāhiku, which facilitates the County's ability to maintain community facilities. |  |   |    |     |
| <b>Objective</b><br>3. Enhance the funding, management, and planning of public facilities and park lands.   |  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| a.  | Identify and encourage the establishment of regulated and environmentally sound campgrounds.   |   |    | X   |
| b.  | Manage park use and control access to natural resources in order to rest sensitive places and utilize the resources in a sustainable manner.         |   |    | X   |
| c.  | Provide public-recreational facilities that are clean and well-maintained.   |   |    | X   |
| d.  | Develop partnerships to ensure proper stewardship of the islands' trails, public lands, and access systems.  |   |    | X   |
| e.  | Ensure that there is an adequate supply of public restrooms in convenient locations.   |   |    | X   |
| <b>Implementing Actions:</b>  |  |   |    | X   |
| a.  | Encourage the State to allow for overnight fishing along the shoreline in accordance with management plans and regulations.                          |   |    |     |
| b.  | Develop and regularly update functional plans, including those relating to public facilities, parks, and campgrounds.                                |   |    |     |
| c.  | Develop and adopt local level-of-service standards for public facilities and parks.  |   |    |     |
| d.  | Identify, acquire, and develop lands for parks, civic spaces, and public uses.   |   |    |     |
| <b>Discussion:</b> The Proposed Action does not affect Objective 3 as to County facilities.   |  |   |    |     |
| <b>H. Diversify Transportation Options</b>  |  |   |    |     |
| <b>Goal:</b> Maui County will have an efficient, economical, and environmentally sensitive means of moving people and goods.  |  |   |    |     |
| <b>Objective</b><br>1. Provide an effective, affordable, and convenient ground-transportation system that is environmentally sustainable.   |  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| a.  | Execute planning strategies to reduce traffic congestion.  |   |    | X   |
| b.  | Plan for the efficient relocation of roadways for the public benefit.  |   |    | X   |
| c.  | Support the use of alternative roadway designs, such as traffic-calming techniques and modern roundabouts.   |   |    | X   |
| d.  | Increase route and mode options in the ground-transportation network.  |   |    | X   |
| e.  | Ensure that roadway systems are safe, efficient, and maintained in good condition.   |   |    | X   |
| f.  | Preserve roadway corridors that have historic, scenic, or unique physical attributes that enhance the character and scenic resources of communities. |   |    | X   |

| Table 5-9: Countywide Policy Plan   |   | S | NS | N/A |
|---|---|---|----|-----|
| g.  | Design new roads and roadway improvements to retain and enhance the existing character and scenic resources of the communities through which they pass.         |   |    | X   |
| h.  | Promote a variety of affordable and convenient transportation services that meet countywide and community needs and expand ridership of transit systems.        |   |    | X   |
| i.  | Collaborate with transit agencies, government agencies, employers, and operators to provide planning strategies that reduce peak-hour traffic.                  |   |    | X   |
| j.  | Develop and expand an attractive, island-appropriate, and efficient public transportation system  |   |    | X   |
| k.  | Provide and encourage the development of specialized transportation options for the young, the elderly, and persons with disabilities                           |   |    | X   |
| l.  | Evaluate all alternatives to preserve quality of life before widening roads.  |   |    | X   |
| m.  | Encourage businesses in the promotion of alternative transportation options for resident and visitor use.   |   |    | X   |
| n.  | Support the development of carbon-emission standards and an incentive program aimed at achieving County carbon-emission goals.                                  |   |    | X   |
| <b>Implementing Actions:</b>  |   |   |    |     |
| a.  | Create incentives and implement strategies to reduce visitor dependence on rental cars.   |   |    |     |
| b.  | Establish efficient public-transit routes between employment centers and primary workforce residential areas.   |   |    |     |
| c.  | Create attractive, island-appropriate, conveniently located park-and-ride and ride-share facilities.  |   |    |     |
| <b>Discussion:</b> The Proposed Action will not affect Objective 1 to diversify transportation options.   |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 2. Reduce the reliance on the automobile and fossil fuels by encouraging walking, bicycling, and other energy-efficient and safe alternative modes of transportation. |   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| a.  | Make walking and bicycling transportation safe and easy between and within communities.   |   |    | X   |
| b.  | Require development to be designed with the pedestrian in mind.   |   |    | X   |
| c.  | Design new and retrofit existing rights-of-way with adequate sidewalks, bicycle lanes, or separated multi-use transit corridors.                                |   |    | X   |
| d.  | Support the development of a countywide network of bikeways, equestrian trails, and pedestrian paths.   |   |    | X   |
| e.  | Support the reestablishment of traditional trails between communities, to the ocean, and through the mountains for public use.                                  |   |    | X   |
| f.  | Encourage educational programs to increase safety for pedestrians and bicyclists.   |   |    | X   |
| <b>Implementing Actions:</b>  |   |   |    |     |
| a.  | Design, build, and modify existing bikeways to improve safety and separation from automobiles.  |   |    | X   |
| b.  | Increase enforcement to reduce abuse of bicycle and pedestrian lanes by motorized vehicles.   |   |    |     |
| c.  | Identify non-motorized transportation options as a priority for new sources of funding.   |   |    |     |
| <b>Discussion:</b> The Proposed Action will not affect Objective 2 to diversify transportation options.   |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 3. Improve opportunities for affordable, efficient, safe, and reliable air transportation.  |   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| a.  | Discourage private helicopter and fixed-wing landing sites to mitigate environmental and social impacts.  |   |    | X   |
| b.  | Encourage the use of quieter aircraft and noise-abatement procedures for arrivals and departures.   |   |    | X   |
| c.  | Encourage the modernization and maintenance of air-transportation facilities for general-aviation activities.   |   |    | X   |
| d.  | Encourage a viable and competitive atmosphere for air carriers to expand service and ensure sufficient intra-County flights and affordable fares for consumers. |   |    | X   |

| Table 5-9: Countywide Policy Plan   |   | S | NS | N/A |
|---|---|---|----|-----|
| e.  | Continue to support secondary airports, and encourage the State to provide them with adequate funding.  |   |    | X   |
| f.  | During Community Plan updates, explore the use of the smaller airports.   |   |    | X   |
| g.  | Encourage the State to provide efficient, adequate, and affordable parking and transit connections within and around airports.                              |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 3 to diversify transportation options.   |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 4. Improve opportunities for affordable, efficient, safe, and reliable ocean transportation.  |   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| a.  | Support programs and regulations that reduce the disposal of maritime waste and prevent spills into the ocean.  |   |    | X   |
| b.  | Encourage the upgrading of harbors to resist damage from natural hazards and disasters.   |   |    | X   |
| c.  | Encourage the State to study the use of existing harbors and set priorities for future use.   |   |    | X   |
| d.  | Explore all options to protect the traditional recreational uses of harbors, and mitigate harbor-upgrade impacts to recreational uses where feasible.       |   |    | X   |
| e.  | Encourage the upgrading of harbors and the separation of cargo and bulk materials from passenger and recreational uses.                                     |   |    | X   |
| f.  | Encourage the State to provide for improved capacity at shipping, docking, and storage facilities.  |   |    | X   |
| g.  | Encourage the State to provide adequate parking facilities and transit connections within and around harbor areas.  |   |    | X   |
| h.  | Encourage the redevelopment and revitalization of harbors while preserving historic and cultural assets in harbor districts.                                |   |    | X   |
| i.  | Encourage the State to provide adequate facilities for small-boat operations, including small-boat launch ramps, according to community needs.              |   |    | X   |
| j.  | Support the maintenance and cleanliness of harbor facilities.   |   |    | X   |
| k.  | Support the redevelopment of harbors as pedestrian-oriented gathering places.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 4 to diversify transportation options.   |   |   |    |     |
| <b>Objective:</b>   |   |   |    |     |
| 5. Improve and expand the planning and management of transportation systems.  |   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| a.  | Encourage progressive community design and development that will reduce transportation trips.   |   |    |     |
| b.  | Require new developments to contribute their pro rata share of local and regional infrastructure costs.   |   |    |     |
| c.  | Establish appropriate user fees for private enterprises that utilize public transportation facilities for recreational purposes.                            |   |    |     |
| d.  | Support the revision of roadway-design criteria and standards so that roads are compatible with surrounding neighborhoods and the character of rural areas. |   |    |     |
| e.  | Plan for multi-modal transportation and utility corridors on each island.   |   |    |     |
| f.  | Support designing all transportation facilities, including airport, harbor, and mass-transit stations, to reflect Hawaiian architecture.                    |   |    |     |
| g.  | Utilize transportation-demand management as an integral part of transportation planning.  |   |    |     |
| h.  | Accommodate the planting of street trees and other appropriate landscaping in all public rights-of-way.   |   |    |     |
| <b>Discussion:</b> The Proposed Action will not affect Objective 5 to diversify transportation options.   |   |   |    |     |
| <b>I. Improve Physical Infrastructure</b>   |   |   |    |     |
| <b>Goal:</b> Maui County's physical infrastructure will be maintained in optimum condition and will provide for and effectively serve the needs of the County through clean and sustainable technologies. |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 1. Improve water systems to assure access to sustainable, clean, reliable, and affordable sources of water.   |   |   |    |     |
| <b>Policies</b>   |   |   |    |     |



| Table 5-9: Countywide Policy Plan  |  |   |  | S | NS | N/A |
|--|--|---|--|---|----|-----|
| a.   | Ensure that adequate supplies of water are available prior to approval of subdivision or construction documents.   | X |  |   |    |     |
| b.   | Develop and fund improved water-delivery systems.  |   |  | X |    |     |
| c.   | Ensure a reliable and affordable supply of water for productive agricultural uses.   | X |  |   |    |     |
| d.   | Promote the reclamation of gray water, and enable the use of reclaimed, gray, and brackish water for activities that do not require potable water.   | X |  |   |    |     |
| e.   | Retain and expand public control and ownership of water resources and delivery systems.  |   |  | X |    |     |
| f.   | Improve the management of water systems so that surface-water and groundwater resources are not degraded by overuse or pollution.  | X |  |   |    |     |
| g.   | Explore and promote alternative water-source-development methods.  |   |  | X |    |     |
| h.   | Seek reliable long-term sources of water to serve developments that achieve consistency with the appropriate Community Plans.  | X |  |   |    |     |
| Implementing Actions: Develop a process to review all applications for desalination.   |  |   |  |   |    |     |
| Discussion: The Proposed Action will support Objective 1 to improve physical infrastructure.   |  |   |  |   |    |     |
| Issuance of the Water Lease under the Proposed Action would allow for the continued conveyance of water through the EMI Aqueduct System to the MDWS, which supplies water to Upcountry Maui, including KAP, as well as the Nāhiku community, to meet their domestic and agricultural water demands. The Proposed Action will ensure the County has a reliable water source to provide for Upcountry Maui, as well as Nāhiku, and to adequately plan, as well as make sound investments, for growth as there are a lack of alternative water sources and infrastructure to meet present and future demands currently. The Proposed Action will also insure that groundwater in the Central Maui area will be recharged and thus insure that brackish water may be utilized for agricultural production in Central Maui. |  |   |  |   |    |     |
| Moreover, the MDWS serves the KAP with non-potable water from diversions of the same streams that serve the Kamole-Weir Water Treatment Plant through the Wailoa Ditch. KAP currently consists of 31 farm lots, ranging in size from 7 to 29 acres, for a total of approximately 445 acres, supporting 26 farmers, and is planned to expand by 262 acres. The Proposed Action would ensure that KAP, and the planned expansion, have a reliable source of water to meet its water demands.   |  |   |  |   |    |     |
| Objective  |  |   |  |   |    |     |
| 2. Improve waste-disposal practices and systems to be efficient, safe, and as environmentally sound as possible.   |  |   |  |   |    |     |
| Policies   |  |   |  |   |    |     |
| a.   | Provide sustainable waste-disposal systems and comprehensive, convenient recycling programs to reduce the flow of waste into landfills.  |   |  | X |    |     |
| b.   | Support innovative and alternative practices in recycling solid waste and wastewater and disposing of hazardous waste.   |   |  | X |    |     |
| c.   | Encourage vendors and owners of automobile, appliance, and white goods to participate in the safe disposal and recycling of such goods, and ensure greater accountability for large waste producers. |   |  | X |    |     |
| d.   | Develop strategies to promote public awareness to reduce pollution and litter, and encourage residents to reduce, reuse, recycle, and compost waste materials.                                       |   |  | X |    |     |
| e.   | Pursue improvements and upgrades to existing wastewater and solid-waste systems consistent with current and future plans and the County's Capital Improvement Program.                               |   |  | X |    |     |
| Implementing Actions:  |  |   |  | X |    |     |
| a.   | Establish recycling, trash-separation, and materials recovery programs and facilities to reduce the flow of waste into landfills.  |   |  |   |    |     |
| b.   | Study the feasibility of developing environmentally safe waste-to-energy facilities.   |   |  |   |    |     |
| c.   | Utilize taxes and fees as means to encourage conservation and recycling.   |   |  |   |    |     |
| d.   | Implement and regularly update the Integrated Solid Waste Management Plan.   |   |  |   |    |     |
| e.   | Phase out the use of injection wells.  |   |  |   |    |     |
| Discussion: The Proposed Action will not affect Objective 2 to improve physical infrastructure.  |  |   |  |   |    |     |
| Objective  |  |   |  |   |    |     |
| 3. Significantly increase the use of renewable and green technologies to promote energy efficiency and energy self-sufficiency.  |  |   |  |   |    |     |

| Table 5-9: Countywide Policy Plan   |  | S | NS | N/A |
|---|--|---|----|-----|
| <b>Policies</b>   |  |   |    |     |
| a.  | Promote the use of locally renewable energy sources, and reward energy efficiency.   |   |    | X   |
| b.  | Consider tax incentives and credits for the development of sustainable- and renewable-energy sources.  |   |    | X   |
| c.  | Expand education about energy conservation and self-sufficiency.   |   |    | X   |
| d.  | Encourage small-scale energy generation that utilizes wind, sun, water, biowaste, and other renewable sources of energy.   | X |    |     |
| e.  | Expand renewable-energy production.  | X |    |     |
| f.  | Develop public-private partnerships to ensure the use of renewable energy and increase energy efficiency.  |   |    | X   |
| g.  | Require the incorporation of locally appropriate energy-saving and green building design concepts in all new developments by providing energy efficient urban design guidelines and amendments to the Building Code. |   |    | X   |
| h.  | Encourage the use of sustainable energy to power vehicles.   |   |    | X   |
| i.  | Promote the retrofitting of existing buildings and new development to incorporate energy-saving design concepts and devices.   |   |    | X   |
| j.  | Encourage green footprint practices.   |   |    | X   |
| k.  | Reduce Maui County's dependence on fossil fuels and energy imports.  |   |    | X   |
| l.  | Support green building practices such as the construction of buildings that aim to minimize carbon dioxide production, produce renewable energy, and recycle water.  |   |    | X   |
| m.  | Promote and support environmentally friendly practices in all energy sectors.  |   |    | X   |
| <b>Implementing Actions:</b>  |  |   |    |     |
| a.  | Adopt an energy-efficiency policy for Maui County government as a model for other jurisdictions.   |   |    | X   |
| b.  | Adopt a Green Building Code, and support green building practices.   |   |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 3 to improve physical infrastructure.   |  |   |    |     |
| Mahi Pono intends to use power from two hydro-electric facilities to provide power to pumps and wells, and other infrastructure. Mahi Pono is also committing land to the production of solar energy for the public utility system.   |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 4.  | Direct growth in a way that makes efficient use of existing infrastructure and to areas where there is available infrastructure capacity.  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| a.  | Capitalize on existing infrastructure capacity as a priority over infrastructure expansion.  | X |    |     |
| b.  | Planning for new towns should only be considered if a region's growth is too large to be directed into infill and adjacent growth areas.   |   |    | X   |
| c.  | Utilize appropriate infrastructure technologies in the appropriate locations.  | X |    |     |
| d.  | Promote land use patterns that can be provided with infrastructure and public facilities in a cost-effective manner.   | X |    |     |
| e.  | Support catchment systems and on-site wastewater treatment in rural areas and aggregated water and wastewater systems in urban areas if they are appropriately located.  |   |    | X   |
| <b>Implementing Actions:</b>  |  |   |    |     |
| a.  | Develop a streamlining system for urban infill projects.   |   |    | X   |
| b.  | Identify appropriate areas for urban expansion of existing towns where infrastructure and public facilities can be provided in a cost-effective manner.  |   |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 4 to improve physical infrastructure.   |  |   |    |     |
| Issuance of the Water Lease would allow for the continued conveyance of water through the EMI Aqueduct System to the MDWS, which supplies water to Upcountry Maui, including KAP and the planned 262-acre KAP expansion, as well as the Nāhiku community, to meet their domestic and agricultural water demands. The Water Lease will ensure the County has a reliable water source to provide for Upcountry Maui, as well as Nāhiku, and to adequately plan, as well as make sound investments, for growth as there are a lack of alternative water sources and infrastructure to meet present and future demands currently. |  |   |    |     |

| Table 5-9: Countywide Policy Plan  |  | S | NS | N/A |
|--|--|---|----|-----|
| <b>Objective</b>   |  |   |    |     |
| 5. Improve the planning and management of infrastructure systems.  |  |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| a.   | Provide a reliable and sufficient level of funding to enhance and maintain infrastructure systems.   |   |    | X   |
| b.   | Require new developments to contribute their pro rata share of local and regional infrastructure costs.  |   |    | X   |
| c.   | Improve coordination among infrastructure providers and planning agencies to minimize construction impacts.  |   |    | X   |
| d.   | Maintain inventories of infrastructure capacity, and project future infrastructure needs.  | X |    |     |
| e.   | Require social-justice and -equity issues to be considered during the infrastructure-planning process.   |   |    | X   |
| f.   | Discourage the development of critical infrastructure systems within hazard zones and the tsunami-inundation zone to the extent practical.   |   |    | X   |
| g.   | Ensure that infrastructure is built concurrent with or prior to development.   |   |    | X   |
| h.   | Ensure that basic infrastructure needs can be met during a disaster.   | X |    |     |
| i.   | Locate public facilities and emergency services in appropriate locations that support the health, safety, and welfare of each community and that minimize delivery inefficiencies. |   |    | X   |
| j.   | Promote the undergrounding of utility and other distribution lines for health, safety, and aesthetic reasons.  |   |    | X   |
| <b>Implementing Actions:</b>   |  |   |    | X   |
| a.   | Develop and regularly update functional plans for infrastructure systems.  |   |    |     |
| b.   | Develop, adopt, and regularly update local or community-sensitive level-of-service standards for infrastructure systems.   |   |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 5 to improve physical infrastructure.  |  |   |    |     |
| <p>Issuance of the Water Lease under the Proposed Action would allow for the continued conveyance of water through the EMI Aqueduct System to the MDWS, which supplies water to Upcountry Maui, including KAP and the planned 262-acre KAP expansion, as well as the Nāhiku community, to meet their domestic and agricultural water demands. The Proposed Action will ensure the County has a reliable water source to provide for Upcountry Maui, as well as Nāhiku, and to adequately plan, as well as make sound investments, for growth as there are a lack of alternative water sources and infrastructure to meet present and future demands currently.</p> <p>The Upcountry Maui Water System's reliance on surface water (80-90%) makes the system extremely vulnerable to drought and presents as a challenge for the MDWS. For decades, the Upcountry region has experienced voluntary and mandatory water use restrictions imposed on residential and agricultural users during droughts, primarily during dry season, often negatively impacting the productivity of the farmers. Droughts are a natural phenomenon that have been historically experienced throughout the Hawaiian Islands, however, drought events have become more intense over the years, and are expected to intensify in the future. As noted by the MDWS, droughts in Maui are a part of the regular climate cycle, and have been occurring on average every 3 to 4 years. These periods of low rainfall have even affected the normally lush East Maui area. Historical occurrences as noted in the recently updated Hawai'i Drought Plan have occurred many times within the past 70 years. Since 1950, droughts have occurred in the East Maui in 1953, 1962, 1971, 1981, 1984, 1999, 2006, and most recently a long period of 2008 to 2013. During these times, the EMI Aqueduct System has delivered less than 50,000 million gallons (mg) annually. The average of the delivery over the past century has been 61,000 mg per year (Akinaka, 2019). Historically, Kamole-Weir Water Treatment Facility is the primary source of water for all of Upcountry Maui during times of drought. However, the facility lacks raw water storage and is restricted to how much water that the facility can treat or how much water that can be delivered through the Wailoa Ditch of the EMI Aqueduct System. The Proposed Action would ensure that the MDWS would have a reliable source of water to supply Upcountry Maui with during periods of drought.</p> |  |   |    |     |
| <b>J. Promote Sustainable Land Use and Growth Management</b>   |  |   |    |     |
| <b>Goal:</b> Community character, lifestyles, economies, and natural assets will be preserved by managing growth and using land in a sustainable manner.   |  |   |    |     |
| <b>Objective</b>   |  |   |    |     |
| 1. Improve land use management and implement a directed-growth strategy.   |  |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| a.   | Establish, map, and enforce urban- and rural-growth limits.  |   |    | X   |

| Table 5-9: Countywide Policy Plan   |   | S | NS | N/A |
|---|---|---|----|-----|
| b.  | Direct urban and rural growth to designated areas.  |   |    | X   |
| c.  | Limit the number of visitor-accommodation units and facilities in Community Plan Areas.   |   |    | X   |
| d.  | Maintain a sustainable balance between the resident, part-time resident, and visitor populations.   |   |    | X   |
| e.  | Encourage redevelopment and infill in existing communities on lands intended for urban use to protect productive farm land and open-space resources.                |   |    | X   |
| f.  | Discourage new entitlements for residential, resort, or commercial development along the shoreline.   |   |    | X   |
| g.  | Restrict development in areas that are prone to natural hazards, disasters, or sea-level rise.  |   |    | X   |
| h.  | Direct new development in and around communities with existing infrastructure and service capacity, and protect natural, scenic, shoreline, and cultural resources. | X |    |     |
| i.  | Establish and maintain permanent open space between communities to protect each community's identity.   |   |    | X   |
| j.  | Support the dedication of land for public uses.   |   |    | X   |
| k.  | Preserve the public's rights of access to and continuous lateral access along all shorelines.   |   |    | X   |
| l.  | Enable existing and future communities to be self-sufficient through sustainable land use planning and management practices.  |   |    | X   |
| m.  | Protect summits, slopes, and ridgelines from inappropriate development.   |   |    | X   |
| <b>Implementing Actions:</b><br>a. Regularly update urban- and rural-growth boundaries and their maps.<br>b. Establish transfer and purchase of development rights programs.<br>c. Develop and adopt a green infrastructure plan.<br>d. Develop studies to help determine a sustainable social, environmental, and economic carrying capacity for each island.<br>e. Identify and define resort-destination areas.  |   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 1 to promote sustainable land use and growth management.  |   |   |    |     |
| Issuance of the Water Lease would allow for the continued conveyance of water through the EMI Aqueduct System to the MDWS, which supplies water to Upcountry Maui, including KAP and the planned 262-acre KAP expansion, as well as the Nāhiku community, to meet their domestic and agricultural water demands. The Water Lease will ensure the County has a reliable water source to provide for Upcountry Maui, as well as Nāhiku, and to adequately plan, as well as make sound investments, for growth as there are a lack of alternative water sources and infrastructure to meet present and future demands currently. |   |   |    |     |
| Moreover, the Proposed Action will be in compliance with the CWRM D&O, which was issued to increase the practical knowledge of stream flows and native habitat restoration. The CWRM D&O establishes a quantity of water that must remain in each stream. Each stream a part of the contested case in East Maui was evaluated individually for their potential for usage, habitat restoration, recreational opportunities, and scenic values. The CWRM D&O ensures the prudent use of the surface water resources in the License Area.  |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 2. Improve planning for and management of agricultural lands and rural areas.   |   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| a.  | Protect prime, productive, and potentially productive agricultural lands to maintain the islands' agricultural and rural identities and economies.                  | X |    |     |
| b.  | Provide opportunities and incentives for self-sufficient and subsistence homesteads and farms.  | X |    |     |
| c.  | Discourage developing or subdividing agriculturally designated lands when non-agricultural activities would be primary uses.  |   |    | X   |
| d.  | Conduct agricultural-development planning to facilitate robust and sustainable agricultural activities.   | X |    |     |
| <b>Implementing Actions:</b> Inventory and protect prime, productive, and potentially productive agricultural lands from competing non-agricultural land uses.  |   |   |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 2 to promote sustainable land use and growth management.  |   |   |    |     |

| Table 5-9: Countywide Policy Plan  |  | S | NS | N/A |
|--|--|---|----|-----|
| <p>The Proposed Action will enable for the continued conveyance of water to support conversion of the agricultural fields in Central Maui to diversified agriculture. Mahi Pono plans to convert the agricultural lands in Central Maui generally to community farms, orchards (citrus, mac nuts, and beverage crops), tropical fruits, row and annual crops, energy crops, irrigated and nonirrigated pasture, and green energy crops. Reopening the land for farming would provide employment opportunities and expand the agriculture sector of Maui's economy, as well as for the State of Hawai'i. Currently the agricultural land is mostly fallow with minimal agricultural activity. Should the Water Lease not be issued, the ongoing agricultural activities may be unfeasible. Issuance of the Water Lease would facilitate the transition of the agricultural fields in Central Maui to a productive diversified agricultural operation.</p> <p>Moreover, the diversified agriculture operation will aid in achieving the State's goal of doubling local food production. In the event of a major catastrophe, limiting overseas supplies, this diversified agriculture initiative could help supply the State with food.</p> <p>Mahi Pono intends to offer approximately 800 acres of various sized community farm blocks in Central Maui to local farmers. Farmers also would have access to Mahi Pono's equipment, management, budgeting and marketing services, thus facilitating robust and sustainable agricultural activities.</p> <p>The EMI Aqueduct System conveys water to the MDWS, which in turn provides water for domestic and agricultural needs in Upcountry Maui, including KAP. Presently, the MDWS serves the KAP with non-potable water from diversions of the same streams that serve the Kamole-Weir Water Treatment Plant through the Wailoa Ditch. KAP currently consists of 31 farm lots, ranging in size from 7 to 29 acres, for a total of approximately 445 acres, supporting 26 farmers, and is planned to expand by 262 acres. Issuance of the Water Lease would ensure that KAP, and the planned expansion, have a reliable source of water to meet its water demands.</p> |  |   |    |     |
| <b>Objective</b>   |  |   |    |     |
| 3. Design all developments to be in harmony with the environment and to protect each community's sense of place.   |  |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| a. Support and provide incentives for green building practices.  |  |   |    | X   |
| b. Encourage the incorporation of green building practices and technologies into all government facilities to the extent practicable.  |  |   |    | X   |
| c. Protect and enhance the unique architectural and landscape characteristics of each Community Plan Area, small town, and neighborhood.   |  |   |    | X   |
| d. Ensure that adequate recreational areas, open spaces, and public-gathering places are provided and maintained in all urban centers and neighborhoods  |  |   |    | X   |
| e. Ensure business districts are distinctive, attractive, and pedestrian-friendly destinations.  |  |   |    | X   |
| f. Use trees and other forms of landscaping along rights-of-way and within parking lots to provide shade, beauty, urban-heat reduction, and separation of pedestrians from automobile traffic in accordance with community desires.  |  |   |    | X   |
| g. Where appropriate, integrate public-transit, equestrian, pedestrian, and bicycle facilities, and public rights-of-way as design elements in new and existing communities.   |  |   |    | X   |
| h. Ensure better connectivity and linkages between land uses.  |  |   |    | X   |
| i. Adequately buffer and mitigate noise and air pollution in mixed-use areas to maintain residential quality of life.  |  |   |    | X   |
| j. Protect rural communities and traditional small towns by regulating the footprint, locations, site planning, and design of structures.  |  |   |    | X   |
| k. Support small-town revitalization and preservation.   |  |   |    | X   |
| l. Facilitate safe pedestrian access, and create linkages between destinations and within parking areas.   |  |   |    | X   |
| <b>Implementing Actions:</b>   |  |   |    |     |
| a. Establish design guidelines and standards to enhance urban and rural environments.  |  |   |    | X   |
| b. Provide funding for civic-center and civic-space developments.  |  |   |    |     |
| c. Establish and enhance urban forests in neighborhoods and business districts.  |  |   |    |     |
| <b>Discussion:</b> The Proposed Action will not affect Objective 3 to promote sustainable land use and growth management.  |  |   |    |     |

| Table 5-9: Countywide Policy Plan  |   |  | S | NS | N/A |
|--|---|--|---|----|-----|
| <b>Objective</b>   |   |  |   |    |     |
| 4. Improve and increase efficiency in land use planning and management.  |   |  |   |    |     |
| <b>Policies</b>  |   |  |   |    |     |
| a.   | Assess the cumulative impact of developments on natural ecosystems, natural resources, wildlife habitat, and surrounding uses.  |  |   |    | X   |
| b.   | Ensure that new development projects requiring discretionary permits demonstrate a community need, show consistency with the General Plan, and provide an analysis of impacts.  |  |   |    | X   |
| c.   | Encourage public and private partnerships to preserve lands of importance, develop housing, and meet the needs of residents.  |  |   |    | X   |
| d.   | Promote creative subdivision designs that implement best practices in land development, sustainable management of natural and physical resources, increased pedestrian and bicycle functionality and safety, and the principles of livable communities. |  |   |    | X   |
| e.   | Coordinate with Federal, State, and County officials in order to ensure that land use decisions are consistent with County plans and the vision local populations have for their communities.   |  |   |    | X   |
| f.   | Enable greater public participation in the review of subdivisions.  |  |   |    | X   |
| g.   | Improve land use decision making through the use of land- and geographic information systems.   |  |   |    | X   |
| <b>Implementing Actions:</b> Institute a time limit and sunseting stipulations on development entitlements and their implementation. |   |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 4 to promote sustainable land use and growth management.            |   |  |   |    |     |
|  |   |  |   |    |     |
| <b>K. Strive for Good Governance</b>   |   |  |   |    |     |
| <b>Goal:</b> Government services will be transparent, effective, efficient, and responsive to the needs of residents.                |   |  |   |    |     |
| <b>Objective</b>   |   |  |   |    |     |
| 1. Strengthen governmental planning, coordination, consensus building, and decision making.  |   |  |   |    |     |
| <b>Policies</b>  |   |  |   |    |     |
| a.   | Plan and prepare for the effects of social, demographic, economic, and environmental shifts.  |  |   |    | X   |
| b.   | Plan for and address the possible implications of Hawaiian sovereignty.   |  |   |    | X   |
| c.   | Encourage collaboration among government agencies to reduce duplication of efforts and promote information availability and exchange.   |  |   |    | X   |
| d.   | Expand opportunities for the County to be involved in and affect State and Federal decision making.   |  |   |    | X   |
| e.   | Plan and prepare for large-scale emergencies and contingencies.   |  |   |    | X   |
| f.   | Improve public awareness about preparing for natural hazards, disasters, and evacuation plans.  |  |   |    | X   |
| g.   | Improve coordination among Federal, State, and County agencies.   |  |   |    | X   |
| <b>Implementing Actions:</b>   |   |  |   |    | X   |
| a.   | Develop policies, regulations, and programs to protect and enhance the unique character and needs of the County's various communities.  |  |   |    |     |
| b.   | Evaluate and, if necessary, recommend modifications to the County Charter that could result in a possible change to the form of governance for Maui County.   |  |   |    |     |
| c.   | Study and evaluate the feasibility and implications of district voting in Maui County Council elections.  |  |   |    |     |
| d.   | Study and evaluate the feasibility of authorizing town governments in Maui County.  |  |   |    |     |
| <b>Discussion:</b> The Proposed Action will not affect Objective 1 to strive for good governance.                                    |   |  |   |    |     |
|  |   |  |   |    |     |
| <b>Objective</b>   |   |  |   |    |     |
| 2. Promote civic engagement.   |   |  |   |    |     |
| <b>Policies</b>  |   |  |   |    |     |
| a.   | Foster consensus building through in-depth, innovative, and accessible public participatory processes.  |  |   |    | X   |
| b.   | Promote and ensure public participation and equal access to government among all citizens.  |  |   |    | X   |



| Table 5-9: Countywide Policy Plan   |   | S | NS | N/A |
|---|---|---|----|-----|
| c.  | Encourage a broad cross-section of residents to volunteer on boards and commissions.  |   |    | X   |
| d.  | Encourage the State to improve its community-involvement processes.   |   |    | X   |
| e.  | Support community-based decision making.  |   |    | X   |
| f.  | Expand advisory functions at the community level.   |   |    | X   |
| g.  | Expand opportunities for all members of the public to participate in public meetings and forums.  |   |    | X   |
| h.  | Facilitate the community's ability to obtain relevant documentation.  |   |    | X   |
| i.  | Increase voter registration and turnout.  |   |    | X   |
| <b>Implementing Actions:</b>  |   |   |    | X   |
| a.  | Implement two-way communication using audio-visual technology that allows residents to participate in the County's planning processes.  |   |    |     |
| b.  | Ensure and expand the use of online notification of County business and public meetings, and ensure the posting of all County board and commission meeting minutes.                   |   |    |     |
| c.  | Explore funding mechanisms to improve participation by volunteers on boards and commissions.  |   |    |     |
| d.  | Develop a project-review process that mandates early and ongoing consultation in and with communities affected by planning and land use activities.                                   |   |    |     |
| <b>Discussion:</b> The Proposed Action will not affect Objective 2 to strive for good governance.                       |   |   |    |     |
|   |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 3. Improve the efficiency, reliability, and transparency of County government's internal processes and decision making. |   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| a.  | Use advanced technology to improve efficiency.  |   |    | X   |
| b.  | Simplify and clarify the permitting process to provide uniformity, reliability, efficiency, and transparency.   |   |    | X   |
| c.  | Improve communication with Lana'i and Moloka'i through the expanded use of information technologies, expanded staffing, and the creation and expansion of government-service centers. |   |    | X   |
| d.  | Ensure that laws, policies, and regulations are internally consistent and effectuate the intent of the General Plan.  |   |    | X   |
| <b>Implementing Actions:</b>  |   |   |    | X   |
| a.  | Update the County Code to be consistent with the General Plan.  |   |    |     |
| b.  | Identify and update County regulations and procedures to increase the productivity and efficiency of County government.   |   |    |     |
| c.  | Develop local level-of-service standards for infrastructure, public facilities, and services.   |   |    |     |
| d.  | Implement plans through programs, regulations, and capital improvements in a timely manner.   |   |    |     |
| e.  | Expand government online services.  |   |    |     |
| <b>Discussion:</b> The Proposed Action will not affect Objective 3 to strive for good governance.                       |   |   |    |     |
|   |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 4. Adequately fund in order to effectively administer, implement, and enforce the General Plan.                         |   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| a.  | Adequately fund, staff, and support the timely update and implementation of planning policy, programs, functional plans, and enforcement activities.                                  |   |    | X   |
| b.  | Ensure that the County's General Plan process provides for efficient planning at the County, island, town, and neighborhood level.  |   |    | X   |
| c.  | Encourage ongoing professional development, education, and training of County employees.  |   |    | X   |
| d.  | Encourage competitive compensation packages for County employees to attract and retain County personnel.  |   |    | X   |
| e.  | Enable the County government to be more responsive in implementing our General Plan and Community Plans.  |   |    | X   |

| Table 5-9: Countywide Policy Plan  |  | S | NS | N/A |
|--|--|---|----|-----|
| f.   | Review discretionary permits for compliance with the Countywide Policy Plan.   |   |    | X   |
| g.   | Strengthen the enforcement of County, State, and Federal land use laws.  |   |    | X   |
| <b>Implementing Actions:</b> Establish penalties to ensure compliance with County, State, and Federal land use laws.   |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 4 to strive for good governance.                      |  |   |    |     |
| <b>Objective</b>   |  |   |    |     |
| 5. Strive for County government to be a role model for implementing cultural and environmental policies and practices. |  |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| a.   | Educate residents on the benefits of sustainable practices.  |   |    | X   |
| b.   | Encourage the retention and hiring of qualified professionals who can improve cultural and environmental practices.    |   |    | X   |
| c.   | Incorporate environmentally sound and culturally appropriate practices in government operations and services.          |   |    | X   |
| d.   | Encourage all vendors with County contracts to incorporate environmentally sound and culturally appropriate practices. |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 5 to strive for good governance.                      |  |   |    |     |

### 5.4.3 Maui Island Plan

The Maui Island Plan (MIP), adopted on December 28, 2012, is the second component of the decennial General Plan update that acts as a blueprint that directs future growth, the economy, and social and environmental decisions for the island of Maui through the year 2030.

The MIP identifies areas appropriate for future urbanization and revitalization. It also identifies and addresses key environmental, housing and economic development issues relevant to Maui's current and future generations. The Countywide Policy Plan is an overarching document that provides direction to the Maui Island Plan, which in turn, provides direction to the various community plans on the island of Maui.

The Maui Island Plan highlights core values and issues relevant to the island of Maui. Table 5-10 below is a discussion of the relevant goals, objectives and policies that relate to the Proposed Action.

| Table 5-10: Maui Island Plan  |  | S | NS | N/A |
|---|--|---|----|-----|
| Population  |  |   |    |     |
| Goal  |  |   |    |     |
| 1.1   | Maui's people, values, and lifestyles thrive through strong, healthy, and vibrant island communities.  |   |    |     |
| Objective   |  |   |    |     |
| 1.1.1   | Greater retention and return of island residents by providing viable work, education, and lifestyle options.   |   |    |     |
| Policies  |  |   |    |     |
| 1.1.1.a   | Expand programs that enable the community to meet the education, employment, housing, and social goals of youth and young adults.  | X |    |     |
| 1.1.1.b   | Expand housing, transportation, employment, and social opportunities to ensure residents are able to comfortably age within their communities.                             | X |    |     |
| 1.1.1.c   | Measure and track resident satisfaction through surveys and community indicators   |   |    | X   |
| 1.1.1.d   | Support funding for transportation, housing, health care, recreation, and social service programs that help those with special needs (including the elderly and disabled). |   |    | X   |
| Discussion: The Proposed Action will support Objective 1.1.1 of the Maui Island Plan. |  |   |    |     |

| Table 5-10: Maui Island Plan  |   | S | NS | N/A |
|---|---|---|----|-----|
| The issuance of the Water Lease under the Proposed Action will allow for the conversion of the agricultural fields in Central Maui to a diversified agricultural operation. Reopening up the agricultural fields for cultivation would increase employment directly and indirectly for the island of Maui and the State. It is projected that approximately 1,140 direct and indirect jobs would be created from implementation of the Proposed Action at full operation.   |   |   |    |     |
| Mahi Pono intends to offer approximately 800 acres of various sized community farm blocks in Central Maui to local farmers. Farmers also would have access to Mahi Pono's equipment, management, budgeting and marketing services thus providing viable work options. Mahi Pono also intends to provide agricultural plots for research and offer an internship program for high school and college students to meet the educational goals of young adults.   |   |   |    |     |
| Moreover, issuance of the Water Lease would allow for the continued conveyance of water through the EMI Aqueduct System to the MDWS, which supplies water to Upcountry Maui, including KAP and the planned 262-acre KAP expansion, as well as the Nāhiku community, to meet their domestic and agricultural water demands. The Water Lease will ensure the County has a reliable water source to provide for Upcountry Maui, as well as Nāhiku, and to adequately plan, as well as make sound investments, for growth as there are a lack of alternative water sources and infrastructure to meet present and future demands currently. |   |   |    |     |
| Heritage Resources  |   |   |    |     |
| Goal  |   |   |    |     |
| 2.1   | Our community respects and protects archaeological and cultural resources while perpetuating diverse cultural identities and traditions.  |   |    |     |
| Objective   |   |   |    |     |
| 2.1.1   | An island culture and lifestyle that is healthy and vibrant as measured by the ability of residents to live on Maui, access and enjoy the natural environment, and practice Hawaiian customs and traditions in accordance with Article XII, Section 7, Hawai'i State Constitution, and Section 7-1, Hawai'i Revised Statutes (HRS). |   |    |     |
| Policies  |   |   |    |     |
| 2.1.1.a   | Perpetuate the spirit of aloha and celebrate the host Hawaiian culture and other ethnic cultures.   |   |    | X   |
| 2.1.1.b   | Perpetuate a respect for diversity and recognize the broad blending of cultures and ethnicities as vital to the quality of life on Maui.  |   |    | X   |
| 2.1.1.c   | Ensure traditional public access routes, including native Hawaiian trails, are maintained for public use.   |   |    | X   |
| 2.1.1.d   | Support the education of visitors and new residents about the customs and etiquette of the Hawaiian culture, as well as other cultures.   |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 2.1.1 of the Maui Island Plan.  |   |   |    |     |
| Objective   |   |   |    |     |
| 2.2   | A more effective and efficient planning and review process that incorporates the best available cultural resources inventory, protection techniques, and preservation strategies.   |   |    |     |
| Policies  |   |   |    |     |
| 2.1.2.a   | Ensure that the island has a comprehensive and up-to-date inventory of historic and archaeological resources, and their cultural significance.  | X |    |     |
| 2.1.2.b   | Require the update of existing planning and regulatory mechanisms to protect the natural, cultural, scenic, and historic resources within designated Heritage Areas.  |   |    | X   |
| 2.1.2.c   | Ensure that cultural, historic, and archaeological resources are protected for the benefit of present and future generations.   | X |    |     |
| Discussion: The Proposed Action will support Objective 2.2 of the Maui Island Plan.   |   |   |    |     |
| In connection with this EIS, Mason Architects prepared a Historic Structure Assessment report for the subject Water Lease. The main purpose of this study was to determine the historical significance of the EMI Aqueduct System. The report provides documentation of various components of the historic EMI Aqueduct System.   |   |   |    |     |
| To assess the Proposed Action, CSH was contracted to conduct an Archaeological LRFI for the License Area in East Maui, as well as a CIA, for the expressed purpose of identifying archaeological and cultural resources.  |   |   |    |     |
| An objective of the Proposed Action is to continue to maintain and operate the EMI Aqueduct System. Should the Water Lease not be issued, the EMI Aqueduct System may be abandoned if it is not economically feasible to operate, resulting in the EMI Aqueduct System falling into disrepair, losing its integrity as a historic resource.   |   |   |    |     |

| Table 5-10: Maui Island Plan   |   | S | NS | N/A |
|--|---|---|----|-----|
| <b>Objective</b>   |   |   |    |     |
| 2.3  | Enhance the island's historic, archaeological, and cultural resources.  |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| 2.1.3.a  | Identify and pursue a listing of the properties and sites on the State and National Register of Historic Places.  |   |    | X   |
| 2.1.3.b  | Support the use of easements, dedications, and other mechanisms to acquire, maintain, and protect lands with cultural, archaeological, and historic significance.   |   |    | X   |
| 2.1.3.c  | Support regulations to require developers, when appropriate, to prepare an Archaeological Inventory Survey, Cultural Impact Assessment, and Ethnographic Inventories that are reviewed and commented upon by the Office of Hawaiian Affairs, Native Hawaiian advisory bodies, the State Historic Preservation Division (SHPD), and the Office of Environmental Quality Control, and systematically comply with the steps listed in SHPD's administrative rules, including consultation and monitoring during construction phases of projects. | X |    |     |
| 2.1.3.d  | Promote the rehabilitation and adaptive reuse of historic sites, buildings, and structures.   |   |    | X   |
| 2.1.3.e  | Encourage property owners to register historic and archaeological sites on the State and National Register.   |   |    | X   |
| 2.1.3.f  | Support opportunities for public involvement with the intent to facilitate the protection and restoration of historic and archeological sites, including consultation with stakeholders.  |   |    | X   |
| 2.1.3.g  | Encourage the resolution of land title questions relating to Land Commission Awards and Royal patents.  |   |    | X   |
| 2.1.3.h  | Ensure compliance with historic preservation laws, and discourage demolition of properties that are determined to be eligible for listing on the National or State Register of Historic Places.   | X |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 2.3 of the Maui Island Plan.   |   |   |    |     |
| To assess the Proposed Action, CSH was contracted to conduct an Archaeological LRFI for the License Area in East Maui, as well as a CIA, for the expressed purpose of identifying archaeological and cultural resources.   |   |   |    |     |
| Mason Architects prepared a Historic Structure Assessment report documenting the historic EMI Aqueduct System. The Proposed Action continues the long-standing maintenance and use of the EMI Aqueduct System for the subject Water Lease. The main purpose of this study was to determine the historical significance of the EMI Aqueduct System. |   |   |    |     |
| Moreover, the Proposed Action does not incorporate any construction or development of new infrastructure.  |   |   |    |     |
| <b>Shoreline, Reefs, and Nearshore Waters</b>  |   |   |    |     |
| <b>Goal</b>  |   |   |    |     |
| 2.2  | An intact, ecologically functional system of reef, shoreline, and nearshore waters that are protected in perpetuity.  |   |    |     |
| <b>Objective</b>   |   |   |    |     |
| 2.2.1  | A more comprehensive and community-based Integrated Coastal Zone Management (ICZM) program.   |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| 2.2.1.a  | Encourage a management system that protects and temporarily rests the reef ecosystems from overuse.   |   |    | X   |
| 2.2.1.b  | Support the establishment of additional Marine Managed Areas (MMAs) and reef replenishment areas.   |   |    | X   |
| 2.2.1.c  | Work with appropriate agencies and community members to protect any special managed conservation areas from overuse and ensure that surrounding land uses do not contribute to the degradation of the natural resources, such as 'Ahihi-Kina'u Natural Area Reserve, Honolua-Mokulē'ia Bay Marine Life Conservation District, and Mākena State Park.  |   |    | X   |
| 2.2.1.d  | Incorporate the following into the MIP, where consistent with the MIP:<br>(1) Beach Management Plan for Maui;<br>(2) Coastal Nonpoint Pollution Control Program Management Plan;<br>(3) Implementation Plan for Polluted Runoff Control; and<br>(4) Ocean Resource Management Plan.   |   |    | X   |

| Table 5-10: Maui Island Plan   |   | S | NS | N/A |
|--|---|---|----|-----|
| 2.2.1.e  | Support greater coordination among governmental agencies involved with the protection of the island's marine resources.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 2.2.1 of the Maui Island Plan.  |   |   |    |     |
| <b>Objective</b>   |   |   |    |     |
| 2.2.2  | Improved reef health, coastal water quality, and marine life  |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| 2.2.2.a  | Create additional mechanisms where needed to contain and control runoff and pollution   |   |    | X   |
| 2.2.2.b  | Allow extraction of high quality, Class A, low silt sands only when they will be used to protect or restore Maui's shorelines and beaches.  |   |    | X   |
| 2.2.2.c  | Carefully manage beach nourishment activities to protect the coastal and marine ecosystem.  |   |    | X   |
| 2.2.2.d  | Require, where appropriate, a buffer between landscaped areas and the shoreline, gulches, and streams to reduce the runoff of fertilizers, pesticides, herbicides, and other pollutants into coastal waters.  |   |    | X   |
| 2.2.2.e  | Strictly regulate shoreline armoring in accordance with adopted Shoreline Rules, with an intent to protect the coastal and marine ecosystem.  |   |    | X   |
| 2.2.2.f  | Support greater protection of Keālia Pond National Wildlife Refuge through the following:<br>(1) Enhancement of marine ecosystems;<br>(2) Beach and sand dune restoration; and<br>(3) Expansion of habitat for Maui's threatened or endangered sea turtles, birds, and other species. |   |    | X   |
| 2.2.2.h  | Encourage the State to conduct a regular census of fish populations and monitor coral health.   |   |    | X   |
| 2.2.2.i  | Encourage the State to significantly increase the number of park rangers, enforcement officers, and marine biologists to protect coastal resources.   |   |    | X   |
| 2.2.2.j  | Encourage the State to prohibit the collection and exportation of fish, coral, algae, and other marine species for the ornamental and aquarium trade.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 2.2.2 of the Maui Island Plan.  |   |   |    |     |
| <b>Objective</b>   |   |   |    |     |
| 2.2.3  | Water quality that meets or exceeds State Clean Water Act standards   |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| 2.2.3.a  | Reduce the amount of impervious surface and devise site plan standards that aim to minimize storm runoff and nonpoint source (NPS) pollution.   |   |    | X   |
| 2.2.3.b  | Support the revision of existing regulations to require an Erosion and Sedimentation Control Plan (ESCP) for development activities that may pose a threat to water quality   |   |    | X   |
| 2.2.3.c  | Require an on-site monitoring program, where applicable, when grading may pose a threat to water quality or when recommended in the ESCP.   |   |    | X   |
| 2.2.3.d  | Avoid development actions that impair Maui's reef systems and remove identified stressors.  | X |    |     |
| 2.2.3.e  | Phase out cesspools and restrict the use of septic systems in ecologically sensitive coastal areas by converting to environmentally-friendly alternative sewage treatment systems, and connecting to central sewerage systems when and where feasible.                                |   |    | X   |
| 2.2.3.f  | Prohibit the development of new wastewater injection wells, except when unavoidable for public health and safety purposes.  |   |    | X   |
| 2.2.3.g  | Ensure that the County upholds its affirmative duty under the Clean Water Act by monitoring and reducing point and NPS pollution to help safeguard coastal waters.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 2.2.3 of the Maui Island Plan.   |   |   |    |     |
| SE and MRC jointly prepared a report assessing the streams and ocean water chemistry to depict the effects of stream discharge of the East Maui streams on the nearshore ocean environment. Results of the investigation indicate that the effects of stream water on marine waters must be considered minor in the nearshore habitats of East Maui. This result is supported by the physical processes associated with relatively small input of stream water |   |   |    |     |

| Table 5-10: Maui Island Plan   |   | S | NS | N/A |
|--|---|---|----|-----|
| to the vastly larger ocean environment. The prevailing condition of extreme mixing by physical forces is the most important factor in diminishing the zone of influence of stream water in the marine setting. Observations of the habitats in these transition zones indicated that they were composed primarily of sand and barren rock. Owing to continual, intense wave energy, these nearshore areas do not constitute important habitats for coral reef communities and associated marine species. Beyond the narrow transition zone, the influence of stream water is minimal owing to rapid and intense mixing.  |   |   |    |     |
| <b>Objective</b>   |   |   |    |     |
| 2.2.4  | Acquire additional shoreline lands and shoreline access rights.   |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| 2.2.4.a  | Promote the use of conservation easements, land trusts, transfer and purchase of development rights, and mitigation banking.  |   |    | X   |
| 2.2.4.b  | Require the dedication of public beach and rocky shoreline access ways to and along the shoreline where it serves a practical public interest as a condition of development or subdivision approval; future subdivisions and developments shall be consistent with and effectuate, to the extent practicable, the Shoreline Access Inventory Update - Final Report (March 2005), and its updates. |   |    | X   |
| 2.2.4.c  | Incorporate the Shoreline Access Inventory Update - Final Report (March 2005), and its regular updates, into this plan.   |   |    | X   |
| 2.2.4.d  | Identify access points while further acquiring key shoreline parcels and easement rights to enhance and protect beach access and shoreline recreation.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 2.2.4 of the Maui Island Plan.  |   |   |    |     |
| <b>Watersheds, Streams, and Wetlands</b>   |   |   |    |     |
| <b>Goal</b>  |   |   |    |     |
| 2.3  | Healthy watersheds, streams, and riparian environments.   |   |    |     |
| <b>Objective</b>   |   |   |    |     |
| 2.3.1  | Greater protection and enhancement of watersheds, streams, and riparian environments.   |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| 2.3.1.a  | All present and future watershed management plans shall incorporate concepts of ahupua'a management based on the interconnectedness of upland and coastal ecosystems/species.   |   |    | X   |
| 2.3.1.b  | Continue to support and be an active member of watershed partnerships.  | X |    |     |
| 2.3.1.c  | Support the establishment of regional water trusts, composed of public and private members, to manage water resources.  |   |    | X   |
| 2.3.1.d  | Support regulations to require developments to utilize ahupua'a management practices.   |   |    | X   |
| 2.3.1.e  | Work with private and non-profit entities to educate the public about the connection between upland activities within the watershed and the impacts on nearshore ecosystems and coral reefs.  |   |    | X   |
| 2.3.1.f  | Provide adequate funding and staff to develop and implement watershed protection plans and policies, including acquisition and management of watershed resources and land.  |   |    | X   |
| 2.3.1.g  | Encourage the State to mandate instream assessment to provide adequate water for native species.  | X |    |     |
| 2.3.1.h  | Maui will protect all watersheds and streams in a manner that guarantees a healthy, sustainable riparian environment.   | X |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 2.3.1 of the Maui Island Plan.   |   |   |    |     |
| The Proposed Action and the issuance of a Water Lease will include a requirement that a Watershed Management Plan be developed and implemented for East Maui. In addition, EMI was a founding member of the EMWP and continues to be an active member.   |   |   |    |     |
| The CWRM D&O was purposefully designed to increase the practical knowledge of stream flows and native habitat restoration. The CWRM D&O establishes a quantity of water that must remain in each stream subject to that D&O. Each stream was evaluated individually for its potential for usage, habitat restoration, recreational opportunities, and scenic values, among other things. The CWRM D&O ensures that should the Water Lease be issued, there will be a prudent use of the surface water resources in the License Area. The Proposed Action is not contrary to the CWRM D&O, and will exercise a conservation ethic in use of the State's natural resources, and ensure compatibility between |   |   |    |     |



| Table 5-10: Maui Island Plan  |   | S | NS | N/A |
|---|---|---|----|-----|
| land-based activities and natural resources and ecological systems. The amount of water awarded by the Water Lease is subject to all applicable requirements under HRS § 171-58. HRS § 171-58(c), (d), and (e) articulate terms for the disposition of the Water Lease. HRS § 171-58(e) requires that any new lease of water rights "shall contain a covenant that requires the lessee and the department of land and natural resources to jointly develop and implement a watershed management plan. The board shall not approve any new lease of water rights without the foregoing covenant or a watershed management plan." |   |   |    |     |
| At the March 22, 2019 meeting of the BLNR, the DLNR staff proposed a watershed management cost share formula and contribution for leases of water rights pursuant to HRS § 171-58(e).. Although the BLNR deferred decision-making on the staff's proposal, the consensus was that compliance with the watershed management provision of HRS § 171-58(e) should be determined on a case-by-case basis for each individual water lease.   |   |   |    |     |
| A&B was a founding member of the EMWP, which was the first watershed partnership in the State of Hawai'i and which served as a model for other watershed partnerships throughout the State. Since the founding of the EMWP in 1991, A&B, on its own and through EMI, has actively participated in watershed partnership activities through monetary contributions and in-kind services. Under the Proposed Action, it is anticipated that EMI and/or Mahi Pono will continue to pursue watershed management activities.   |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 2.3.2   | Decreased NPS and point source pollution.   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 2.3.2.a   | Enforce water pollution related standards and codes.  |   |    | X   |
| 2.3.2.b   | Support the use of low impact development (LID) Techniques such as those described in the State of Hawai'i LID Practitioner's Guide (June 2006), as amended.              |   |    | X   |
| 2.3.2.c   | Encourage farmers and ranchers to use agricultural best management practices (BMPs) to address NPS pollution.   | X |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 2.3.2 of the Maui Island Plan.  |   |   |    |     |
| The Proposed Action would allow for the continued conveyance of water from East Maui to the agricultural fields in Central Maui for the transition to a diversified agricultural farming model. The various operations that occur within these fields as a result of the Proposed Action will adopt water quality standards and best management practices, and regulate point and nonpoint sources of pollution to protect coastal waters where feasible.   |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 2.3.3   | Preserve existing wetlands and improve and restore degraded wetlands.   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 2.3.3.a   | Prohibit the destruction and degradation of existing upland, mid-elevation, and coastal wetlands.   |   |    | X   |
| 2.3.3.b   | Support and fund wetland protection and improvement, and restoration of degraded wetlands.  |   |    | X   |
| 2.3.3.c   | Where applicable, require developers to provide a wetland protection buffer and/or other protective measures around and between development and wetland resources.        |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 2.3.3 of the Maui Island Plan.   |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 2.3.4   | Greater preservation of native flora and fauna biodiversity to protect native species   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 2.3.4.a   | Work with appropriate agencies to eliminate feral ungulate populations and invasive species.  |   |    | X   |
| 2.3.4.b   | Encourage the State to provide adequate funding to preserve biodiversity, protect native species, and contain or eliminate invasive species.                              |   |    | X   |
| 2.3.4.c   | Support the work of conservation groups and organizations that protect, reestablish, manage, and nurture sensitive ecological areas and threatened indigenous ecosystems. |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 2.3.4 of the Maui Island Plan.   |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |

| Table 5-10: Maui Island Plan   |  | S | NS | N/A |
|--|--|---|----|-----|
| 2.3.5  | Limited development in critical watershed areas.   |   |    |     |
| Policies   |  |   |    |     |
| 2.3.5.a  | Discourage development and subdivision of land within critical watersheds and in areas susceptible to high erosion and sediment loss   |   |    | X   |
| 2.3.5.b  | Designate critical watershed areas as conservation lands.  |   |    | X   |
| 2.3.5.c  | Strongly encourage new subdivisions and developments that are proximate to environmentally sensitive watershed resources to prepare and implement Conservation Subdivision Design plans.   |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 2.3.5 of the Maui Island Plan. The License Area is within one of the two critical watershed areas identified in the MIP. No development is proposed within this area, all or most of which is in the Conservation District, under the Proposed Action.   |  |   |    |     |
| Objective  |  |   |    |     |
| 2.3.6  | Enhance the vitality and functioning of streams, while balancing the multiple needs of the community.  |   |    |     |
| Policies   |  |   |    |     |
| 2.3.6.a  | Protect and enhance natural streambeds and discourage stream alteration.   | X |    |     |
| 2.3.6.b  | Work with appropriate agencies to establish minimum stream flow levels and ensure adequate stream flow to sustain riparian ecosystems, traditional kalo cultivation, and self-sustaining ahupua'a.   | X |    |     |
| 2.3.6.c  | Respect and participate in the resolution of native Hawaiian residual land and water rights issues (kuleana lands, ceded lands, and historic agricultural and gathering rights).   | X |    |     |
| 2.3.6.d  | Ensure that stream flows implement laws and policies found in the State Constitution and Water Code.   | X |    |     |
| 2.3.6.e  | Work with appropriate agencies and stakeholders to establish minimum stream flow levels, promote actions to support riparian habitat and the use of available lo'i, and maintain adequate flows for the production of healthy kalo crops.  | X |    |     |
| Discussion: The Proposed Action will support Objective 2.3.6 of the Maui Island plan.  |  |   |    |     |
| The CWRM D&O was purposefully designed to increase the practical knowledge of stream flows and native habitat restoration. The CWRM D&O establishes a quantity of water that must remain in each stream. Each stream a part of the contested case in East Maui was evaluated individually for their potential for usage, habitat restoration, recreational opportunities, and scenic values. The CWRM D&O ensures the prudent use of the surface water resources in the License Area with the issuance of the Water Lease. The CWRM D&O ordered that certain streams, designated as "kalo and community streams", will be fully restored, protecting those special areas that depend upon these streams. These streams support communities that depend upon kalo cultivation, an element of Hawai'i's cultural heritage. Should the Water Lease be issued, the Proposed Action will be required to be in compliance with the CWRM D&O. The Proposed Action is not contrary to the CWRM D&O, and will exercise a conservation ethic in use of the State's natural resources, and ensure compatibility between land-based activities and natural resources and ecological systems. |  |   |    |     |
| Wildlife and Natural Areas   |  |   |    |     |
| Goal   |  |   |    |     |
| 2.4  | Maui's natural areas and indigenous flora and fauna will be protected.   |   |    |     |
| Objective  |  |   |    |     |
| 2.4.1  | A comprehensive management strategy that includes further identification, protection, and restoration of indigenous wildlife habitats.   |   |    |     |
| Policies   |  |   |    |     |
| 2.4.1.a  | Identify and inventory the following:<br>(1) Natural, recreational, and open space resources;<br>(2) Flora and fauna with medium, high, and very high concentrations of threatened or endangered species; and<br>(3) Location and extent of invasive species.  | X |    |     |
| 2.4.1.b  | Require flora and fauna assessment and protection plans for development in areas with concentrations of indigenous flora and fauna; development shall comply with the assessment and protection plan and shall use the avoidance, minimization, and mitigation approach respectively, with an emphasis on avoidance. | X |    |     |

| Table 5-10: Maui Island Plan  |  | S | NS | N/A |
|---|--|---|----|-----|
| 2.4.1.c   | Support the implementation of Hawai'i's Comprehensive Wildlife Conservation Strategy (October 2005).   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 2.4.1 of the Maui Island Plan.<br><br>SWCA Environmental Consultants was contracted to assess the Proposed Action and the potential impacts on the terrestrial flora and fauna resources, including the potential for the presence of state or federally listed threatened, endangered, proposed, or candidate species or rare species. In summary, the impacts would be minimal from what they have been over the past century. The EMI staff will be trained by qualified individuals on appropriate conduct and measures to take within the License Area during future maintenance work. This will encourage the protection of the rare and endangered plant and animal species and habitats native to Hawai'i that have been identified in the region. The EMI Aqueduct System will be maintained in a way that is compatible with the existing environment and natural resources in the region.<br><br>The Proposed Action and the issuance of a Water Lease will also include a requirement that a Watershed Management Plan be developed and implemented for East Maui. In addition, EMI was a founding member of the EMWP and continues to be an active member. |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 2.4.2   | A decrease in invasive species through programs and partnerships that eradicate undesirable species and protect native habitat.  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 2.4.2.a   | Prevent the introduction of invasive species at all of Maui's airports and harbors.  |   |    | X   |
| 2.4.2.b   | Encourage the State to increase funding in support of invasive species interception, control, and eradication.   |   |    | X   |
| 2.4.2.c   | Encourage the State to develop programs that allow students to participate in invasive species eradication projects.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 2.4.2 of the Maui Island Plan.   |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 2.4.3   | Greater protection of sensitive lands, indigenous habitat, and native flora and fauna.   |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 2.4.3.a   | Secure an interconnected network of sensitive lands, greenways, watercourses, and habitats.  |   |    | X   |
| 2.4.3.b   | Protect Maui's sensitive lands.  |   |    | X   |
| 2.4.3.c   | Promote innovative environmental-planning methods and site-planning standards that preserve and re-establish indigenous flora and fauna habitat, to preserve and restore connected habitat corridors and open space.   | X |    |     |
| 2.4.3.d   | Utilize protection tools such as conservation easements, land trusts, land banks, Purchase of Developments Rights, Transfer of Development Rights, and other stewardship tools to acquire natural areas.   |   |    | X   |
| 2.4.3.e   | Encourage discussions with communities to designate heritage areas that protect recreational and cultural lifestyles and resources.  |   |    | X   |
| 2.4.3.f   | Support the expansion of Haleakalā National Park, and the creation of new national parks, where appropriate and supported by local communities.  |   |    | X   |
| 2.4.3.g   | Encourage reforestation efforts that increase native species' habitat.   | X |    |     |
| 2.4.3.h   | Utilize the Natural Area Partnership Program (NAPP) and other programs to protect natural lands.   |   |    | X   |
| 2.4.3.i   | Support increased dedicated funding for the acquisition, protection, restoration, or preservation of important natural areas or open space through the following: grants from the Land and Water Conservation Fund; dedicated funding from real property taxes or other appropriate revenues; bond issues; real estate transfer tax; revenues from the Transient Accommodations Tax; development mitigation fees; and other appropriate funding sources. |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 2.4.3 of the Maui Island Plan.<br><br>The CWRM D&O was purposefully designed to increase the practical knowledge of stream flows and native habitat restoration. The CWRM D&O establishes a quantity of water that must remain in each stream. Each stream a part of the contested case in East Maui was evaluated individually for their potential for usage, habitat restoration, recreational opportunities, and scenic values. The CWRM D&O ensures the prudent use of the surface water  |  |   |    |     |

| Table 5-10: Maui Island Plan  |   | S | NS | N/A |
|---|---|---|----|-----|
| resources in the License Area with the issuance of the Water Lease. Should the Water Lease be issued, the Proposed Action will be required to be in compliance with the CWRM D&O. The Proposed Action is not contrary to the CWRM D&O, and will exercise a conservation ethic in use of the State's natural resources, and ensure compatibility between land-based activities and natural resources and ecological systems. |   |   |    |     |
|   |   |   |    |     |
| Scenic Resources  |   |   |    |     |
| Goal  |   |   |    |     |
| 2.5   | Maui will continue to be a beautiful island steeped in coastal, mountain, open space, and historically significant views that are preserved to enrich the residents' quality of life, attract visitors, provide a connection to the past, and promote a sense of place.   |   |    |     |
| Objective   |   |   |    |     |
| 2.5.1   | A greater level of protection for scenic resources.   |   |    |     |
| Policies  |   |   |    |     |
| 2.5.1.a   | Protect views to include, but not be limited to, Haleakalā, Īao Valley, the Mauna Kahalawai (West Maui Mountains), Pu'u Ō'la'i, Kaho'olawe, Molokini, Moloka'i, and Lāna'i, Mauna Kea, Mauna Loa, sea stacks, the Pacific Ocean, and significant water features, ridgelines, and landforms.                       |   |    | X   |
| 2.5.1.b   | Identify, preserve, and provide ongoing management of important scenic vistas and open space resources, including mauka-to-makai and makai-to-mauka view planes.  |   |    | X   |
| 2.5.1.c   | Protect "night sky" resources by encouraging the implementation of ambient light ordinances and encouraging conversion of all sources that create excessive light pollution, affecting our ability to view the stars.   |   |    | X   |
| 2.5.1.d   | Protect ridgelines from development where practicable to facilitate the protection of public views.   |   |    | X   |
| 2.5.1.e   | Protect scenic resources along Maui's scenic roadway corridors.   |   |    | X   |
| Discussion: The Proposed Action will support Objective 2.5.1 of the Maui Island Plan.   |   |   |    |     |
| Irrigating the fields in Central Maui, a region with very little natural rainfall, would maintain existing open space and preserve existing vistas, as the land will be in cultivated green space rather than remaining fallow or being developed.  |   |   |    |     |
|   |   |   |    |     |
| Objective   |   |   |    |     |
| 2.5.2   | Reduce impacts of development projects and public-utility improvements on scenic resources  |   |    |     |
| Policies  |   |   |    |     |
| 2.5.2.a   | Enforce the policies and guidelines of the SMA regarding the protection of views.   |   |    | X   |
| 2.5.2.b   | Require any new subdivision of land, development, or redevelopment adjacent to a "high" or "exceptional" scenic corridor to submit an impact assessment of the project's scenic impacts; this assessment shall use the avoidance, minimization, and mitigation steps respectively, with an emphasis on avoidance. |   |    | X   |
| 2.5.2.c   | Require appropriate building setbacks and limits on wall heights to protect views along scenic corridors.   |   |    | X   |
| 2.5.2.d   | Encourage the State of Hawai'i Board of Land and Natural Resources to deny any development within the State Conservation District that interferes with a scenic landscape or disrupts important open space resources.   |   |    | X   |
| 2.5.2.e   | Require Urban Design and Review Board (UDRB) review and approval of utility poles, facilities, and other visible infrastructure improvements along scenic corridors.  |   |    | X   |
| 2.5.2.f   | Ensure little or no effect on scenic resources from utility improvements, primarily power poles.  |   |    | X   |
| 2.5.2.g   | Protect scenic vistas from intrusion by power poles.  |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 2.5.2 of the Maui Island Plan.  |   |   |    |     |
|   |   |   |    |     |
| Objective   |   |   |    |     |
| 2.5.3   | Greater protection of and access to scenic vistas, access points, and scenic lookout points.  |   |    |     |
| Policies  |   |   |    |     |
| 2.5.3.a   | Protect, enhance, and acquire access to Maui's scenic vistas and resources.   | X |    |     |

| Table 5-10: Maui Island Plan   |  | S | NS | N/A |
|--|--|---|----|-----|
| <b>Discussion:</b> The Proposed Action will support Objective 2.5.3 of the Maui Island Plan.   |  |   |    |     |
| Irrigating the fields in Central Maui, a region with very little natural rainfall, would maintain existing open space and preserve existing vistas, as the land will be in cultivated green space rather than remaining fallow or being developed.   |  |   |    |     |
| <b>Natural Hazards</b>   |  |   |    |     |
| <b>Goal</b>  |  |   |    |     |
| 3.1  | Maui will be disaster resilient.   |   |    |     |
| <b>Objective</b>   |  |   |    |     |
| 3.1.1  | Increased inter-agency coordination  |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| 3.1.1.a  | Reinforce the island's preparedness capacity by:<br>(1) Applying the latest data-gathering techniques/technology;<br>(2) Pursuing funding opportunities;<br>(3) Improving monitoring and advance warning systems;<br>(4) Fostering public awareness; and<br>(5) Working with external agencies to coordinate disaster mitigation and response. |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 3.1.1 of the Maui Island Plan.  |  |   |    |     |
| <b>Objective</b>   |  |   |    |     |
| 3.1.2  | Greater protection of life and property.   |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| 3.1.2.a  | Identify critical infrastructure, lifelines, roads, and populations that are vulnerable to coastal hazards, and encourage strategic retreat and relocation to safer areas.   |   |    | X   |
| 3.1.2.b  | Consider the location of dams, reservoirs, holding ponds, and other water-containing entities that are upstream of inhabited areas to anticipate, avoid, and mitigate inundation risks, and discourage new development in areas where possible inundation hazards may exist.   |   |    | X   |
| 3.1.2.c  | Strengthen current development standards to minimize destruction of land and property.   |   |    | X   |
| 3.1.2.d  | Encourage the use of construction techniques that reduce the potential for damage from natural hazards.  |   |    | X   |
| 3.1.2.e  | Increase the County's resilience to drought.   | X |    |     |
| 3.1.2.f  | Increase food and energy security through local production and storage.  | X |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 3.1.2 of the Maui Island Plan.   |  |   |    |     |
| <p>The Water Lease will allow for the transition of approximately 30,000 acres of former sugar cane land in Central Maui to diversified agriculture. The proposed diversified agriculture operation will aid in achieving the State's goal of doubling local food production to reduce dependence on overseas sources.</p> <p>The Upcountry Water System relies on 80-90% of its water from three surface water treatment plants, which makes the system extremely vulnerable to droughts and presents a challenge to the MDWS. For decades, the Upcountry region has experienced voluntary and mandatory water use restrictions imposed on residential and agricultural users during droughts, primarily during dry season, often negatively impacting the productivity of the farmers. One of the three surface water sources is delivered by the EMI Aqueduct System through the Wailoa Ditch, which is treated at the Kamole-Weir Water Treatment Plant. The average daily use by the MDWS from the Wailoa Ditch has been 7.1 mgd, which includes water for the Kamole facility, averaging 3.6 mgd and the KAP. This accounts for a major portion of the water supplied to the Upcountry Water System.</p> <p>The Nāhiku community receives water directly from the EMI Aqueduct System via a development tunnel in the Koolau Ditch. The tunnel draws up 20,000 to 45,000 gallons per day, dependent on weather, directly from the EMI Aqueduct System. The water serves about 43 water meters located along Nāhiku Road. One meter is classified as an agricultural use while all the others are classified as single-family use.</p> <p>Without the issuance of the Water Lease under the Proposed Action, the EMI Aqueduct System may be left in an inoperable state, leaving Upcountry Maui, and the Nāhiku community without a reliable source of water.</p> |  |   |    |     |

| Table 5-10: Maui Island Plan  |   | S | NS | N/A |
|---|---|---|----|-----|
| <b>Objective</b>  |   |   |    |     |
| 3.1.3   | A more coordinated emergency response system that includes clearly defined and mapped evacuation routes.  |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 3.1.3.a   | Identify and expand shelter facilities and evacuation routes away from areas susceptible to natural hazards.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 3.1.3 of the Maui Island Plan.   |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 3.1.4   | A more educated and involved public that is aware of and prepared for natural hazards   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 3.1.4.a   | Promote public education and involvement related to natural hazards awareness and preparedness.   |   |    | X   |
| 3.1.4.b   | Coordinate a multi-agency effort to establish and promote a comprehensive public education program that will focus on practical approaches to preparedness, damage prevention, and hazard mitigation.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 3.1.4 of the Maui Island Plan.   |   |   |    |     |
| <b>Economic Development</b>   |   |   |    |     |
| <b>Goal</b>   |   |   |    |     |
| 4.1   | Maui will have a balanced economy composed of a variety of industries that offer employment opportunities and well-paying jobs and a business environment that is sensitive to resident needs and the island's unique natural and cultural resources. |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 4.1.1   | A more diversified economy  |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 4.1.1.a   | Encourage an economy that is driven by innovation, research and development, and human resource development, including but not limited to, increasing technology- and knowledge-based sectors to be a major component in Maui County's economic base. |   |    | X   |
| 4.1.1.b   | Support the creation of new jobs and industries that provide a living wage.   | X |    |     |
| 4.1.1.c   | Facilitate and expedite permits and approvals   |   |    | X   |
| 4.1.1.d   | Develop linkages and partnerships among international research and development activities and Maui businesses.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 4.1.1 of the Maui Island Plan.  |   |   |    |     |
| The issuance of the Water Lease will allow for the conversion of the agricultural fields in Central Maui to a diversified agricultural operation. Reopening up the agricultural fields for cultivation would increase employment directly and indirectly for the island of Maui and the State. It is projected that approximately 1,140 jobs would be created from implementation of the Proposed Action at full operation. |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 4.1.2   | Increase activities that support principles of sustainability   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 4.1.2.a   | Support industries that are sustainable, and culturally and environmentally sensitive.  | X |    |     |
| 4.1.2.b   | Encourage and support local businesses.   | X |    |     |
| 4.1.2.c   | Substitute imports with locally-produced services and products where practicable.   | X |    |     |
| 4.1.2.d   | Support the development of economic development clusters in targeted industry sectors.  |   |    | X   |
| 4.1.2.e   | Encourage all businesses to save energy, water, and other resources.  | X |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 4.1.2 of the Maui Island Plan.  |   |   |    |     |
| The Water Lease under the Proposed Action will allow for the transition of approximately 30,000 acres of former sugar cane land in Central Maui to diversified agriculture. The proposed diversified agriculture operation will aid in achieving the State's goal of doubling local food production to reduce dependence on oversea sources.  |   |   |    |     |
| In the process of doing so, Mahi Pono's operations can offer opportunities for numerous secondary economic  |   |   |    |     |



| Table 5-10: Maui Island Plan   |  | S | NS | N/A |
|--|--|---|----|-----|
| <p>benefits—offering entrepreneurship and small-business owners opportunities for value-added agricultural products whether in retail or food establishments, welcoming innovative methods and approaches for the cultivation of agricultural products, expanding markets for Hawai'i-grown products, providing construction activity for needed facilities, setting the foundation for agricultural cooperatives for farmers, providing jobs directly and indirectly for all segments of Hawai'i's population, especially on a neighbor island where employment opportunities can be limited.</p> <p>Mahi Pono intends to offer approximately 800 acres of various sized community farm blocks in Central Maui to local farmers. Farmers also would have access to Mahi Pono's equipment, management, budgeting and marketing services.</p> <p>Mahi Pono's irrigation engineering team is designing a high-efficiency irrigation system. The new irrigation system will reduce water usage by: (1) using automatic, real-time irrigation sensors to deliver precise amounts of water efficiently; (2) recycle and re-use all water used in Mahi Pono's processing plants; and (3) integrate various live technology feeds to constantly monitor plant, soil, and tree health. Reducing water usage through effective irrigation assures the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.</p> <p>Mahi Pono intends to use power from two hydro-electric facilities to provide power to pumps and wells, and other infrastructure. Mahi Pono is also committing land to the production of solar energy for the public utility system.</p> |  |   |    |     |
| <b>Objective</b>   |  |   |    |     |
| 4.1.3  | Improve the island's business climate.   |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| 4.1.3.a  | Upgrade, maintain the quality of, and improve access to telecommunications infrastructure.   |   |    | X   |
| 4.1.3.b  | Ensure an adequate supply of affordable workforce housing.   |   |    | X   |
| 4.1.3.c  | Develop neighborhoods and communities that are attractive to the workforce of a diversified economy.   |   |    | X   |
| 4.1.3.d  | Encourage, nurture, and reward entrepreneurship and innovation.  |   |    | X   |
| 4.1.3.e  | Encourage employers to establish incentive programs. Support flexibility in workforce policies compatible with business and quality of life goals.   |   |    | X   |
| 4.1.3.f  | Assist community development organizations with revitalization and development of neighborhoods and communities that are attractive to the workforce of a diversified economy.   | X |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 4.1.3 of the Maui Island Plan.   |  |   |    |     |
| <p>Mahi Pono intends to offer approximately 800 acres of various sized community farm blocks in Central Maui to local farmers. Farmers also would have access to Mahi Pono's equipment, management, budgeting and marketing services.</p>  |  |   |    |     |
| <b>Tourism</b>   |  |   |    |     |
| <b>Goal</b>  |  |   |    |     |
| 4.2  | A healthy visitor industry that provides economic well-being with stable and diverse employment opportunities.   |   |    |     |
| <b>Objective</b>   |  |   |    |     |
| 4.2.1  | Increase the economic contribution of the visitor industry to the island's environmental well-being for the island's residents' quality of life.   |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| 4.2.1.a  | Engage the visitor industry in the growth of emerging sectors where practicable  |   |    | X   |
| 4.2.1.b  | Support the implementation of the Maui County Tourism Strategic Plan (TSP), when consistent with the MIP.  |   |    | X   |
| 4.2.1.c  | Focus economic growth in the visitor industry through enhanced visitor experiences and an emphasis on attracting higher-spending.  |   |    | X   |
| 4.2.1.d  | Provide a rich visitor experience, while protecting the island's natural beauty, culture, lifestyles, and aloha spirit.  |   |    | X   |
| 4.2.1.e  | Diversify the tourism industry by supporting appropriate niche activities such as ecotourism, cultural tourism, voluntourism, ag-tourism, health and wellness tourism, educational tourism, medical tourism, and other viable tourism-related businesses in appropriate locations. |   |    | X   |

| Table 5-10: Maui Island Plan  |   | S | NS | N/A |
|---|---|---|----|-----|
| 4.2.1.f   | Recognize the important economic contributions that the visitor industry makes and support a healthy and vibrant visitor industry.  |   |    | X   |
| 4.2.1.g   | Support the increased availability of kama'āina discount programs   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 4.2.1 of the Maui Island Plan.   |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 4.2.2   | Comprehensively manage future visitor-unit expansion.   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 4.2.2.a   | Mitigate the impact of tourism on the host culture, natural environment, and resident lifestyles.   |   |    | X   |
| 4.2.2.b   | Allow, where permitted by the community plan, the development of business hotels and small, sensitively-designed inns.  |   |    | X   |
| 4.2.2.c   | Manage impacts from transient vacation rentals, hotels, bed and breakfast units, timeshares, and resort condominiums on residential communities, public infrastructure, and community facilities. |   |    | X   |
| 4.2.2.d   | Discourage supplanting of existing island housing to visitor accommodations that may have a negative impact on long-term rental housing, price of housing, and price of land.                     |   |    | X   |
| 4.2.2.e   | Allow the designation of retreat/mini-conference centers in appropriate locations through the community plan process.   |   |    | X   |
| 4.2.2.f   | Community plans should consider establishing standards such as limits on building size, room count, and the number of inns, if any, that will be allowed in small towns.                          |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 4.2.2 of the Maui Island Plan.   |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 4.2.3   | Maximize residents' benefits from the visitor industry.   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 4.2.3.a   | Promote a desirable island population by striving to not exceed an island-wide visitor population of roughly 33 percent of the resident population.   |   |    | X   |
| 4.2.3.b   | Use the required General Plan Annual Status Report to monitor trends related to residents and visitors.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 4.2.3 of the Maui Island Plan.   |   |   |    |     |
| <b>Agriculture</b>  |   |   |    |     |
| <b>Goal</b>   |   |   |    |     |
| 4.3   | Maui will have a diversified agricultural industry contributing to greater economic, food, and energy security and prosperity   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 4.3.1   | Strive for at least 85 percent of locally-consumed fruits and vegetables and 30 percent of all other locally-consumed foods to be grown in-State.   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 4.3.1.a   | Strive to substitute food/agricultural product imports with a reliable supply of locally produced food and agricultural products.   | X |    |     |
| 4.3.1.b   | Facilitate and support the direct marketing/sale of the island's agricultural products to local consumers, through farmers markets and similar venues.  |   |    | X   |
| 4.3.1.c   | Encourage growing a diverse variety of crops and livestock to ensure the stewardship of our land while safeguarding consumer safety.  | X |    |     |
| 4.3.1.d   | Work with the State to regulate and monitor genetically-modified-organism (GMO) crops to ensure the safety of all crops and label all GMO products.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 4.3.1 of the Maui Island Plan.  |   |   |    |     |
| <p>"If agriculture on Maui is to be economically viable, the State and County will need to ensure that farmers have access to sufficient supplies of affordable water." "For agriculture to flourish in Central Maui, reliable and affordable supplies of water will need to be made available to the region. Without an adequate supply of affordable water, farmers may be reluctant to invest capital in agricultural production" (MIP. 4-18).</p> <p>The Proposed Action will enable for the continued conveyance of water to support conversion to diversified agriculture. Mahi Pono plans to convert the agricultural lands in Central Maui generally to community farms, orchards</p> |   |   |    |     |

| Table 5-10: Maui Island Plan  |  | S | NS | N/A |
|---|--|---|----|-----|
| <p>(citrus, mac nuts, and beverage crops), tropical fruits, row and annual crops, energy crops, irrigated and nonirrigated pasture, and green energy crops. Currently the agricultural land is mostly fallow with minimal agricultural activity. Ultimately, the terms of the Water Lease will determine whether and the extent to which the water will be affordable to farmers. Should the Water Lease not be issued, the ongoing agricultural activities may be unfeasible. Issuance of the Water Lease would facilitate the transition of the agricultural fields in Central Maui to a productive diversified agricultural operation.</p> <p>Moreover, the diversified agriculture operation will aid in achieving the goal of increasing the percentage of locally-consumed fruits, vegetables and other foods being grown in-State. In the event of a major catastrophe, limiting overseas supplies, this diversified agriculture initiative could help supply the State with food, and substitute imports with a reliable supply of locally produced food and agricultural products.</p> <p>The EMI Aqueduct System conveys water to the MDWS, which in turn provides water for domestic and agricultural needs in Upcountry Maui, including KAP.</p> <p>Presently, the MDWS serves the KAP with non-potable water from diversions of the same streams that serve the Kamole-Weir Water Treatment Plant through the Wailoa Ditch. KAP currently consists of 31 farm lots, ranging in size from 7 to 29 acres, for a total of approximately 445 acres, supporting 26 farmers, and is planned to expand by 262 acres. Issuance of the Water Lease would ensure that KAP, and the planned expansion, have a reliable source of water to meet its water demands.</p> |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 4.3.2   | Maintain or increase agriculture's share of the total island economy.  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 4.3.2.a   | Encourage the export of the island's agricultural products to offshore markets.  | X |    |     |
| 4.3.2.b   | Support infrastructure investments at harbors, such as ferry service, airports, and other facilities for the rapid and cost-effective export of island-grown products.   |   |    | X   |
| 4.3.2.c   | Encourage the continued viability of sugar cane production, or other agricultural crops, in central Maui and all of Maui Island.   | X |    |     |
| 4.3.2.d   | Work with the State to reduce excise taxes for commercial agricultural products produced within the State.   |   |    | X   |
| 4.3.2.e   | Coordinate with appropriate State and Federal Departments and agencies, private shipping companies, and farmers associations to assist in the rapid and cost-effective export of Maui's agricultural products to off-island markets. |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 4.3.2 of the Maui Island Plan.  |  |   |    |     |
| <p>The Proposed Action will enable for the continued conveyance of water to support conversion to diversified agriculture. Mahi Pono plans to convert the agricultural lands in Central Maui generally to community farms, orchards (citrus, mac nuts, and beverage crops), tropical fruits, row and annual crops, energy crops, irrigated and nonirrigated pasture, and green energy crops. Mahi Pono's agricultural products will be sold within the state and exported to other markets elsewhere.</p> <p>Currently the agricultural land is mostly fallow with minimal agricultural activity. Should the Water Lease not be issued, the ongoing agricultural activities may be unfeasible. Issuance of the Water Lease would facilitate the transition of the agricultural fields in Central Maui to a productive diversified agricultural operation.</p>   |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 4.3.3   | Expand diversified agriculture production at an average annual rate of 4 percent   |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 4.3.3.a   | Promote the development of locally-grown and ecologically-sound biofuels, aquaculture, and forest products.  |   |    | X   |
| 4.3.3.b   | Support the development of farming associations/cooperatives.  | X |    |     |
| 4.3.3.c   | Work with educational institutions and appropriate agencies to provide education and training for farm owners and entrepreneurs.   | X |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 4.3.3 of the Maui Island Plan.  |  |   |    |     |
| <p>Mahi Pono intends to provide plots for research and offer an internship program for high school and college students. Mahi Pono also intends to offer approximately 800 acres of various sized community farm blocks in Central Maui to local farmers. Farmers also would have access to Mahi Pono's equipment, management.</p>  |  |   |    |     |

| Table 5-10: Maui Island Plan   |   | S | NS | N/A |
|--|---|---|----|-----|
| budgeting and marketing services, thus supporting entrepreneurship by residents and assisting small scale producers, manufacturers, and distributors. Additionally, Mahi Pono intends to lease some of its property to other agricultural organizations.   |   |   |    |     |
| Emerging Sectors   |   |   |    |     |
| Goal   |   |   |    |     |
| 4.4  | A diverse array of emerging economic sectors.   |   |    |     |
| Objective  |   |   |    |     |
| 4.4.1  | Support increased investment and expanded activity in emerging industries.  |   |    |     |
| Policies   |   |   |    |     |
| 4.4.1.a  | Support the development of and access to state-of-the-art voice, video, and data telecommunications systems and high-speed Internet.  |   |    | X   |
| 4.4.1.b  | Attract and assist industries to compete in high technology activities such as those related to renewable energy, green technologies, diversified agriculture, ocean sciences, health sciences, space technologies, and other knowledge-based industries. | X |    |     |
| 4.4.1.c  | Support new industries that are environmentally and culturally sensitive such as health and wellness, sports and outdoor activities, cultural activities, the arts, film-making, entertainment, and digital media.  |   |    | X   |
| 4.4.1.d  | Support a sustainable, culturally sensitive, astronomy industry.  |   |    | X   |
| 4.4.1.e  | Support the continued development of the Maui Research and Technology Park in Kihei, as a center for research and development, education, and diversified economic development, as provided by the Maui County Code.                                      |   |    | X   |
| 4.4.1.f  | Work with appropriate organizations to support the development of high technology clusters around renewable energy, diversified agriculture, ocean sciences, health sciences, and other knowledge-based industries  |   |    | X   |
| Discussion: The Proposed Action will support Objective 4.4.1 of the Maui Island Plan.  |   |   |    |     |
| <p>The Proposed Action will enable for the continued conveyance of water to support conversion to diversified agriculture. Mahi Pono plans to convert the agricultural lands in Central Maui generally to community farms, orchards (citrus, mac nuts, and beverage crops), tropical fruits, row and annual crops, energy crops, irrigated and nonirrigated pasture, and green energy crops. Currently the agricultural land is mostly fallow with minimal agricultural activity. Should the Water Lease not be issued, the ongoing agricultural activities may be unfeasible. Issuance of the Water Lease would facilitate the transition of the agricultural fields in Central Maui to a productive diversified agricultural operation.</p> <p>Mahi Pono's irrigation engineering team is also designing a high-efficiency irrigation system. The new irrigation system will reduce water usage by: (1) using automatic, real-time irrigation sensors to deliver precise amounts of water efficiently; (2) recycle and re-use all water used in Mahi Pono's processing plants; and (3) integrate various live technology feeds to constantly monitor plant, soil, and tree health. Reducing water usage through effective irrigation assures the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.</p> <p>Additionally, Mahi Pono is committing land to the production of solar energy for the public utility system. Mahi Pono also intends to use power from two hydro-electric facilities to provide power to pumps and wells, and other infrastructure.</p> |   |   |    |     |
| Objective  |   |   |    |     |
| 4.4.2  | Increase the development of renewable energy technologies that are supported by the local community.  |   |    |     |
| Policies   |   |   |    |     |
| 4.4.2.a  | Support the expansion of the renewable energy sector and the use of solar, wind, wave, and biofuel technologies.  | X |    |     |
| 4.4.2.b  | Provide incentives to encourage renewable energy development, the use of green energy technologies, and energy conservation.  |   |    | X   |
| 4.4.2.c  | Ensure an adequate supply of land and facilitate permitting to meet the needs for renewable energy technologies such as solar, wind, wave, biofuel, and other technologies, provided that environmental, view plane, and cultural impacts are addressed.  |   |    | X   |

| Table 5-10: Maui Island Plan  |   | S | NS | N/A |
|---|---|---|----|-----|
| 4.4.2.d   | Support the Maui County Energy Alliance Plan where consistent with the MIP.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 4.4.2 of the Maui Island Plan. Mahi Pono intends to use power from two hydro-electric facilities to provide power to pumps and wells, and other infrastructure. Mahi Pono is also committing land to the production of solar energy for the public utility system.                    |   |   |    |     |
| <b>Small Business Development</b>   |   |   |    |     |
| <b>Goal</b>   |   |   |    |     |
| 4.5   | Small businesses will play a key role in Maui's economy   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 4.5.1   | Increase the number of and revenue generated by small businesses and decrease the percentage of small business failures.  |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 4.5.1.a   | Provide incentives and support for small businesses and entrepreneurs that incorporate sustainable technologies and practices into their operations, utilize local materials, or produce and sell locally-made goods or services. | X |    |     |
| 4.5.1.b   | Assist traditional "mom and pop" business establishments.   |   |    | X   |
| 4.5.1.c   | Reduce barriers to small business development   |   |    | X   |
| 4.5.1.d   | Require, where feasible, the government procurement of goods and services from locally owned, small businesses  |   |    | X   |
| 4.5.1.e   | Support community markets and venues that sell locally-made produce, goods, and services.   |   |    | X   |
| <b>Discussion:</b> Mahi Pono intends to offer approximately 800 acres of various sized community farm blocks in Central Maui to local farmers. Farmers also would have access to Mahi Pono's equipment, management, budgeting and marketing services. Mahi Pono is committing land to the production of solar energy for the public utility system. |   |   |    |     |
| <b>Health Care Sector</b>   |   |   |    |     |
| <b>Goal</b>   |   |   |    |     |
| 4.6   | Maui will have a health care industry and options that broaden career opportunities that are reliable, efficient, and provide social well-being.  |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 4.6.1   | Expand the economic benefits of the health care sector.   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 4.6.1.a   | Encourage expanded services at Maui Memorial Medical Center (MMMC) and at other medical facilities.   |   |    | X   |
| 4.6.1.b   | Support expansion of federally qualified health centers with the direct involvement of the residents of the communities served.   |   |    | X   |
| 4.6.1.c   | Support the use of multimedia as a means to provide healthcare information.   |   |    | X   |
| 4.6.1.d   | Encourage digitalization of all diagnostic equipment at all facilities on Maui to enable sharing of data and more efficient use of limited provider workforce, consistent with data protection and patient privacy.               |   |    | X   |
| 4.6.1.e   | Support the expansion of telemedicine.  |   |    | X   |
| 4.6.1.f   | Encourage expansion and improved access to emergency care in all communities.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 4.6.1 of the Maui Island Plan.   |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 4.6.2   | Be more efficient in the delivery of health care services and in minimizing health care costs.  |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 4.6.2.a   | Support expansion of health care providers and facilities to improve access to quality care throughout the island.  |   |    | X   |
| 4.6.2.b   | Encourage the expansion of veteran health care services.  |   |    | X   |
| 4.6.2.c   | Allow home-based out-patient medical care that does not interfere with surrounding neighborhoods.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 4.6.2 of the Maui Island Plan.   |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |

| Table 5-10: Maui Island Plan  |   | S | NS | N/A |
|---|---|---|----|-----|
| 4.6.3   | Expand Maui's alternative health care services, including spiritual practices.  |   |    |     |
| Policies  |   |   |    |     |
| 4.6.3.a   | Support efforts to promote alternative medicine.  |   |    | X   |
| 4.6.3.b   | Allow small-scale home-alternative medicine businesses such as massage, chiropractic care, traditional Hawaiian healing, and acupuncture that do not interfere with surrounding neighborhoods.  |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 4.6.3 of the Maui Island Plan.  |   |   |    |     |
| Education and Workforce Development   |   |   |    |     |
| Goal  |   |   |    |     |
| 4.7   | Maui will have effective education and workforce development programs and initiatives that are aligned with economic development goals.   |   |    |     |
| Objective   |   |   |    |     |
| 4.7.1   | Improve preschool and K-12 education to allow our youth to develop the skills needed to successfully navigate the 21st century.   |   |    |     |
| Policies  |   |   |    |     |
| 4.7.1.a   | Encourage the State to implement programs such as:<br>(1) Universally available preschool for children between the ages of one and five;<br>(2) Mandatory kindergarten;<br>(3) Mandatory K-5th grade classroom size limits of 1 teacher to 20 students;<br>(4) Mandatory nutrition programs; and<br>(5) Mandatory Native Hawaiian programs at all grade levels. |   |    | X   |
| 4.7.1.b   | Encourage the DOE to extend the school day by at least an hour.   |   |    | X   |
| 4.7.1.c   | Encourage the State to increase funding for public education so that Hawai'i is among the top 10 states nationally as measured by investment per pupil.   |   |    | X   |
| 4.7.1.d   | Encourage the State to ensure teacher certifications relate to effective delivery and improved student performances, and develop an industry experience/equivalency certification to assure our DOE students have access to career technical education and training.  |   |    | X   |
| 4.7.1.e   | Encourage the University of Hawai'i Maui College (UHMC) to provide dormitory space for high school students.  |   |    | X   |
| 4.7.1.f   | Encourage the development and implementation of curriculum on native Hawaiian history, culture, and practices, in consultation with native Hawaiian groups and associations.  |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 4.7.1 of the Maui Island Plan.  |   |   |    |     |
| Objective   |   |   |    |     |
| 4.7.2   | Encourage an increase in the number of certificate recipients and associate, bachelors, and graduate degrees conferred.   |   |    |     |
| Policies  |   |   |    |     |
| 4.7.2.a   | Encourage the State to increase the number of articulation agreements between the UHMC and four-year universities, particularly the University of Hawai'i at Mānoa.   |   |    | X   |
| 4.7.2.b   | Encourage the State to expand accredited 2-year, 4-year, and graduate programs through the UHMC.  |   |    | X   |
| 4.7.2.c   | Encourage the education and training of our residents to meet the needs of a diversified economy.   | X |    |     |
| 4.7.2.d   | Support education and training programs such as student internships, vocational training, and career development opportunities to ensure a highly skilled workforce.  | X |    |     |
| 4.7.2.e   | Work with educational institutions to improve and expand access to education and training through multiple modes, including distance learning.  | X |    |     |
| Discussion: The Proposed Action will support Objective 4.7.2 of the Maui Island Plan.   |   |   |    |     |
| Mahi Pono also intends to provide agricultural plots for research and offer an internship program for high school and college students. |   |   |    |     |



| Table 5-10: Maui Island Plan  |  | S | NS | N/A |
|---|--|---|----|-----|
| <b>Objective</b>  |  |   |    |     |
| 4.7.3   | Strive to ensure that more of Maui's jobs are developed in STEM (science, technology, engineering, and mathematics)-related sectors by 2030.   |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 4.7.3.a   | Support the development of STEM-related certificates and degrees at the two- and four year levels  |   |    | X   |
| 4.7.3.b   | Support the education initiatives of the Maui Agricultural Development Plan.   |   |    | X   |
| 4.7.3.c   | Expand and seek funding for internships, mentoring, job shadowing, etc. to foster interest in health and green workforce careers.  |   |    | X   |
| 4.7.3.d   | Work with Maui Economic Development Board, Inc., UHMC, and other similar organizations to expand internship/education programs to support STEM careers.  |   |    | X   |
| 4.7.3.e   | Continue to partner with the Maui Economic Development Board, Inc. and other similar organizations to recruit, assist, and retain emerging industries, research and development activities, and educational/workforce opportunities.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 4.7.3 of the Maui Island Plan. |  |   |    |     |
| <b>Housing</b>  |  |   |    |     |
| <b>Goal</b>   |  |   |    |     |
| 5.1   | Maui will have safe, decent, appropriate, and affordable housing for all residents developed in a way that contributes to strong neighborhoods and a thriving island community.  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 5.1.1   | More livable communities that provide for a mix of housing types, land uses, income levels, and age.   |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 5.1.1.a   | Promote livable communities (compact/walkable/bikeable, access to transit) that provide for a mix of housing types and land uses, including parks, open space, and recreational areas.   |   |    | X   |
| 5.1.1.b   | Promote planning approaches that provide a mix of multifamily and single-family housing units to expand housing choices.   |   |    | X   |
| 5.1.1.c   | Discourage gated communities   |   |    | X   |
| 5.1.1.d   | Provide incentives for the rehabilitation or adaptive reuse of historic structures to facilitate more housing choices.   |   |    | X   |
| 5.1.1.e   | Use planning and regulatory approaches to provide higher housing densities.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 5.1.1 of the Maui Island Plan. |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 5.1.2   | Better monitoring, evaluation, and refinement of affordable housing policy in conjunction with the economic cycle.   |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 5.1.2.a   | Improve data on resident and nonresident housing.  |   |    | X   |
| 5.1.2.b   | Utilize the following approaches to promote resident housing and to minimize offshore market impacts:<br>(1) Ensure that the future housing stock is composed of a mix of housing types (multifamily, small lots, ohana units, co-housing, cottage houses, etc.);<br>(2) Encourage new housing in proximity to jobs and services, in places that are conducive/affordable to island residents; and<br>(3) Explore taxation alternatives and building fee structures. |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 5.1.2 of the Maui Island Plan. |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 5.1.3   | Provide affordable housing, rental or in fee, to the broad spectrum of our island community  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 5.1.3.a   | Consider regulations that can help keep affordable housing available at affordable rents.  |   |    | X   |
| 5.1.3.b   | Seek to have ownership of affordable for-sale and rental housing vested in a non-profit community land trust, or other qualified housing provider, committed to keeping such housing affordable in perpetuity.   |   |    | X   |

| <b>Table 5-10: Maui Island Plan</b>   |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|--|----------|-----------|------------|
| 5.1.3.c   | Facilitate the use of public lands in urban areas that are suitable for affordable housing.  |          |           | <b>X</b>   |
| 5.1.3.d   | Develop or support partnerships and initiatives that provide housing-related education/outreach.   |          |           | <b>X</b>   |
| 5.1.3.e   | Support the continuing efforts of the County and its community partners to:<br>(1) Disseminate information on different housing/financial assistance programs (loans, grants, etc.) including information on housing rehabilitation/restoration/adaptive reuse;<br>(2) Provide housing-related counseling including budget, credit, and financial planning assistance; and<br>(3) Create and maintain a comprehensive/master list of available affordable housing to help residents secure a unit that satisfies their need. |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 5.1.3 of the Maui Island Plan. |  |          |           |            |
| <b>Objective</b>  |  |          |           |            |
| 5.1.4   | Provide infrastructure in a more timely manner to support the development of affordable housing.   |          |           |            |
| <b>Policies</b>   |  |          |           |            |
| 5.1.4.a   | Prioritize the development of infrastructure that supports the development of affordable housing.  |          |           | <b>X</b>   |
| 5.1.4.b   | Utilize appropriate financing approaches and assistance tools to encourage the development of infrastructure and public facilities.  |          |           | <b>X</b>   |
| 5.1.4.c   | Tailor infrastructure requirements to correspond with appropriate level-of-service standards to help control housing costs and to maintain safety  |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 5.1.4 of the Maui Island Plan. |  |          |           |            |
| <b>Objective</b>  |  |          |           |            |
| 5.1.5   | A wider range of affordable housing options and programs for those with special needs.   |          |           |            |
| <b>Policies</b>   |  |          |           |            |
| 5.1.5.a   | Ensure that residents with special needs have access to appropriate housing.   |          |           | <b>X</b>   |
| 5.1.5.b   | Encourage housing to be built or rehabilitated to allow the elderly and those with special needs to live in their homes.   |          |           | <b>X</b>   |
| 5.1.5.c   | Ensure and facilitate programs to assist those with special needs from becoming homeless.  |          |           | <b>X</b>   |
| 5.1.5.d   | Promote programs that stimulate the production of sustainable homeless shelters and alternative housing technologies.  |          |           | <b>X</b>   |
| 5.1.5.e   | Support programs that offer home modification counseling on low-interest retrofit loans and grants to those with special needs.  |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 5.1.5 of the Maui Island Plan. |  |          |           |            |
| <b>Objective</b>  |  |          |           |            |
| 5.1.6   | Reduce the cost to developers of providing housing that is affordable to families with household incomes 160 percent and below of annual median income.  |          |           |            |
| <b>Policies</b>   |  |          |           |            |
| 5.1.6.a   | Support fast-track processing procedures for the following housing-related entitlements: affordable housing projects/units; indigenous Hawaiian housing/units; and special-needs housing units (seniors, disabled, homeless, etc.).  |          |           | <b>X</b>   |
| 5.1.6.b   | Require the construction of affordable for-sale and rental housing units as part of the construction of new housing developments.  |          |           | <b>X</b>   |
| 5.1.6.c   | Offer extra incentives in boom periods and withdraw incentives during slack periods.   |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 5.1.6 of the Maui Island Plan. |  |          |           |            |
| <b>Objective</b>  |  |          |           |            |
| 5.1.7   | Increased preservation and promotion of indigenous Hawaiian housing and architecture.  |          |           |            |
| <b>Policies</b>   |  |          |           |            |
| 5.1.7.a   | Preserve, promote, and give priority to Hawaiian housing/architecture forms to preserve Hawaiian culture.  |          |           | <b>X</b>   |

| Table 5-10: Maui Island Plan  |  | S | NS | N/A |
|---|--|---|----|-----|
| 5.1.7.b   | Provide for indigenous architecture as an allowable structure for native Hawaiian uses to include hula and lā'au lapa'au.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 5.1.7 of the Maui Island Plan. |  |   |    |     |
| <b>Infrastructure and Public Facilities</b>   |  |   |    |     |
| <b>Goal</b>   |  |   |    |     |
| 6.1   | Maui will have implemented the Integrated Solid Waste Management Plan thereby diverting waste from its landfills, extending their capacities.  |   |    |     |
| <b>Objectives</b>   |  |   |    |     |
| 6.1.1   | Meet our future solid waste needs with a more comprehensive planning and management strategy.  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 6.1.1.a   | Update and publicize the Integrated Solid Waste Management Plan every ten years  |   |    | X   |
| 6.1.1.b   | Strengthen inter-agency coordination including Planning and Environmental Management departments.  |   |    | X   |
| 6.1.1.c   | Divert waste from the landfills and educate the public about the recommendations of the Integrated Solid Waste Management Plan.  |   |    | X   |
| 6.1.1.d   | Minimize future active, unlined landfill cells to the extent feasible.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 6.1.1 of the Maui Island Plan. |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 6.1.2   | Divert at least 60 percent of solid waste from the island's landfills.   |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 6.1.2.a   | Require residents and commercial enterprises that generate waste to pay a fair proportion of disposal costs.   |   |    | X   |
| 6.1.2.b   | Encourage environmentally safe waste-to-energy solutions.  |   |    | X   |
| 6.1.2.c   | Facilitate the reduction of solid waste generated by packaging, food service products, construction waste, etc.  |   |    | X   |
| 6.1.2.d   | Educate residents and visitors about the impacts of and methods to reduce, reuse, and recycle.   |   |    | X   |
| 6.1.2.e   | Discourage the disposal of landfill leachate by diversion to wastewater treatment plants, where practicable.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 6.1.2 of the Maui Island Plan. |  |   |    |     |
| <b>Wastewater</b>   |  |   |    |     |
| <b>Goal</b>   |  |   |    |     |
| 6.2   | Maui will have wastewater systems that comply with or exceed State and Federal regulations; meet levels-of-service needs; provide adequate capacity to accommodate projected demand; ensure efficient, effective, and environmentally sensitive operation; and maximize wastewater reuse where feasible. |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 6.2.1   | A wastewater planning program capable of efficiently providing timely and adequate capacity to service projected demand where economically feasible and practicable.   |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 6.2.1.a   | Encourage the use of renewable energy in support of wastewater treatment facilities.   |   |    | X   |
| 6.2.1.b   | Focus the expansion of wastewater systems to accommodate planned growth consistent with the MIP Directed Growth Strategy.  |   |    | X   |
| 6.2.1.c   | Establish new wastewater treatment plant(s) outside the tsunami zone   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 6.2.1 of the Maui Island Plan. |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 6.2.2   | Adequate levels of wastewater service with minimal environmental impacts.  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 6.2.2.a   | Meet or exceed all State and Federal standards regulating wastewater disposal or reuse.  |   |    | X   |

| Table 5-10: Maui Island Plan   |  | S | NS | N/A |
|--|--|---|----|-----|
| 6.2.2.b  | Encourage tertiary treatment for all municipal wastewater that is disposed through deep injection wells. Phase out all municipal and private injection wells in coordination with water reuse programs, where feasible, by 2020. |   |    | X   |
| 6.2.2.c  | Improve and upgrade the County's existing wastewater collection, treatment, and reuse facilities consistent with current and future plans and the County's CIP.  |   |    | X   |
| 6.2.2.d  | Maintain an ongoing sewer inspection program for public and private multi-user systems to identify potential problems and forecast each system's residual life.  |   |    | X   |
| 6.2.2.e  | Require all new developments to fund system improvements in proportion to the development impact and in accordance with the County's wastewater functional plan.   |   |    | X   |
| 6.2.2.f  | Require appropriate funding mechanisms, such as a sinking fund, to adequately maintain or replace aging water-system components.   |   |    | X   |
| 6.2.2.g  | Strongly encourage the phase out of cesspools.   |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 6.2.2 of the Maui Island Plan. |  |   |    |     |
| Objective  |  |   |    |     |
| 6.2.3  | Increase the reuse of wastewater.  |   |    |     |
| Policies   |  |   |    |     |
| 6.2.3.a  | Strengthen coordination between the MDWS and Maui County Department of Environmental Management, Wastewater Reclamation Division (WWRD) to promote reuse/recycling of wastewater.  |   |    | X   |
| 6.2.3.b  | Expand the reuse of wastewater from the Central Maui, Kīhei, Lāhainā, and other wastewater systems.  |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 6.2.3 of the Maui Island Plan. |  |   |    |     |
| Water  |  |   |    |     |
| Goal   |  |   |    |     |
| 6.3  | Maui will have an environmentally sustainable, reliable, safe, and efficient water system  |   |    |     |
| Objective  |  |   |    |     |
| 6.3.1  | More comprehensive approach to water resources planning to effectively protect, recharge, and manage water resources including watersheds, groundwater, streams, and aquifers.   |   |    |     |
| Policies   |  |   |    |     |
| 6.3.1.a  | Ensure that MDWS actions reflect its public trust responsibilities toward water.   |   |    | X   |
| 6.3.1.b  | Ensure the Water Use Development Plan (WUDP) implements the State Water Code and MIP's goals, objectives, and policies.  |   |    | X   |
| 6.3.1.c  | Regularly update the WUDP, to maintain compliance with the General Plan  |   |    | X   |
| 6.3.1.d  | Ensure that the County's CIP for water-source development is consistent with the WUDP and the MIP.   |   |    | X   |
| 6.3.1.e  | Where desirable, retain and expand public ownership and management of watersheds and fresh-water systems.  |   |    | X   |
| 6.3.1.f  | Encourage and improve data exchange and coordination among Federal, State, County, and private land use planning and water resource management agencies.   |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 6.3.1 of the Maui Island Plan. |  |   |    |     |
| Objective  |  |   |    |     |
| 6.3.2  | Increase the efficiency and capacity of the water systems in striving to meet the needs and balance the island's water needs.  |   |    |     |
| Policies   |  |   |    |     |
| 6.3.2.a  | Ensure the efficiency of all water system elements including well and stream intakes, water catchment, transmission lines, reservoirs, and all other system infrastructure.  | X |    |     |
| 6.3.2.b  | Encourage increased education about and use of private catchment systems where practicable for nonpotable uses   |   |    | X   |
| 6.3.2.c  | Maximize the efficient use of reclaimed wastewater to serve nonpotable needs.  |   |    | X   |
| 6.3.2.d  | Work with appropriate State and County agencies to achieve a balance in resolving the needs of water users in keeping with the water allocation priorities of the MIP.   | X |    |     |

| Table 5-10: Maui Island Plan  |  | S | NS | N/A |
|---|--|---|----|-----|
| 6.3.2.e   | Ensure water conservation through education, incentives, and regulations   |   |    | X   |
| 6.3.2.f   | Acquire and develop additional sources of potable water.   |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action will support Objective 6.3.2 of the Maui Island Plan.</p> <p>Mahi Pono's irrigation engineering team is also designing a high-efficiency irrigation system. The new irrigation system will reduce water usage by: (1) using automatic, real-time irrigation sensors to deliver precise amounts of water efficiently; (2) recycle and re-use all water used in Mahi Pono's processing plants; and (3) integrate various live technology feeds to constantly monitor plant, soil, and tree health. Reducing water usage through effective irrigation ensures conservation of Hawai'i's natural resources.</p> <p>The issuance of the Water Lease will allow for the continued conveyance of water from the EMI Aqueduct System to the MDWS, which in turn provides water to Upcountry Maui, including KAP and the planned 262-acre KAP expansion, as well as the Nāhiku community. The Upcountry Water System relies on 80-90% of its water from three surface water sources. One of the three surface water sources is delivered by the EMI Aqueduct System through the Wailoa Ditch, which is treated at the Kamole-Weir Water Treatment Plant. The average daily use by the MDWS from the EMI Aqueduct System is 7.1 mgd, which accounts for a major portion of the water supplied to the Upcountry Water System.</p> <p>Nāhiku draws up in between 20,000-45,000 gallons of water daily, dependent upon weather, directly from the EMI Aqueduct System from the Ko'olau Ditch through a development tunnel.</p> <p>Without the issuance of the Water Lease, the EMI Aqueduct System may be left in an inoperable state, leaving Upcountry Maui and the Nāhiku community without a reliable source of water.</p> |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 6.3.3   | Improve water quality and the monitoring of public and private water systems.  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 6.3.3.a   | Protect and maintain water delivery systems.   | X |    |     |
| <p><b>Discussion:</b> The Proposed Action will support Objective 6.3.3 of the Maui Island Plan.</p> <p>The issuance of the Water Lease will allow for the continued conveyance of water from the EMI Aqueduct System to the MDWS, which in turn provides water to Upcountry Maui, including KAP and the planned 262-acre KAP expansion, as well as the Nāhiku community. The agreements with the MDWS provide that the delivery of water to the MDWS is contingent upon the Water Lease being issued.</p> <p>Without the issuance of the Water Lease, the EMI Aqueduct System may be left in an inoperable state, leaving Upcountry Maui and the Nāhiku community without a reliable source of water.</p>   |  |   |    |     |
| <b>Transportation</b>   |  |   |    |     |
| <b>Goal</b>   |  |   |    |     |
| 6.4   | An interconnected, efficient, and well-maintained, multimodal transportation system.   |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 6.4.1   | Provide for a more integrated island-wide transportation and land use planning program that reduces congestion and promotes more efficient (transit-friendly) land use patterns. |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 6.4.1.a   | Plan for an integrated multi-modal transportation system comprised of public transit, bicycle, pedestrian, automobile, and other transportation modes.                           |   |    | X   |
| 6.4.1.b   | Refocus transportation investment from the construction of additional roadways only for the automobile to the expansion of a multimodal transportation system.                   |   |    | X   |
| 6.4.1.c   | Encourage the use of "complete streets" design methods.  |   |    | X   |
| 6.4.1.d   | Encourage employers to implement Transportation Demand Management (TDM) strategies.  |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action will not affect Objective 6.4.1 of the Maui Island Plan.</p>  |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 6.4.2   | Safe, interconnected transit, roadway, bicycle, equestrian, and pedestrian network.  |   |    |     |
| <b>Policies</b>   |  |   |    |     |

| Table 5-10: Maui Island Plan  |   | S | NS | N/A |
|---|---|---|----|-----|
| 6.4.2.a   | Ensure transit-, roadway-, and pedestrian-facilities design and level-of-service standards respect the unique character of our communities  |   |    | X   |
| 6.4.2.b   | Prioritize transportation improvements list to cost-effectively meet existing and future needs consistent with the MIP.   |   |    | X   |
| 6.4.2.c   | Require new development, where appropriate, to integrate sidewalks, pathways, bikeways, and transit infrastructure into new commercial and residential projects while enhancing community character.              |   |    | X   |
| 6.4.2.d   | Identify and improve hazardous and substandard sections of roadways, drainage infrastructure, and bridges, provided that the historical integrity of the roads and bridges are protected.                         |   |    | X   |
| 6.4.2.e   | Consider identification, acquisition where appropriate, and utilization of abandoned right-of-ways for bikeways, pedestrian pathways, and open-space networks.  |   |    | X   |
| 6.4.2.f   | Support the implementation of the Central Maui Pedestrian & Bicycle Master Plan (March 2012), when consistent with the MIP.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 6.4.2 of the Maui Island Plan. |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 6.4.3   | An island-wide, multimodal transportation system that respects and enhances the natural environment, scenic views, and each community's character.  |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 6.4.3.a   | Ensure that the roadway and transit alignments respect the natural environment and scenic views.  |   |    | X   |
| 6.4.3.b   | Ensure that roadways and transit systems in rural areas and small towns enhance community character.  |   |    | X   |
| 6.4.3.c   | Design all transit systems to respect visual corridors and Maui's character.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 6.4.3 of the Maui Island Plan. |   |   |    |     |
| <b>Transit</b>  |   |   |    |     |
| <b>Goal</b>   |   |   |    |     |
| 6.5   | An island-wide transit system that addresses the needs of residents and visitors and contributes to healthy and livable communities.  |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 6.5.1   | An integrated transit system that better serves all mobility needs of Maui's residents and visitors.  |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 6.5.1.a   | Maximize access to public transit in town centers, commercial districts, and employment centers.  |   |    | X   |
| 6.5.1.b   | Expand regional and inter-regional transit services, where appropriate, in heavily traveled corridors and within communities.   |   |    | X   |
| 6.5.1.c   | Increase the frequency of current service, add additional bus routes as demand requires, and transition to nonpolluting transit vehicles, as funding permits.   |   |    | X   |
| 6.5.1.d   | Provide adequate transit infrastructure (e.g., bus pullouts, waiting benches and shelters, signs) along existing and future transit right-of-ways.  |   |    | X   |
| 6.5.1.e   | Require new development where appropriate, to provide right-of-ways (ROWs) to accommodate transit circulation and support facilities.   |   |    | X   |
| 6.5.1.f   | Identify, protect, and preserve, or acquire corridors for future inter-community transit use, including but not limited to, rail and also multimodal use corridors.   |   |    | X   |
| 6.5.1.g   | Establish transit corridors by planning for and securing right-of-way when appropriate for alternative modes of transportation (such as rail and water ferry service).  |   |    | X   |
| 6.5.1.h   | Pursue improvements and upgrades to the existing transit system consistent with updated MDOT planning studies/transit plans (within the framework of comprehensive island- wide multimodal transportation plans). |   |    | X   |
| 6.5.1.i   | Increase inter-agency coordination between the Department of Planning, State Department of Transportation, County Department of Public Works, and other applicable agencies.                                      |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 6.5.1 of the Maui Island Plan. |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |



| Table 5-10: Maui Island Plan   |  | S | NS | N/A |
|--|--|---|----|-----|
| 6.5.2  | Plan for a more diversified and stable funding base to support transportation goals.   |   |    |     |
| Policies   |  |   |    |     |
| 6.5.2.a  | Support alternative methods and sources of funding transportation improvements (including impact fees, higher taxes, fare adjustments, dedicated sources of funding, and assessments).   |   |    | X   |
| 6.5.2.b  | Collaborate with public-private entities or nonprofit organizations to reduce public transit operational expenses.   |   |    | X   |
| 6.5.2.c  | Coordinate with appropriate Federal, State, and County agencies to fund transportation projects in areas where growth is anticipated.  |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 6.5.2 of the Maui Island Plan. |  |   |    |     |
| Parks  |  |   |    |     |
| Goal   |  |   |    |     |
| 6.6  | Maui will have a diverse range of active and passive recreational parks, wilderness areas, and other natural-resource areas linked, where feasible, by a network of greenways, bikeways, pathways, and roads that are accessible to all. |   |    |     |
| Objective  |  |   |    |     |
| 6.6.1  | More effective, long-range planning of parks and recreation programs able to meet community needs.   |   |    |     |
| Policies   |  |   |    |     |
| 6.6.1.a  | Support, consistent with the MIP, the implementation of open-space and recreational plans, such as the Pali to Puamana Parkway Master Plan and the Upcountry Greenways Master Plan.  |   |    | X   |
| 6.6.1.b  | Utilize the ahupua'a approach by integrating mauka-to-makai natural landscapes into an island-wide parks and recreation functional plan.   |   |    | X   |
| 6.6.1.c  | Provide a balanced mix of passive and active parks, including neighborhood, community, and regional parks, in each community plan area.  |   |    | X   |
| 6.6.1.d  | Support the expansion of Haleakala National Park, where supported by affected communities.   |   |    | X   |
| 6.6.1.e  | Support lo'i and dryland taro restoration in County, State, and Federal parks.   |   |    | X   |
| 6.6.1.f  | Encourage private landowners to dedicate land to Federal, State, or County governments, or nonprofit land trusts, for parks and open-space protection consistent with the MIP.   |   |    | X   |
| 6.6.1.g  | Strengthen inter-agency coordination including State and County departments, such as resolving joint use of facilities and properties.   |   |    | X   |
| 6.6.1.h  | Work with the State to prepare and implement a master management plan for 'Āhihi- Kīna'u and La Perouse-Keone'ō'io Bay to Kanaloa Point region.  |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 6.6.1 of the Maui Island Plan. |  |   |    |     |
| Objective  |  |   |    |     |
| 6.6.2  | Achieve parks and recreation opportunities to meet the diverse needs of our community.   |   |    |     |
| Policies   |  |   |    |     |
| 6.6.2.a  | Establish appropriate level-of-service standards at the neighborhood, community, and regional levels.  |   |    | X   |
| 6.6.2.b  | Identify and acquire parks and recreational facilities that address existing park inadequacies and complement and enhance neighborhoods, communities, and natural- land features.  |   |    | X   |
| 6.6.2.c  | Design park facilities to preserve and enhance natural site characteristics, maximize views, protect environmental and cultural sites, and minimize water demands.   |   |    | X   |
| 6.6.2.d  | Acquire lands along the shoreline, between coastal roadways and the ocean.   |   |    | X   |
| 6.6.2.e  | Encourage the development of regional parks, district parks, and greenways in a manner that helps to contain sprawl, provide separation between distinct communities, or offer open space within urban communities.                      |   |    | X   |
| 6.6.2.f  | Require large master-planned communities that incorporate a mixture of park facilities pursuant to parks standards and functional plans.   |   |    | X   |
| 6.6.2.g  | Support appropriate areas for cultural parks (e.g., Kepaniwai) in each community plan area.  |   |    | X   |

| Table 5-10: Maui Island Plan   |   | S | NS | N/A |
|--|---|---|----|-----|
| 6.6.2.h  | Incorporate community input to determine the appropriate location, design, and long-term stewardship of parks and recreation facilities.  |   |    | X   |
| 6.6.2.i  | Manage commercial activities at public parks to minimize impacts to residents.  |   |    | X   |
| 6.6.2.j  | Support public-private partnerships to implement the acquisition and development of parks when consistent with the General Plan.  |   |    | X   |
| 6.6.2.k  | Support a coordinated program to improve, operate, and maintain joint-use facilities and grounds.   |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 6.6.2 of the Maui Island Plan. |   |   |    |     |
| Objective  |   |   |    |     |
| 6.6.3  | An expanded network of greenways, trails, pathways, and bikeways.   |   |    |     |
| Policies   |   |   |    |     |
| 6.6.3.a  | Link existing and future park sites, natural areas, the shoreline, and residential areas with a network of bikeways, pedestrian paths, trails, and greenways.   |   |    | X   |
| 6.6.3.b  | Support the implementation of plans and programs that facilitate pedestrian mobility and access to active and passive recreation areas and sites.   |   |    | X   |
| 6.6.3.c  | Collaborate with the State and private land owners to ensure perpetual access and proper stewardship of traditional trails and access systems.  |   |    | X   |
| 6.6.3.d  | Facilitate the development of well-managed noncommercial campgrounds throughout the island.   |   |    | X   |
| 6.6.3.e  | Consider requiring commercial bike rental businesses to provide funding that supports a mauka-to-makai Haleakalā bikeway improvement program.   |   |    | X   |
| 6.6.3.f  | Ensure ADA compliance and seek opportunities to make all parks and recreational facilities accessible to people with disabilities.  |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 6.6.3 of the Maui Island Plan. |   |   |    |     |
| Public Facilities  |   |   |    |     |
| Goal   |   |   |    |     |
| 6.7  | Maui will have adequate public facilities that meet the diverse needs of residents.   |   |    |     |
| Objective  |   |   |    |     |
| 6.7.1  | More effective planning for public facilities to meet community needs.  |   |    |     |
| Policies   |   |   |    |     |
| 6.7.1.a  | Ensure the development and update of island-wide public facilities functional plans that incorporate prioritized facilities, programs, and a financial component.   |   |    | X   |
| 6.7.1.b  | Establish appropriate level-of-service standards for public facilities provided by the County.  |   |    | X   |
| 6.7.1.c  | Pursue improvements and upgrades of County public facilities consistent with the public facilities functional plan.   |   |    | X   |
| 6.7.1.d  | Recognize Wailuku Town as Maui's Civic Center and support the revitalization of the Civic Center District by consolidating government office spaces, enhancing landscape beautification, and providing adequate public parking. |   |    | X   |
| 6.7.1.e  | Support, with community input, the relocation of the Maui Community Correctional Center from Wailuku to an appropriate location in Pu'unēhē.  |   |    | X   |
| 6.7.1.f  | Adequately plan and fund public safety facilities (fire, police, ambulance, civil defense) to meet community needs.   |   |    | X   |
| 6.7.1.g  | Increase joint facilities utilization and program coordination between State and County agencies such as baseyards, communication centers, recreational facilities, etc., where feasible.                                       |   |    | X   |
| 6.7.1.h  | Focus future expenditures for additional government office space, parking, and related facilities in Wailuku's Civic Center District.   |   |    | X   |
| 6.7.1.i  | Encourage continuous and safe walkways for children within one mile of each school.   |   |    | X   |
| 6.7.1.j  | Encourage public-private partnerships to identify and resolve public facility plan shortcomings when consistent with the General Plan.  |   |    | X   |
| 6.7.1.k  | Incorporate community/area residents' input to determine the appropriate location and design of public facilities.  |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 6.7.1 of the Maui Island Plan. |   |   |    |     |

| Table 5-10: Maui Island Plan   |  | S | NS | N/A |
|--|--|---|----|-----|
| Schools and Libraries  |  |   |    |     |
| Goal   |  |   |    |     |
| 6.8  | Maui will have school and library facilities that meet residents' needs and goals.   |   |    |     |
| Objective  |  |   |    |     |
| 6.8.1  | Assist in providing appropriate school and library facilities in a timely manner and in strategic locations.   |   |    |     |
| Policies   |  |   |    |     |
| 6.8.1.a  | Work in partnership with all educational institutions to meet current and future needs including appropriate location, timing, and design of future facilities.                    |   |    | X   |
| 6.8.1.b  | Allow for the expansion and intensification of uses at the UHMC including satellite campuses operating in remote areas.  |   |    | X   |
| 6.8.1.c  | Encourage the DOE to build and maintain smaller, community-oriented schools.   |   |    | X   |
| 6.8.1.d  | Encourage better cooperation by the State and County for use of State and County facilities.   |   |    | X   |
| 6.8.1.e  | Encourage the State to upgrade, modernize, and expand school facilities, including those in remote communities.  |   |    | X   |
| 6.8.1.f  | Work with the State to develop a master plan for the expansion of UHMC in accordance with the MIP.   |   |    | X   |
| 6.8.1.g  | Support partnerships (public/private/nonprofit) to build and staff new schools and improve existing facilities.  |   |    | X   |
| 6.8.1.h  | Work with the Board of Education Hawai'i State Public Library System to provide centralized library services (including telecommunications) to all areas of Maui.                  |   |    | X   |
| 6.8.1.i  | Work with the State to expedite planning and construction of Kihei High School, including the integration of the high school with the Maui Research and Technology Park.           |   |    | X   |
| 6.8.1.j  | Work with the State to identify intermediate school sites in Central Maui and other areas where needed.  |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 6.8.1 of the Maui Island Plan. |  |   |    |     |
| Objective  |  |   |    |     |
| 6.8.2  | Provide a more expansive network of safe and convenient pedestrian-friendly streets, trails, pathways, and bikeways between neighborhoods and schools where appropriate.           |   |    |     |
| Policies   |  |   |    |     |
| 6.8.2.a  | Encourage the State to build new school facilities in appropriate locations that minimize time and distance for students to travel to and from school.                             |   |    | X   |
| 6.8.2.b  | Encourage the State to implement the Safe Routes to School initiative with funding commitments to help the County plan and fund projects that ensure safe access routes to school. |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 6.8.2 of the Maui Island Plan. |  |   |    |     |
| Healthcare   |  |   |    |     |
| Goal   |  |   |    |     |
| 6.9  | All of Maui residents will have the best possible health care to include healthy living, disease prevention, as well as acute and long-term care.                                  |   |    |     |
| Objective  |  |   |    |     |
| 6.9.1  | Greater autonomy to the Maui region in their efforts to improve medical care on the island.  |   |    |     |
| Policies   |  |   |    |     |
| 6.9.1.a  | Encourage the State to give greater autonomy to the Maui region in their efforts to improve medical care on the island.  |   |    | X   |
| 6.9.1.b  | Support innovative financial solutions, such as capital partnerships, joint ventures, and consolidations for MMMC and other health institutions.                                   |   |    | X   |
| 6.9.1.c  | Support MMMC as a major core medical center that provides a greater range of services.   |   |    | X   |
| 6.9.1.d  | Support the immediate development of a critical access hospital in West Maui.  |   |    | X   |
| 6.9.1.e  | Support the expansion of regional critical-access facilities, where allowed by Federal regulations.  |   |    | X   |
| 6.9.1.f  | Improve medical service to remote and outlying regions.  |   |    | X   |

| Table 5-10: Maui Island Plan  |  | S | NS | N/A |
|---|--|---|----|-----|
| 6.9.1.g   | Support transportation services for dialysis patients and community dialysis programs.   |   |    | X   |
| 6.9.1.h   | Work with the State to determine the feasibility of appropriate medical facilities in South Maui and Hāna, including the possible reestablishment of a small community hospital in Hāna, the establishment of a hospital in South Maui, and assist the State in securing funding to meet Maui's health care needs. |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 6.9.1 of the Maui Island Plan. |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 6.9.2   | An expansion of long-term care facilities and long-term care alternatives to meet the needs of our aging population.   |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 6.9.2.a   | Support efforts to increase Maui's long-term care bed capacity to cover current and future needs, close to large population centers.   |   |    | X   |
| 6.9.2.b   | Recognize that facilities for low-income elders who need long-term care are a needed form of affordable and subsidized housing.  |   |    | X   |
| 6.9.2.c   | Evaluate the needs of the long-term disabled and provide planning support for their care, if there is a need for long-term care facilities.  |   |    | X   |
| 6.9.2.d   | Consider long-term care facilities as a major potential employment base and encourage the recruitment and training of potential employees.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 6.9.2 of the Maui Island Plan. |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 6.9.3   | More support to home-care and community-based programs so they become alternatives to traditional nursing homes.   |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 6.9.3.a   | Support the establishment of a program to assist the elderly and people with disabilities to remain in their homes or in a home-like setting.  |   |    | X   |
| 6.9.3.b   | Support the establishment of senior and adult-day-care centers and senior housing.   |   |    | X   |
| 6.9.3.c   | Continue to support existing senior centers (e.g. Kaunoa), and establish new senior centers that will provide day-care sites and programs for the disabled and elderly.  |   |    | X   |
| 6.9.3.d   | Support funding alternatives for community-based services that assist home-care efforts.   |   |    | X   |
| 6.9.3.e   | Encourage the State to adopt the recommendations contained within the Legislative Reference Bureau's report entitled "Gimme a Break: Respite Care Services in Other States," (December 2007) where appropriate, feasible, and consistent with the MIP.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 6.9.3 of the Maui Island Plan. |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 6.9.4   | Improved preventative medicine and primary health care.  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 6.9.4.a   | Develop and utilize health-status benchmarks to measure prevention and primary health care service delivery.   |   |    | X   |
| 6.9.4.b   | Support programs that provide family planning assistance.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 6.9.4 of the Maui Island Plan. |  |   |    |     |
| <b>Energy</b>   |  |   |    |     |
| <b>Goal</b>   |  |   |    |     |
| 6.10  | Maui will meet its energy needs through local sources of clean, renewable energy, and through conservation.  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 6.10.1  | Reduce fossil fuel consumption. Using the 2005 electricity consumption as a baseline, reduce by 15 percent in 2015; 20 percent by 2020; and 30 percent by 2030.  |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 6.10.1.a  | Support energy efficient systems, processes, and methods in public and private operations, buildings, and facilities.  | X |    |     |

| Table 5-10: Maui Island Plan   |  | S | NS | N/A |
|--|--|---|----|-----|
| 6.10.1.b   | Support the Maui Solar Rooftop initiative.   |   |    | X   |
| 6.10.1.c   | Support Hawai'i Energy and other Public Utility Commission (PUC) approved energy efficiency programs.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 6.10.1 of the Maui Island Plan.<br><br>Mahi Pono intends to use power from two hydro-electric facilities to provide power to pumps and wells, and other infrastructure, and convert 500 acres of the agricultural lands in Central Maui to energy crops. The company also anticipates the installation of a 250 acre solar farm. |  |   |    |     |
| <b>Objective</b>   |  |   |    |     |
| 6.10.2   | Increase the minimum percentage of electricity obtained from clean, renewable energy sources. By 2015, more than 15 percent of Maui's electricity will be produced from locally-produced, clean, renewable energy sources, 25 percent by 2020, and 40 percent by 2030. |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| 6.10.2.a   | Evaluate available renewable energy resource sites and applicable technologies.  | X |    |     |
| 6.10.2.b   | Encourage the installation of renewable energy systems, where appropriate.   | X |    |     |
| 6.10.2.c   | Support the establishment of new renewable energy facilities at appropriate locations provided that environmental, view plane, and cultural impacts are addressed.   | X |    |     |
| 6.10.2.d   | Encourage all new County facilities completed after January 1, 2015, to produce at least 15 percent of their projected electricity needs with onsite renewable energy.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 6.10.2 of the Maui Island Plan.<br><br>Mahi Pono intends to use power from two hydro-electric facilities to provide power to pumps and wells, and other infrastructure. Mahi Pono is also committing land to the production of solar energy for the public utility system.   |  |   |    |     |
| <b>Objective</b>   |  |   |    |     |
| 6.10.3   | Increased use of clean, renewable energy.  |   |    |     |
| <b>Policies</b>  |  |   |    |     |
| 6.10.3.a   | Support efforts in the PUC to upgrade Maui's power grid to integrate renewable energy from multiple sources and wheeling of electricity.   |   |    | X   |
| 6.10.3.b   | Encourage the PUC to work with the County to implement and expedite community supported renewable energy projects.   |   |    | X   |
| 6.10.3.c   | Encourage efforts to produce more renewable energy using distributed generation.   | X |    |     |
| 6.10.3.d   | Encourage import substitution by MECO and the broader community to become more self-sufficient in energy production.   |   |    | X   |
| 6.10.3.e   | Educate the public on the economic and environmental benefits from the increased use of renewable energy.  |   |    | X   |
| 6.10.3.f   | Encourage support from the Federal government, State, and the private sector for Maui's renewable energy objectives.   |   |    | X   |
| 6.10.3.g   | Encourage incentives to support the development and use of renewable energy.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support Objective 6.10.3 of the Maui Island Plan.<br><br>Mahi Pono intends to use power from two hydro-electric facilities to provide power to pumps and wells, and other infrastructure. Mahi Pono is also committing land to the production of solar energy for the public utility system.   |  |   |    |     |
| <b>Harbor and Airports</b>   |  |   |    |     |
| <b>Goal</b>  |  |   |    |     |
| 6.11   | Maui will have harbors and airports that will efficiently, dependably, and safely facilitate the movement of passengers and cargo.   |   |    |     |
| <b>Objective</b>   |  |   |    |     |
| 6.11.1   | Upgraded harbor facilities to handle larger volumes of freight and passengers and additional small boat harbors.   |   |    |     |
| <b>Policies</b>  |  |   |    |     |

| Table 5-10: Maui Island Plan   |   | S | NS | N/A |
|--|---|---|----|-----|
| 6.11.1.a   | Support the expansion and upgrade of Kahului Harbor through the following, provided that any expansion is respectful of cultural practices and existing recreational uses and supports improved water quality:<br>1. (1) Accommodate increasing volumes of cargo;<br>2. (2) Provide deeper pier depths and greater fuel-receiving and storing capacities; and<br>3. (3) Ensure safe and efficient work areas, including separating passenger operations from fuel and cargo operations. |   |    | X   |
| 6.11.1.b   | Work with public and private entities to provide adequate pier slips, utilities, repair facilities, and waste-disposal capabilities.  |   |    | X   |
| 6.11.1.c   | Encourage the State to safely separate passenger (cruise and ferry) operations from hazardous bulk fuels and heavy cargo transporting operations, while not decreasing harbor's capacity to safely support various recreational uses.   |   |    | X   |
| 6.11.1.d   | Encourage the State to develop cargo inspecting sites and facilities for efficient cargo and container processing and transportation and to prevent alien species entry.  |   |    | X   |
| 6.11.1.e   | Support a State and County task force to study the feasibility of a second commercial harbor on Maui.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 6.11.1 of the Maui Island Plan. |   |   |    |     |
| <b>Objective</b>   |   |   |    |     |
| 6.11.2   | Establish more economically thriving and environmentally sensitive small boat harbors accommodating resident and business activity, including fishing, recreation, and tour boats   |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| 6.11.2.a   | Provide for needed shore-side facilities and capabilities to support small boat harbor users (e.g. repair facilities, parking, cold storage, and mass-transit connections).   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 6.11.2 of the Maui Island Plan. |   |   |    |     |
| <b>Objective</b>   |   |   |    |     |
| 6.11.3   | Upgraded airport facilities and navigation aids to serve the needs of passengers, freight movements, and general aviation.  |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| 6.11.3.a   | Protect the island's airports from encroaching urbanization that may negatively impact the airport operations.  |   |    | X   |
| 6.11.3.b   | Support State efforts to improve Kahului Airport operations to better serve passenger and cargo needs.  |   |    | X   |
| 6.11.3.c   | Support State efforts to identify sites and plan to relocate and accommodate small and rotary wing aircraft.  |   |    | X   |
| 6.11.3.d   | Encourage the State to improve airport safety including lighting, fuel transmission, fuel safety, etc.  |   |    | X   |
| 6.11.3.e   | Consider expansion of rental car facilities in West and South Maui.   |   |    | X   |
| 6.11.3.f   | Consider expansion of mass transit (bus, fixed-rail, shuttle, and taxis, bicycle, and pedestrian facilities) to and from Kahului Airport and not limited to passenger movements (allowing for luggage and cargo).   |   |    | X   |
| 6.11.3.g   | Encourage the State to maintain airport capacity and to encourage more responsive air services to Hāna and Kapalua.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 6.11.3 of the Maui Island Plan. |   |   |    |     |
| <b>Land Use</b>  |   |   |    |     |
| <b>Goal</b>  |   |   |    |     |
| 7.1  | Maui will have a prosperous agricultural industry and will protect agricultural lands.  |   |    |     |
| <b>Objective</b>   |   |   |    |     |
| 7.1.1  | Significantly reduce the loss of productive agricultural lands.   |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| 7.1.1.a  | Allow, where appropriate, the clustering of development on agricultural lands when approved as a Conservation Subdivision Design plan or similar approval mechanism.  |   |    | X   |



| Table 5-10: Maui Island Plan  |   | S | NS | N/A |
|---|---|---|----|-----|
| 7.1.1.b   | Require, where appropriate, the review and approval of Conservation Subdivision Design plans prior to the subdivision of agricultural land.   |   |    | X   |
| 7.1.1.c   | Discourage developing or subdividing productive agricultural lands for residential uses in which the residence would be the primary use and any agricultural activities would be secondary uses.  | X |    |     |
| 7.1.1.d   | Consider requirements for public notification and review of the subdivision of agricultural land into four or more lots.  |   |    | X   |
| 7.1.1.e   | Focus urban growth, to the extent practicable, away from productive and important agricultural lands.   | X |    |     |
| 7.1.1.f   | Strongly discourage the conversion of productive and important agricultural lands (such as sugar, pineapple, and other produce lands) to rural or urban use, unless justified during the General Plan update, or when other overriding factors are present.     | X |    |     |
| 7.1.1.g   | Further develop the requirements for agricultural assessments found under Section 19.510, Maui County Code (MCC).   |   |    | X   |
| 7.1.1.h   | Provide incentives for landowners to preserve and protect agricultural lands from development through the use of Transfer of Development Rights /Purchase of Development Rights, tax credits, easement programs, or similar means.                              |   |    | X   |
| 7.1.1.i   | Promote the use of U.S.D.A. Farm and Ranch Lands Protection Program grants to fund the acquisition of conservation easements on eligible agricultural lands.  |   |    | X   |
| 7.1.1.j   | Require all major developments adjacent to agricultural lands to provide an appropriate and site-specific agricultural protection buffer as part of a required site plan.   |   |    | X   |
| 7.1.1.k   | Support and promote the viability of Maui's agricultural businesses through property tax incentives and other programs and subsidies.   |   |    | X   |
| 7.1.1.l   | Encourage future community plan efforts to identify lands within the County Agricultural zoning district that are primarily being used for large-lot residential or rural use and consider such lands for reclassification to an appropriate County Rural zone. |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action will support Objective 7.1.1 of the Maui Island Plan.</p> <p>"Agriculture creates a diversity of jobs, generates tax revenues, and produces a variety of crops for different local and export markets. While agriculture ranks behind tourism and retail business in terms of market value, its contributions to the economy are significant. In 2007, the total value of crop sales in Maui County approached \$139 million and the agricultural industry provided 1,700 jobs. Agriculture also benefits Maui's tourism industry by providing green landscapes and enhancing the island's sense of place" (MIP, 7-3).</p> <p>The Proposed Action will allow for the continued conveyance of water to supply the agricultural fields in Central Maui to support a diversified agriculture farming model. Currently, the fields are mostly fallow and not being utilized to their full potential. Should the Water Lease not be issued, or be issued with insufficient water, the agricultural fields may need to be left in a fallow state for a prolonged period of time, and agricultural activities may be unfeasible in Central Maui. Mahi Pono, under the No Action Alternative, however, plans to farm a portion of the agricultural fields. For more detail please refer to Chapter 3.</p> |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 7.1.2   | Reduction of the island's dependence on off-island agricultural products and expansion of export capacity.  |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 7.1.2.a   | Coordinate with the agricultural community, associations/community groups, agricultural landowners, and the State to designate IALs.  |   |    | X   |
| 7.1.2.b   | Support an incentive package for productive Agricultural Lands which aims to ensure agricultural viability for small- and commercial-scale agricultural producers.  |   |    | X   |
| 7.1.2.c   | Actively look to acquire land and provide infrastructure to expand the agricultural park and establish new agricultural parks.  | X |    |     |
| 7.1.2.d   | Support the designation of a research and development area within agricultural parks to help farmers stay attuned to new technology and research.   |   |    | X   |
| 7.1.2.e   | Support local cooperative extension services to facilitate timely technology transfer opportunities.  |   |    | X   |

| Table 5-10: Maui Island Plan  |   | S | NS | N/A |
|---|---|---|----|-----|
| 7.1.2.f   | Support plans and programs to develop additional sources of water for irrigation purposes.  |   |    | X   |
| 7.1.2.g   | Consider appropriate subdivision requirements (gravel roads, above-ground utilities, etc.) in those subdivisions creating Agricultural Parks where lots are limited to agricultural production with no dwellings. |   |    | X   |
| 7.1.2.h   | Support the recommendations, policies, and actions contained within the Maui Agricultural Development Plan, July 2009, when consistent with the MIP.  |   |    | X   |
| 7.1.2.i   | Allow water and tax discounts for legitimate farming operations on rural and agricultural land.   |   |    | X   |
| 7.1.2.j   | Give priority in delivery and use of agricultural water and agricultural land within County agricultural parks to cultivation of food crops for local consumption.  | X |    |     |
| 7.1.2.k   | Support programs that control pests and diseases that affect agriculture.   |   |    | X   |
| 7.1.2.l   | Support the development of training and apprenticeship programs to encourage an adequate supply of agricultural workers.  | X |    |     |
| <b>Discussion:</b> The Proposed Action will support Objective 7.1.2 of the Maui Island Plan.  |   |   |    |     |
| <p>Much of the approximately 30,000 acres of farmlands in Central Maui were designated as IAL by the LUC under a voluntary petition filed by A&amp;B. The Proposed Action will enable for the continued conveyance of water to support conversion to diversified agriculture on those IAL lands. Mahi Pono plans to convert the agricultural lands in Central Maui generally to community farms, orchards (citrus, mac nuts, and beverage crops), tropical fruits, row and annual crops, energy crops, irrigated and nonirrigated pasture, and green energy crops.</p> <p>The EMI Aqueduct System conveys water to the MDWS, which in turn provides water for domestic and agricultural needs in Upcountry Maui, including KAP, and the planned 262-acre KAP expansion. The Proposed Action will ensure the County has a reliable water source to provide for Upcountry Maui and to adequately plan, as well as make sound investments, for growth as there are insufficient alternative water sources and infrastructure to meet present and future demands currently.</p> <p>While not supporting new sources of irrigation water, Mahi Pono's irrigation engineering team is designing a high-efficiency irrigation system. The new irrigation system will reduce water usage by: (1) using automatic, real-time irrigation sensors to deliver precise amounts of water efficiently; (2) recycle and re-use all water used in Mahi Pono's processing plants; and (3) integrate various live technology feeds to constantly monitor plant, soil, and tree health. Reducing water usage through effective irrigation assures the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.</p> <p>Mahi Pono also intends to provide plots for research and offer an internship program for high school and college students, which supports the development and training of agricultural workers.</p> |   |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 7.1.3   | Support and facilitate connectivity between communities.  |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 7.1.3.a   | Evaluate the impact of gated communities on interconnectivity.  |   |    | X   |
| 7.1.3.b   | Discourage land use and urban design that impedes interconnectivity between adjacent communities.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 7.1.3 of the Maui Island Plan.   |   |   |    |     |
| <b>Rural Areas</b>  |   |   |    |     |
| <b>Goal</b>   |   |   |    |     |
| 7.2   | Maui will have a rural landscape and lifestyle where natural systems, cultural resources and farm lands are protected and development enhances and compliments the viability and character of rural communities.  |   |    |     |
| <b>Objective</b>  |   |   |    |     |
| 7.2.1   | Reduce the proliferation and impact of residential development outside of urban, small town, and rural growth boundaries.   |   |    |     |
| <b>Policies</b>   |   |   |    |     |
| 7.2.1.a   | Focus development to areas inside urban, small town, and rural growth boundaries to preserve natural, cultural, and agricultural resources.   |   |    | X   |
| 7.2.1.b   | Encourage cluster development with a mandatory buffer requirement/clear edge at the interface of country towns, agricultural uses, and surrounding rural landscapes.  |   |    | X   |

| Table 5-10: Maui Island Plan  |  | S | NS | N/A |
|---|--|---|----|-----|
| 7.2.1.c   | Encourage or require, where appropriate, Conservation Subdivision Designs and the use of green spaces/natural separations to protect the character of rural landscapes.  |   |    | X   |
| 7.2.1.d   | Encourage basic goods/services in business country towns.  |   |    | X   |
| 7.2.1.e   | Allow for mixed uses, including residential uses, within Business Country Town Districts.  |   |    | X   |
| 7.2.1.f   | Encourage the use of alternative stormwater management techniques that minimize land disturbance and preserve natural drainage features.   |   |    | X   |
| 7.2.1.g   | Encourage green belts, open space buffers, and riparian zones to minimize conflicts between agriculture and residential uses.  |   |    | X   |
| 7.2.1.h   | Evaluate the impact of gated communities on inter-connectivity.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 7.2.1 of the Maui Island Plan. |  |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 7.2.2   | More appropriate service/infrastructure standards to enhance and protect the island's rural character and natural systems.   |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 7.2.2.a   | Minimize impermeable surfaces within rural areas.  |   |    | X   |
| 7.2.2.b   | Protect and support the character, economic viability, and historic integrity of Maui's small towns.   |   |    | X   |
| 7.2.2.c   | Use infrastructure, public service, and design standards that are appropriate to rural areas.  |   |    | X   |
| 7.2.2.d   | Discourage land use and urban design that impede interconnectivity between adjacent communities.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 7.2.2 of the Maui Island Plan. |  |   |    |     |
| <b>Urban Areas</b>  |  |   |    |     |
| <b>Goal</b>   |  |   |    |     |
| 7.3   | Maui will have livable human-scale urban communities, an efficient and sustainable land use pattern, and sufficient housing and services for Maui residents.   |   |    |     |
| <b>Objective</b>  |  |   |    |     |
| 7.3.1   | Facilitate and support a more compact, efficient, human-scale urban development pattern.   |   |    |     |
| <b>Policies</b>   |  |   |    |     |
| 7.3.1.a   | Ensure higher-density compact urban communities, infill, and redevelopment of underutilized urban lots within Urban Growth Boundaries.   |   |    | X   |
| 7.3.1.b   | Maintain a distinct separation between communities, such as but not limited to, Wailuku and Waikapū; Wailuku and Waihe'e; Pukalani and Makawao; Pukalani and Kula; Makawao and Hāli'imaile; Lahaina and Kā'anapali; Kīhei and Mā'alaea; and Mā'alaea and Waikapū, to protect the character and identity of Maui's communities. |   |    | X   |
| 7.3.1.c   | Strengthen evaluation requirements for new urban expansion, new towns, and major urban infill projects within urban growth areas. Tailor submittal requirements to reflect the impact or scale of different projects.  |   |    | X   |
| 7.3.1.d   | Ensure future amendments to urban growth boundaries achieve the following: (1) provide a beneficial extension of the existing community; (2) are in areas where it is cost-effective to provide and operate infrastructure/public service facilities; and (3) do not promote automobile-oriented land use patterns.            |   |    | X   |
| 7.3.1.e   | Evaluate the impact of gated communities on inter-connectivity.  |   |    | X   |
| 7.3.1.f   | Encourage the development and implementation of neighborhood design standards that are environmentally friendly, such as Leadership in Energy and Environmental Design for Neighborhood Development standards.   |   |    | X   |
| 7.3.1.g   | Discourage future pyramid zoning within the industrial zoning districts, while allowing accessory commercial uses and grandfathering existing uses.  |   |    | X   |
| 7.3.1.h   | Promote agriculture by encouraging community gardening, community-supported agricultural programs, and farmers markets within and adjacent to urban areas.   |   |    | X   |
| 7.3.1.i   | Discourage land use and urban design that impedes inter-connectivity between adjacent communities.   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 7.3.1 of the Maui Island Plan. |  |   |    |     |

| Table 5-10: Maui Island Plan  |  | S | NS | N/A |
|---|--|---|----|-----|
| Objective   |  |   |    |     |
| 7.3.2   | Facilitate more self-sufficient and sustainable communities.   |   |    |     |
| Policies  |  |   |    |     |
| 7.3.2.a   | When developing new communities, provide sufficient lands for commercial, appropriate industrial, educational, spiritual, and non-profit uses to serve the daily needs of community residents.   |   |    | X   |
| 7.3.2.b   | Site community facilities such as schools, parks, libraries, and community centers within walking and biking distance of residences.   |   |    | X   |
| 7.3.2.c   | Facilitate self-sufficient communities and shorten commutes by:<br><br>1. Directing residential development to job-rich areas;<br>2. Allowing for appropriate commercial development and community services to shorten commutes; and<br>3. Allowing home occupations or home-based businesses that are compatible with surrounding neighborhoods and lifestyles. |   |    | X   |
| 7.3.2.d   | Ensure, where appropriate, that affordable employee housing and multi-modal transportation opportunities are located near major employment centers.  |   |    | X   |
| 7.3.2.e   | Discourage the establishment of bedroom communities where long commutes are required to employment centers.  |   |    | X   |
| 7.3.2.f   | Facilitate the development of housing by focusing projects in locations where land and infrastructure costs facilitate the development of affordably-priced housing.   |   |    | X   |
| 7.3.2.g   | Provide incentives to facilitate the development of multifamily housing.   |   |    | X   |
| 7.3.2.h   | Encourage the placement of rental housing projects in the same areas as for-sale housing to facilitate mixed-income communities.   |   |    | X   |
| 7.3.2.i   | Develop communities that provide sufficient parks, schools, libraries, and other essential public facilities and services to serve resident needs.   |   |    | X   |
| 7.3.2.j   | Promote agriculture by encouraging community gardening, edible landscaping, community-supported agricultural programs, and farmers markets within and adjacent to urban areas.   |   |    | X   |
| Discussion: The Proposed Action will not affect Objective 7.3.2 of the Maui Island Plan.  |  |   |    |     |
| Objective   |  |   |    |     |
| 7.3.3   | Strengthen the island's sense of place.  |   |    |     |
| Policies  |  |   |    |     |
| 7.3.3.a   | Protect and enhance the unique architectural and landscape characteristics of each community.  |   |    | X   |
| 7.3.3.b   | Encourage Hawaiian architecture and tropical building designs.   |   |    | X   |
| 7.3.3.c   | Support the continued revitalization of historic country towns, Wailuku Town, and Kahului's commercial core and harbor-front without displacing traditional, cultural, recreational and customary uses.  |   |    | X   |
| 7.3.3.d   | Strongly encourage the preservation of buildings, structures, and sites of historic significance.  | X |    |     |
| 7.3.3.e   | Require community input through Design Workshops for major new urban expansion, new towns, and major urban infill projects.  |   |    | X   |
| 7.3.3.f   | Require design enhancement, landscaping, and integration of park and rides, bicycle parking areas, and mass-transit infrastructure to mitigate the effect of parking lots and structured parking on the urban landscape.   |   |    | X   |
| 7.3.3.g   | Ensure that safe and attractive public spaces (e.g., plazas, parks, town/village squares) are provided throughout the island's urban areas.  |   |    | X   |
| Discussion: The Proposed Action will support Objective 7.3.3 of the Maui Island Plan.   |  |   |    |     |
| Implementation of the CWRM D&O may require modification or complete removal of specific diversion in the EMI Aqueduct System. Mason Architects prepared a Historic Structure Assessment report for the subject Water Lease. The main purpose of this study was to determine the historical significance of the EMI Aqueduct System. It was determined that the system is eligible to be placed on the NRHP under National Register Criterion A, for its role in |  |   |    |     |

| Table 5-10: Maui Island Plan   |   | S | NS | N/A |
|--|---|---|----|-----|
| supporting the development of the sugar industry on Maui, and Criterion C, as an extensive engineering design that exemplifies the characteristics, technology, and pattern of features common to irrigation ditch systems in Hawai'i. The removal of the sluice gates create an "effect, with agreed upon mitigation commitments" determination. The effect is minimal, as they do not drastically alter the overall physical appearance of the historic EMI Aqueduct System. The proposed mitigation is to document the sluice gates with photos and location sketch plans conforming to the HAER standards where sluice gates are to be removed or altered. Many of the sluice gates are unique to a particular stream, and documentation will ensure that nothing is lost over time. |   |   |    |     |
| One of the objectives of the Proposed Action is to continue the operation and maintain the EMI Aqueduct System. Issuance of the Water Lease will ensure that the EMI Aqueduct System continues to operate. Should the Water Lease not be issued, the EMI Aqueduct System may be abandoned if it is deemed unfeasible to operate, at which point the EMI Aqueduct System may fall into disrepair.   |   |   |    |     |
| <b>Objective</b>   |   |   |    |     |
| 7.3.4  | Strengthen planning and management for the visitor industry to protect resident quality of life and enhance the visitor experience.   |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| 7.3.4.a  | Discourage the conversion of hotel units to timeshares and fractional ownership.  |   |    | X   |
| 7.3.4.b  | Monitor and manage the amount of, and impacts from, timeshares and fractional ownership.  |   |    | X   |
| 7.3.4.c  | Manage short-term rentals and bed-and-breakfast homes through a permitting and regulatory process in accordance with adopted ordinances and community plan policies.  |   |    | X   |
| 7.3.4.d  | Limit large-scale resort development to the four existing resort destination areas of Wailea, Mākena, Kapalua and Kā'anapali. "Large Scale Resort" is defined as complexes that include multiple accommodation facilities, activity businesses, retail complexes, and other amenities.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 7.3.4 of the Maui Island Plan.  |   |   |    |     |
| <b>Objective</b>   |   |   |    |     |
| 7.3.5  | Ensure that Maui's planning and development review process becomes more transparent, efficient, and innovative.   |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| 7.3.5.a  | Encourage greater community involvement in land use planning and decision making.   |   |    | X   |
| 7.3.5.b  | Establish a predictable and timely development review process that facilitates the approval of projects that meet planning and regulatory requirements.   |   |    | X   |
| 7.3.5.c  | Increase inter-agency coordination between the Department of Planning and all State and County agencies responsible for infrastructure and public facilities provision, particularly as it relates to the mitigation of long-term cumulative impacts resulting from development projects.   |   |    | X   |
| 7.3.5.d  | Provide greater certainty and transparency in the development review process.   |   |    | X   |
| 7.3.5.e  | Expand and maintain land use and geographic information system databases for improved decisions, and make data and products available to the public.  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect Objective 7.3.5 of the Maui Island Plan.  |   |   |    |     |
| <b>Directed Growth</b>   |   |   |    |     |
| <b>Goal</b>  |   |   |    |     |
| 8.1  | Maui will have well-serviced, complete, and vibrant urban communities and traditional small towns through sound planning and clearly defined development expectations.  |   |    |     |
| <b>Policies</b>  |   |   |    |     |
| 8.1.a  | The County, with public input, will be responsible for designating new growth areas where infrastructure and public facilities will be provided, consistent with the policies of the MIP and in accordance with State and County infrastructure plans.  |   |    | X   |
| 8.1.b  | Amendments to a Urban Growth Boundary (UGB) or Small Town Boundary (STB) shall be reviewed as a MIP amendment. A UGB or STB shall only be expanded if the island-wide inventory (maintained by the Department of Planning) of existing land uses (residential, commercial, industrial) indicates that additional urban density land is necessary to provide for the needs of the projected population |   |    | X   |

| Table 5-10: Maui Island Plan  |  | S | NS | N/A |
|---|--|---|----|-----|
|   | growth within ten years of that inventory; or, during the decennial update of the MIP.   |   |    |     |
| 8.1.c   | Community plans shall provide for urban density land use designations only within UGBs and Small Towns. The County may only support and approve State Urban Land Use Designations for areas within UGBs, STBs, and Rural Villages.   |   |    | X   |
| 8.1.d   | The unique character and function of existing small towns shall be protected to retain and preserve their sense of place.  |   |    | X   |
| 8.1.e   | New development shall be consistent with the UGBs, STBs, and all other applicable policies of the MIP. New urban-density development shall not be allowed outside of a UGB or STB.   |   |    | X   |
| 8.1.f   | The County, as a condition of development approval, shall require developers of privately owned infrastructure systems to provide financial insurance (bonding, etc.) for the operation and maintenance of these systems.  |   |    | X   |
| 8.1.g   | The County shall implement a zoning program to comprehensively redistrict and rezone lands within UGBs according to updated community plan policies and map designations.  |   |    | X   |
| 8.1.h   | The County will seek to focus capital improvements (schools, libraries, roads, and other infrastructure and public facilities) within the UGBs and STBs in accordance with the MIP.  |   |    | X   |
| 8.1.i   | The County will promote (through incentives, financial participation, expedited project review, infrastructure/public facilities support, etc.) appropriate urban infill, redevelopment and the efficient use of buildable land within UGBs to avoid the need to expand the UGBs.  |   |    | X   |
| 8.1.j   | The MIP's UGBs and STBs shall not be construed or implemented to prohibit the construction of a single-family dwelling on any existing parcel where otherwise permitted by law.  |   |    | X   |
| Discussion: The Proposed Action will not affect Goal 8.1 of the Maui Island Plan. |  |   |    |     |
| Goal  |  |   |    |     |
| 8.2   | Maui will maintain opportunities for agriculture and rural communities through sound planning and clearly defined development expectations.  |   |    |     |
| Policies  |  |   |    |     |
| 8.2.a   | Amendments to a RGB shall be reviewed as an MIP amendment. A RGB shall only be expanded if an island-wide inventory of existing land uses (residential, commercial, industrial) indicates that additional lands are necessary to provide for the needs of the projected population growth within ten years of that inventory; or, during the decennial update of the MIP.              |   |    | X   |
| 8.2.b   | New development shall be consistent with RGB and all other applicable policies and requirements of the MIP. Public, quasi-public, civic, and limited commercial or industrial uses may be allowed in the RGB when the proposed uses demonstrate a public need and are consistent with the Community Plan and zoning.   |   |    | X   |
| 8.2.c   | Environmental protection and compatibility will be a top priority in rural growth areas.   |   |    | X   |
| 8.2.d   | All development within rural growth areas should avoid encroachment upon prime agricultural land.  |   |    | X   |
| 8.2.e   | Rural growth areas include Rural Residential Areas and Rural Villages. Rural residential areas may be designated when they are located in association with or on the border of urban growth areas or Small Towns; and/or when they provide for complete, self-sufficient rural communities with a range of uses to be developed at densities that do not require urban infrastructure. |   |    | X   |
| 8.2.f   | Community plans shall provide for rural density land use designations only within RGBs; provided that limited community plan urban designations may be allowed within Rural Villages. New rural growth areas shall not be located where urban expansion may ultimately become necessary or desirable. New rural-density development shall not be allowed outside of a RGB.             |   |    | X   |
| 8.2.g   | New rural growth areas intended to be complete, self-sufficient rural communities must be located a significant distance from existing urban areas, distinctly separated by agricultural or open lands.  |   |    | X   |



| <b>Table 5-10: Maui Island Plan</b>   |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|--|----------|-----------|------------|
| 8.2.h   | Urban-scale infrastructure and public facilities shall not be provided in rural areas except as described in the defined Level-of-Service (LOS) standards. There should be no expectations of urban services in rural areas. |          |           | <b>X</b>   |
| 8.2.i   | Urban development standards shall not be required within RGBs except in fulfillment of Federal law.  |          |           | <b>X</b>   |
| 8.2.j   | The unique character and function of existing small towns and rural communities shall be protected to retain and preserve their sense of place.  |          |           | <b>X</b>   |
| 8.2.k   | Preserve rural landscapes in which natural systems, cultural resources, and agricultural lands are protected and development compliments rural character and contributes to the viability of communities and small towns.    |          |           | <b>X</b>   |
| 8.2.l   | The MIP's RGBs shall not be construed or implemented to prohibit the construction of a single family dwelling on any existing parcel where otherwise permitted by law.   |          |           | <b>X</b>   |
| 8.2.m   | The County shall implement a zoning program to comprehensively redistrict and rezone lands within RGBs, and to implement community plan policies and map designations.   |          |           | <b>X</b>   |
| 8.2.n   | At the time of zoning from agricultural to rural, Council will consider prohibiting restrictions on agricultural activity.   |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action maintains opportunities for agriculture, consistent with Goal 8.2, but otherwise will not affect Goal 8.2 of the Maui Island Plan. |  |          |           |            |

## 5.5 State Of Hawai'i Water Plan

The Hawai'i State Water Code, HRS Chapter 174C, sets forth the following declaration of policy, recognizing that water must be used to maximize the public's interests, and that agricultural uses of water are in the public interest.

- (a) It is recognized that the waters of the State are held for the benefit of the citizens of the State. It is declared that the people of the State are beneficiaries and have a right to have the waters protected for their use.
- (b) There is a need for a program of comprehensive water resources planning to address the problems of supply and conservation of water. The Hawai'i water plan, with such future amendments, supplements, and additions as may be necessary, is accepted as the guide for developing and implementing this policy.
- (c) The state water code shall be liberally interpreted to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses. However, adequate provision shall be made for the protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. Such objectives are declared to be in the public interest.
- (d) The state water code shall be liberally interpreted to protect and improve the quality of waters of the State and to provide that no substance be discharged into such waters without first receiving the necessary treatment or other corrective action. The people of Hawai'i have a substantial interest in the prevention, abatement, and control of both new and existing water pollution and in the maintenance of high standards of water quality.
- (e) The state water code shall be liberally interpreted and applied in a manner which conforms with intentions and plans of the counties in terms of land use planning.

As noted in section (b), the Water Code requires the preparation of the Hawai'i Water Plan, which consists of five components: (i) water resources protection plan, which is prepared by the

CWRM; (ii) water quality plan, which is prepared by the Department of Health, (iii) State water projects plan, which is prepared by the DLNR Engineering Division; (iv) agricultural water use and development plan, which is prepared by the Department of Agriculture; and (v) the County water use and development plans, prepared by each of the four Counties.

#### **5.5.1 Agricultural Water Use and Development Plan**

The State Agricultural Water Use and Development Plan must include a master irrigation inventory plan that: (i) inventories public and private irrigation water systems; (ii) identifies the extent of rehabilitation needed for each system; (iii) identifies sources of water used by agricultural operations and particularly those on lands identified and designated as IAL under part III of chapter 205, HRS; (iv) identifies current and future water needs for agricultural operations and particularly those on lands identified and designated as IAL; (v) subsidizes the cost of repair and maintenance of the systems; (vi) establishes criteria to prioritize the rehabilitation of the systems; (vii) develops a five-year program to repair the systems; and (viii) sets up a long-range plan to manage the systems.

The current Agricultural Water Use and Development Plan was prepared by the Department of Agriculture in December 2003 and revised in December 2004. The plan was conceived to ensure that the plantation irrigation systems affected by plantation closures would be rehabilitated and maintained for agricultural use. The plan evaluates the irrigations systems deemed to be important and viable to Hawai'i's growing diversified agricultural industry and existing monocrop industry. The plan provides an assessment for the EMI Aqueduct System, which states, "For this report, no assessment of the needs and concerns were conducted due to time constraints and limited funds. No proposed improvements are included for the same reason. Future studies will be directed toward a detailed evaluation of this system."

#### **5.4.4 Draft Maui Island Water Use & Development Plan (March 2019)**

Under HRS § 174C-31, island-level water use and development plans must be consistent with the respective county land use plans and policies including general plan and zoning as determined by each respective county, as well as with the State Land Use classification and policies. Each county water use and development plan shall include but not be limited to: (i) status of water and related land development, including an inventory of existing water uses for domestic, municipal, and industrial users, agriculture, particularly agriculture on lands designated as IAL, aquaculture, hydropower development, drainage, reuse, reclamation, recharge, and resulting problems and constraints; (ii) future land uses and related water needs; and (iii) regional plans for water developments, including recommended and alternative plans, costs, adequacy of plans, and relationship to the water resource protection and water quality plans. Currently the Maui Island Water Use and Development Plan is in draft form. The update was approved by the Board of Water Supply in January 2019 and submitted to the Maui County Council in March 2019 for adoption by ordinance.

The Draft Maui Island Water Use and Development Plan (March 2019) provides a 20-year blueprint for all uses of water in the county. The Draft Maui Island Water Use and Development Plan is limited to the island of Maui and does not encompass Lāna'i or Moloka'i. The primary objective of the Draft Maui Island Water Use and Development Plan is to provide guidelines for the management and use of the island's water resources. This will help ensure the future water needs of all water users are met while preserving the integrity of the County's water resources. The Draft Maui Island Water Use and Development Plan coordinates water use with land use policies set by the Maui Island Plan and the State of Hawai'i. The Draft Maui Island Water Use and Development Plan is a resource-focused plan, rather than an infrastructure plan. The Draft

Maui Island Water Use and Development Plan inventories existing water resources, sources and uses; discusses existing and future land uses and related water needs over a 20-year timeframe, discusses resource impacts of adopted plans, existing and future land uses, and related water needs; considers multiple forecasts and scenarios; and sets forth a program with the objective to meet all water needs. It must be drafted with credible public involvement.

The Draft Maui Island Water Use and Development Plan includes six regional plans (Wailuku Aquifer Sector Area, Central Aquifer Sector Area, Ko'olau Aquifer Sector Area, Hāna Aquifer Sector Area, Kahikinui Aquifer Sector Area, Lahaina Aquifer Sector Area) based on Aquifer Sectors as hydrologic units. Area specific issues are addressed in each regional Aquifer Sector. The Proposed Action involves both the Ko'olau and Central Aquifer Sectors. The License Area and Upcountry Maui are located within the Ko'olau Aquifer Sector. The agricultural fields in Central Maui are located within the Central Aquifer Sector. Below is a discussion of the Proposed Action's consistency with the relevant Draft Maui Island Water Use and Development Plan Aquifer Sectors.

| <b>Table 5-11: Ko'olau Aquifer Sector Area Strategies</b>   |   | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|---|----------|-----------|------------|
| <b>Resource Management</b>  |   |          |           |            |
| 1   | Seek dedicated, long term and broad based core funding for maintaining and expanding watershed protection areas and providing for watershed maintenance in East Maui and Hana watersheds for habitat protection and water security. The annual EMWP budget varies but have been in the range of \$800,000-\$1,000,000, with funding from Federal, State, County and private sources | <b>X</b> |           |            |
| <b>Planning Objectives:</b> <ul style="list-style-type: none"> <li>• Maintain sustainable resources</li> <li>• Protect water resources</li> <li>• Protect and restore streams</li> </ul>  |   |          |           |            |
| 2   | Support and promote community grassroots initiatives to collaborate with state and land owner partnerships to increase participation in natural resource management and to ensure adequate access and opportunities for traditional uses of the region's natural resources. Use established moku process to consult on resource management.   | <b>X</b> |           |            |
| <b>Planning Objectives:</b> <ul style="list-style-type: none"> <li>• Maintain sustainable resources</li> <li>• Protect water resources</li> <li>• Protect and restore streams</li> </ul>  |   |          |           |            |
| 3   | Support collaborative hydrogeological studies to inform impact from climate change and future well development on groundwater health for Ha'ikū and Honopou aquifers.   |          |           | <b>X</b>   |
| <b>Planning Objectives:</b> <ul style="list-style-type: none"> <li>• Maintain sustainable resources</li> <li>• Protect water resources</li> <li>• Protect and restore streams</li> </ul>  |   |          |           |            |
| 4   | Convene sector-based drought workshops to assist stakeholders in developing or improving their individual drought/water conservation plans. Focus in the Ko'olau sector should be on catchment systems and contingency supply to supplement or substitute catchment when necessary.   |          |           | <b>X</b>   |
| <b>Planning Objectives:</b> <ul style="list-style-type: none"> <li>• Provide adequate volume of water supply</li> <li>• Maximize reliability of water service</li> </ul>  |   |          |           |            |
| <b>Discussion:</b> The Proposed Action will support the Ko'olau Aquifer Sector Area Strategies related to resource management. <p>The Proposed Action will include a requirement that that the lessee participate in watershed management for East Maui. The Water Lease under the Proposed Action will be in compliance with the CWRM D&amp;O, which ordered stream restoration to protect and restore stream resources.</p> |   |          |           |            |

| Table 5-12: Central Aquifer Sector Area Strategies   |   | S | NS | N/A |
|--|---|---|----|-----|
| <b>Resource Management</b>   |   |   |    |     |
| 1  | Explore funding and conduct a cost benefit analysis of improvements to the EMI non-potable conveyance system to mitigate losses and preserve existing reservoirs at risk of decommissioning. Priority components and associated costs TBD.  | X |    |     |
| <b>Planning Objectives:</b> <ul style="list-style-type: none"> <li>• Maintain sustainable resources</li> <li>• Protect water resources</li> <li>• Protect and restore streams</li> <li>• Maximize efficiency of water use</li> </ul>   |   |   |    |     |
| <p><b>Discussion:</b> The Proposed Action will support the resource management strategies and planning objectives identified in the Central Aquifer Sector Area under the Draft Maui Island Water Use and Development Plan (March 2019).</p> <p>Mahi Pono's irrigation engineering team is also designing a high-efficiency irrigation system. The new irrigation system will reduce water usage by: (1) using automatic, real-time irrigation sensors to deliver precise amounts of water efficiently; (2) recycle and re-use all water used in Mahi Pono's processing plants; and (3) integrate various live technology feeds to constantly monitor plant, soil, and tree health. Reducing water usage through effective irrigation assures the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.</p> <p>Moreover, it should be noted that, although the EMI Aqueduct System has historically attributed to approximately 22.7% of system losses on the Central Maui side of the EMI Aqueduct System, this loss provides a significant amount of recharge to the Central Maui aquifers.</p> |   |   |    |     |
| <b>Conventional Water Source Strategies</b>  |   |   |    |     |
| 2  | Assess alternative options to restructure and process the existing Upcountry Meter Priority List to improve processing rate and adequate source development.  |   |    | X   |
| <b>Planning Objectives:</b> <ul style="list-style-type: none"> <li>• Provide adequate volume of water supply</li> <li>• Maximize reliability of water service</li> </ul>   |   |   |    |     |
| 3  | Explore new basal well development in the Makawao aquifer to accommodate growth Upcountry and add reliable new source. Potential yield is up to 3 mgd.  |   |    | X   |
| <b>Planning Objectives:</b> <ul style="list-style-type: none"> <li>• Provide adequate volume of water supply</li> <li>• Maximize reliability of water service</li> <li>• Minimize adverse environmental impacts</li> </ul>   |   |   |    |     |
| 4  | Explore East Maui well development in combination with Makawao aquifer basal groundwater to meet projected demand on the MDWS Upcountry System. Initiate a hydrologic study to determine any negative impact on existing ground and surface water sources, stream flow and influences from dikes. Potential yield is > 6 mgd. |   |    | X   |
| <b>Planning Objectives:</b> <ul style="list-style-type: none"> <li>• Provide adequate volume of water supply</li> <li>• Maximize reliability of water service</li> <li>• Minimize adverse environmental impacts</li> </ul>   |   |   |    |     |
| 5  | Explore Pā'ia aquifer for non-potable demand, and potable use with additional treatment as necessary to serve projects included in the Maui Island Plan that cannot feasibly be serviced by MDWS source and infrastructure. Estimated demand for the Maui High School Campus is about 0.75 mgd.                               |   |    | X   |
| <b>Planning Objectives:</b> <ul style="list-style-type: none"> <li>• Provide adequate volume of water supply</li> <li>• Maximize reliability of water service</li> </ul>   |   |   |    |     |
| 6  | Execute a long term source agreement for use and maintenance of the Wailoa Ditch that ensures adequate non-potable supply for the Kula Agricultural Park expansion and potable supply for projected MDWS Upcountry System needs over the planning period.   | X |    |     |

|   |  |   |  |   |
|---|--|---|--|---|
| <b>Planning Objectives:</b> <ul style="list-style-type: none"> <li>• Provide adequate volume of water supply</li> <li>• Maximize reliability of water service</li> </ul>  |  |   |  |   |
| 7   | Pursue hydrologic studies needed to explore the Ha'ikū aquifer and an updated ditch flow analysis to optimize raw water storage and treatment plant capacity at Kamole Weir in order to expedite the most feasible new source. Surface water strategies are contingent on a long term agreement with A&B Properties allocating adequate surface water for the MDWS Upcountry System. |   |  | X |
| <b>Planning Objectives:</b> <ul style="list-style-type: none"> <li>• Minimize cost of water supply</li> <li>• Provide adequate volume of water supply</li> <li>• Maximize reliability of water service</li> <li>• Maintain consistency with General and Community Plans</li> </ul>  |  |   |  |   |
| <b>Discussion:</b> The Proposed Action will support the conventional water source strategies and planning objectives identified in the Central Aquifer Sector Area under the Draft Maui Island Water Use and Development Plan (March 2019).<br><br>The EMI Aqueduct System conveys water to the MDWS, which in turn provides water for domestic and agricultural needs in Upcountry Maui, including KAP and the planned 262-acre KAP expansion. The Proposed Action will ensure the County has a reliable water source to provide for Upcountry Maui and to adequately plan, as well as make sound investments, for growth as there are insufficient alternative water sources and infrastructure to meet present and future demands currently. |  |   |  |   |
| <b>Alternative Water Source Strategies</b>  |  |   |  |   |
| 8   | Consider alternative sources of irrigation water including wastewater reuse, recycled stormwater runoff, and brackish well water in land use permitting to mitigate low flow stream conditions. Require alternative sources for irrigation when reasonably available in county discretionary land use permitting.  | X |  |   |
| <b>Planning Objectives:</b> <ul style="list-style-type: none"> <li>• Maintain sustainable resources</li> <li>• Protect and restore streams</li> <li>• Minimize adverse environmental impacts</li> <li>• Maximize efficiency of water use</li> <li>• Maintain consistency with General and Community Plans</li> </ul>  |  |   |  |   |
| 9   | Expand distribution from the Kahului WWTF and the application for planned energy crops. Potential available recycled water is 4.2 mgd.   |   |  | X |
| <b>Planning Objectives:</b> <ul style="list-style-type: none"> <li>• Maximize efficiency of water use</li> <li>• Maintain consistency with General and Community Plans</li> </ul>   |  |   |  |   |
| 10  | MDWS and MDEM collaborate to identify private-public partnerships, state and federal funding sources to maximize utilization of recycled water produced at the Kihei WWTF and supplemental non-potable sources for seasonal use of R-1 water.  |   |  | X |
| <b>Planning Objectives:</b> <ul style="list-style-type: none"> <li>• Maximize efficiency of water use</li> <li>• Maintain consistency with General and Community Plans</li> </ul>   |  |   |  |   |
| <b>Discussion:</b> The Proposed Action will support the alternative water source strategies and planning objectives identified in the Central Aquifer Sector Area under the Draft Maui Island Water Use and Development Plan (March 2019).<br><br>Mahi Pono's irrigation engineering team is designing a high-efficiency irrigation system. The new irrigation system will reduce water usage by: (1) using automatic, real-time irrigation sensors to deliver precise amounts of water efficiently; (2) recycle and re-use all water used in Mahi Pono's processing plants; and (3) integrate various live technology feeds to constantly monitor plant, soil, and tree health. Reducing water usage through effective                         |  |   |  |   |

irrigation assures the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.

## 5.6 Maui County Zoning

The Maui County Zoning Administration and Enforcement Division administers the enforcement of State and County land use laws, codes, regulations and the general and community plans. The Zoning Administration and Enforcement serves as primary departmental advisory and information branch regarding the interpretation and application of codes, ordinances, decision and orders, and other matters of enforcement.

### **East Maui**

The entire License Area is situated in the Maui County's "Interim" zoning designation. Areas below the License Area, such as the Nāhiku community, are situated within the AG-Agriculture zoning designation. The Proposed Action is consistent with the County zoning regulations.

### **Upcountry Maui**

Majority of Upcountry Maui is situated in the County's AG-Agriculture zoning designation. Other zoning designations within Upcountry Maui are residential, business, rural, urban reserve, project district, park, public, and interim zones. The Proposed Action is consistent with the County Zoning regulations.

### **Central Maui**

The majority of the approximate 30,000-acre Central Maui agricultural fields are situated in Maui County's AG-Agriculture zoning designation. The transition of the agricultural fields to a diversified agricultural operation is consistent with the county zoning regulations.

## 5.7 Maui Island Community Plans

### 5.7.1 Hāna Community Plan (1994)

The Hāna Community Plan is one of nine (9) community plans for the County of Maui. The plan reflects current and anticipated conditions in the Hana region, and advances the community's planning goals, objectives, policies, and implementation to guide the future of the region. The Hana region encompasses approximately 145,000 acres in the eastern portion of the island of Maui. The boundary of the region, from its northern shoreline at Makaiwa Bay, runs mauka along 'O'opuola and Waikamoi Streams, then along the boundaries of Haleakala National Park and the Kahiknui Forest Reserve and finally makai along the boundary between Auahi and Kanaio to Kanaloa Point on the southern shoreline of the region. This region encompasses portions of the License Area, as well as the communities of Nāhiku and Ke'anae. Table 5-13 below, is a discussion of the relevant objectives and policies of the Hāna Community Plan that relate to the Proposed Action.

| Table 5-13: Hāna Community Plan   |   |    |     |
|---|---|----|-----|
| Land Use  | S | NS | N/A |
| <b>Goal</b>   |   |    |     |
| An efficient distribution of urban, rural, and agricultural land uses in order to provide for the social and economic well-being of residents in the Hāna Community Plan region. Preservation and enhancement of the current land use patterns which establish and enrich the Hāna Community Plan region's unique and diverse qualities |   |    |     |
| <b>Objectives and Policies</b>  |   |    |     |



| Table 5-13: Hāna Community Plan   |  | S | NS | N/A |
|---|--|---|----|-----|
| 1.  | Preserve existing mauka open space vistas throughout the State Agricultural and Conservation Districts and existing coastal open space vistas by discouraging linear development along the highways traversing the Hāna District.  |   |    | X   |
| 2.  | Encourage single-family and multi-family land use designations which provide affordable housing opportunities for the region's residents in areas compatible with surrounding uses and in proximity to urban infrastructure and services.  |   |    | X   |
| 3.  | Explore alternative land use and overlay zoning designations that recognize and preserve the unique natural and cultural characteristics of each community within the Hāna region.   |   |    | X   |
| 4.  | Consider alternative regulatory frameworks to facilitate family residential use of Hawaiian hui and kuleana lands.   |   |    | X   |
| 5.  | Encourage the availability of agriculturally suitable lands to provide opportunities for small diversified agricultural activities with residential tenancy for farmers.   |   |    | X   |
| 6.  | Prohibit uses and discourage activities which adversely affect active diversified agricultural endeavors within designated agricultural use areas.   |   |    | X   |
| 7.  | Discourage developing or subdividing land under agricultural use or agriculturally designated lands for passive agricultural, estate residential uses.   |   |    | X   |
| 8.  | Discourage urban land uses and Special Use Permits outside of the Hāna Town area except to allow those activities which are essential to the region's economic well-being, which provide essential services for the residents of the Hāna District, or which provide for the essential 14 domestic needs of remote communities such as Ke'anae, Kipahulu and Kaupo. Such activities shall not adversely affect surrounding neighborhoods and shall be supportive of the agricultural activities of the area. |   |    | X   |
| 9.  | Discourage transient rental accommodation uses outside of the Hāna urban area.   |   |    | X   |
| 10.   | Discourage "heavy industrial" uses within the Hāna Community Plan region, except those temporary or on-site activities which are essential for the construction of facilities and infrastructure within the Hāna District.   |   |    | X   |
| 11.   | Encourage the development of a light industrial area to serve the region's needs.  |   |    | X   |
| 12.   | Should further land other than that depicted on the Land Use Map be required to accommodate urban growth, limit State Urban District boundary expansion to the State Agricultural and Rural District areas between the current Hāna School and the Hasegawa General Store site in Hāna Town.   |   |    | X   |
| 13.   | Encourage community-based dialogue regarding proposed land use changes in order to avoid unwarranted conflict.   |   |    | X   |
| Implementing Actions:   |  |   |    | X   |
| 1.  | Identify and inventory exceptional open space resources and viewsheds. Explore protective management measures such as covenants, easements, and other planning tools   |   |    |     |
| 2.  | Establish zoning standards with varying minimum lot sizes to prevent improper use and reflect different kinds of agricultural activities within the agricultural district.   |   |    |     |
| 3.  | Implement new procedures to provide increased opportunity for community and agency review of agricultural subdivisions.  |   |    |     |
| 4.  | Adopt land use standards and overlay zoning designations that recognize and preserve the unique natural, cultural and land use characteristics of each community within the Hāna region.   |   |    |     |
| 5.  | Conduct an inventory and study of existing non-conforming uses, including vacation rentals, to determine (1) their numbers, (2) geographic distribution, and (3) effects upon the local housing and real estate markets and the local economy, and identity recommendations for resolving non-conforming use issues.   |   |    |     |
| Discussion: The Proposed Action will not affect the Land Use objectives and policies of the Hāna Community Plan.  |  |   |    |     |
| Environment   |  |   |    |     |
| Goal  |  |   |    |     |
| Protection and management of Hāna's land, water and ocean resources to ensure that future generations can enjoy the region's exceptional environmental qualities. |  |   |    |     |
| Objectives and Policies   |  |   |    |     |

| Table 5-13: Hāna Community Plan  |   | S | NS | N/A |
|--|---|---|----|-----|
| 1.   | Protect, preserve and increase the Hāna region's natural marine, coastal and inland resources, encouraging comprehensive resource management programs.  |   |    | X   |
| 2.   | Recognize residents' traditional uses of the region's natural resources which balance environmental protection and self-sufficiency.  | X |    |     |
| 3.   | Manage, protect, and where appropriate, restore areas which have significant indigenous flora and fauna habitat resource value.   | X |    |     |
| 4.   | Discourage water or land development and activities which threaten the biological diversity of the Hāna region and degrade the existing quality of the region's (1) air and noise character, (2) marine, surface and ground water and (3) scenic resources and vistas.                              | X |    |     |
| 5.   | Encourage organic farming practices and environmental protective practices in the selection and application of chemical pesticides, herbicides, and fertilizers.  |   |    | X   |
| 6.   | Encourage resource management programs that maintain and re-establish indigenous and endemic flora and fauna in the Hāna region.  | X |    |     |
| 7.   | Protect, restore and preserve native aquatic habitats and resources within and along all streams within the Hāna District by (1) protecting existing instream flows, and (2) regulating diversions of stream waters   | X |    |     |
| 8.   | Ensure that groundwater and surface water resources are preserved and maintained at capacities and levels to meet the current and future domestic, agricultural, commercial, ecological and traditional cultural demands of each area in the Hāna District.   | X |    |     |
| 9.   | Avoid development of flood prone areas, stream channels and gulches.  |   |    | X   |
| 10.  | Discourage development of geothermal sources or energy transmission line corridors within environmentally sensitive and archaeologically significant areas in the Hāna Community Plan region.   |   |    | X   |
| <b>Implementing Actions:</b>   |   |   |    |     |
| 1.   | In coordination with Native Hawaiian residents and community representatives, prepare watershed management plans and a groundwater and surface water resources monitoring program to protect the district's surface and ground waters, and monitor water levels to meet current and future demands. | X |    |     |
| 2.   | Establish and maintain an aquatic resources management and monitoring program to ensure the sustainability of the region's ocean resources and protect the ecological integrity of the district's coastal waters and streams.   |   |    |     |
| 3.   | Establish and maintain feral animal control programs, and programs which control invasive alien plant species.  |   |    |     |
| 4.   | Conduct a regional land resources assessment to identify areas suitable for (1) revegetation and reforestation with native plant species, and (2) the re-establishment of indigenous fauna.   |   |    |     |
| 5.   | Establish pro-active conservation programs to ensure the sustainability of the region's indigenous flora and fauna.   |   |    |     |
| 6.   | Establish a program to (1) monitor the selection and application of chemical pesticides, herbicides, and fertilizers, and (2) develop incentives to reduce the dependency on such chemicals.  |   |    |     |
| 7.   | Explore methods to diminish out-of-district diversions of the district's groundwater and/or surface water resources in order to meet current and future domestic, agricultural, commercial, ecological, and traditional cultural needs within the district.   |   |    |     |
| 8.   | Initiate re-classification of lands and streams into the State Conservation District where warranted by biological values that do not unduly burden native Hawaiian rights to cultivate or reside on kuleana or hui lands.  |   |    |     |
| <b>Discussion:</b> The Proposed Action will support the Environment objectives and policies of the Hāna Community Plan.  |   |   |    |     |
| The water source for the EMI Aqueduct System comes from East Maui streams. 24 of the streams that are diverted by the EMI Aqueduct System in the License Area were subject to the CWRM D&O. The CWRM D&O established the IIFS in attempt to properly manage the surface water for habitat restoration, instream uses, offstream uses, scenic value, and recreational opportunities. Certain streams were designated as "kalo and community" streams. These streams support communities that depend upon kalo cultivation, an element of Hawai'i's cultural heritage. Other streams are designated as "habitat restoration" streams, which will be limited in the amount of stream surface water that can be diverted as these streams primary function is to support native habitat restoration. Other streams |   |   |    |     |

| Table 5-13: Hāna Community Plan   |  | S | NS | N/A |
|---|--|---|----|-----|
| <p>were ordered to have a wetted pathway maintaining the “mauka to makai” connection. This would allow for the various animal species that have diadromous life cycle to complete their life cycles, benefiting coastal water ecosystems. Should the Water Lease be issued, the Proposed Action will be required to be in compliance with the CWRM D&amp;O. The Proposed Action will not be contrary to the CWRM D&amp;O.</p> <p>The Proposed Action and the issuance of a Water Lease will include a requirement that a Watershed Management Plan be developed and implemented for East Maui. In addition, EMI was a founding member of the EMWP and continues to be an active member.</p>   |  |   |    |     |
| <b>Cultural Resources</b>   |  |   |    |     |
| <b>Goal</b>   |  |   |    |     |
| Identification, preservation, protection, and where appropriate, restoration of significant cultural resources and practices, that provide a sense of history and identity for the Hāna region.   |  |   |    |     |
| <b>Objectives and Policies</b>  |  |   |    |     |
| 1. Identify, preserve and protect historically, archaeologically and culturally significant areas, sites, and features within the Hāna District.  |  | X |    |     |
| 2. Acknowledge and respect family ancestral ties to cultural resources.   |  | X |    |     |
| 3. Encourage community stewardship of historic sites and provide for the curation of artifacts in the Hāna region.  |  |   |    | X   |
| 4. Promote the cultural resources of the Hāna region as an identifying characteristic of the people and the place.  |  | X |    |     |
| 5. Encourage the restoration and use of lo'i kalo (taro terraces) found in the Hāna region.   |  | X |    |     |
| 6. Encourage and protect traditional mauka and makai accesses for traditional cultural uses and practices.  |  | X |    |     |
| 7. Promote development of educational and cultural programs which emphasize the perpetuation of Hawaiian and other ethnic arts, crafts and practices.   |  |   |    | X   |
| <b>Implementing Actions:</b>  |  |   |    |     |
| <ol style="list-style-type: none"> <li>Encourage community participation by creating a Hāna Cultural Resources and Historic Site Preservation Committee to serve as an advisory agency to the Maui Cultural Resources Commission to identify significant cultural resources and provide recommendations specific to the Hāna region.</li> <li>Require development projects to identify all cultural resources within or adjacent to the project area as part of the County development review process. Further require that all proposed development include appropriate mitigation measures including site avoidance, adequate buffer areas and interpretation.</li> <li>General site types and areas that should be flagged for preservation during development review include the following: <ul style="list-style-type: none"> <li>Pi'ilani Trail/Old government roads</li> <li>Hāna/Pi'ilani Highways and historic bridges</li> <li>Fishponds</li> <li>Landings</li> <li>Nearshore marine cultural resources</li> <li>Habitation complexes (shoreline and interior)</li> <li>Lo'i terraces and 'auwai</li> <li>Native vegetation zones</li> <li>Plantation ditch systems</li> <li>Religious structures (shrines, churches and heiau)</li> <li>Plantation era structures and homes</li> <li>Petroglyphs</li> <li>Burials</li> </ul> </li> <li>Develop regulations and implement programs to protect <i>lo'i kalo</i> (taro terraces), and encourage their productive use.</li> <li>Conduct and maintain a native language oral history program to record the knowledge and expertise of the <i>kupuna</i>, particularly as it relates to agricultural practices, fishing practices, and cultural practices and values.</li> <li>Establish and maintain programs to rejuvenate and exhibit the various cultural practices, skills and traditions of the Hāna region, and to reorient youth and adults with their cultural heritage and Hawaiian language.</li> </ol> |  | X |    |     |

| Table 5-13: Hāna Community Plan   |   | S | NS | N/A |
|---|---|---|----|-----|
| 7. Establish a Hawaiian language immersion program in Hāna.   |   |   |    |     |
| <b>Discussion:</b> The Proposed Action will support the Cultural Resources objectives and policies of the Hāna Community Plan.  |   |   |    |     |
| The water source for the EMI Aqueduct System comes from East Maui streams. 24 of the streams that are diverted by the EMI Aqueduct System in the License Area were subject to the CWRM D&O. The CWRM D&O established the IIFS in attempt to properly manage the surface water for habitat restoration, instream uses, offstream uses, scenic value, and recreational opportunities. Certain streams were designated as “kalo and community” streams. These streams support communities within the Hāna Community Plan boundaries that depend upon kalo cultivation, an element of Hawai‘i’s cultural heritage. Should the Water Lease be issued, the Proposed Action will be required to be in compliance with the CWRM D&O and will not be contrary to the CWRM D&O. |   |   |    |     |
|   |   |   |    |     |
| <b>Economic Activity</b>  |   |   |    |     |
| <b>Goal</b>   |   |   |    |     |
| A balanced local economy which provides long-term viability and sustainability while meeting residents' needs and respecting the cultural and natural resources of Hāna.  |   |   |    |     |
| <b>Objectives and Policies</b>  |   |   |    |     |
| 1. Encourage a local economy which provides employment choices for the region's residents and which provides future employment opportunities for the region's youth.  |   |   |    | X   |
| 2. Utilize existing components of the local economy to establish a framework for balanced regional economic development.  |   |   |    | X   |
| 3. Encourage economic activities which are: of substantive economic benefit to the residents of the area; environmentally benign; and compatible with the cultural sensitivities of the residents of the Hāna region.   |   |   |    | X   |
| 4. Protect traditional mauka and makai access for subsistence activities that supplement family food sources.   |   |   |    | X   |
| 5. Promote and maintain agriculture as a major economic activity with emphasis on a regional diversified agricultural industry.   |   |   |    | X   |
| 6. Maintain taro farming, ranching and floriculture as major economic activities and promote their economic viability and sustainability. Promote aquaculture and horticulture as economic activities.  | X |   |    |     |
| 7. Maintain the visitor industry as a major economic activity, encouraging commercial activities which focus on the "day" visitor market and/or complement the "overnight" visitor market.  |   |   |    | X   |
| 8. Support the continued operation of the Hotel Hāna-Maui as a significant economic unit in order to provide stable employment for local residents at a size and scale that is in balance with the character of the Hāna Town community.  |   |   |    | X   |
| 9. Support community-based economic development activities and regional cooperative marketing.  |   |   |    | X   |
| 10. Promote self-sufficiency by using local resource materials, products, and natural energy sources. Encourage and promote programs which allow use of certain abundant native plant species, such as hala and kukui, for commercial endeavors by residents of the Hāna District.  |   |   |    | X   |
| 11. Assist the region's local fishing industry and promote its economic viability and sustainability.   |   |   |    | X   |
| 12. Encourage contractors to employ qualified Hāna District residents when constructing facilities or other structures within the Hāna District   |   |   |    | X   |
| <b>Implementing Actions:</b>  |   |   |    |     |
| 1. Update the County's socio-economic forecast model at least once a year to provide an on-going basis for evaluating socio-economic issues and conditions in the Hāna Community Plan region.   |   |   |    | X   |
| 2. Seek government funds to promote economic diversification, community-based economic development, and economic self-sufficiency of the Hāna District.   |   |   |    |     |
| 3. Seek government funds and technical assistance to establish a community-based Hāna Economic Development Task Force to implement the policies of this plan.   |   |   |    |     |
| <b>Discussion:</b> The Proposed Action will support the Economic Activity objectives and policies of the Hāna Community Plan.   |   |   |    |     |

| Table 5-13: Hāna Community Plan  |  |  | S | NS | N/A |
|--|--|--|---|----|-----|
| <p>The water source for the EMI Aqueduct System comes from East Maui streams. 24 of the streams that are diverted by the EMI Aqueduct System in the License Area were subject to the CWRM D&amp;O. The CWRM D&amp;O established the IIFS in attempt to properly manage the surface water for habitat restoration, instream uses, offstream uses, scenic value, and recreational opportunities. Certain streams were designated as “kalo and community” streams. These streams support communities within the Hāna Community Plan boundaries that depend upon kalo cultivation. Under the Proposed Action, the farms in East Maui that depend on stream water would provide about 14 jobs with a payroll of about \$500,000 per year, and generate about 21 direct and indirect jobs having a payroll of \$800,000. the farms in East Maui that depend on stream water would generate about \$1.4 million per year in direct sales, and about \$2.9 million per year in direct and indirect sales. Should the Water Lease be issued, the Proposed Action will be required to be in compliance with the CWRM D&amp;O, and therefore supportive of the Economic Activity objectives and policies.</p> |  |  |   |    |     |
| <b>Housing</b>   |  |  |   |    |     |
| <b>Goal</b>  |  |  |   |    |     |
| The provision of housing opportunities to the residents of Hāna, for all income and age groups, which are affordable, safe, and environmentally and culturally compatible.   |  |  |   |    |     |
| <b>Objectives and Policies</b>   |  |  |   |    |     |
| 1. Encourage a comprehensive housing strategy which encompasses private sector initiatives, government programs, public-private joint efforts, and other assistance programs to reduce costs and increase housing availability for all income and age groups.  |  |  |   |    | X   |
| 2. Provide sufficient land area for urban residential development only in appropriate areas near urban facilities.   |  |  |   |    | X   |
| 3. Encourage modification of regulatory codes which may not be appropriate to the Hāna region and which increase the time and cost of providing housing opportunities for the region's residents.  |  |  |   |    | X   |
| <b>Implementing Actions:</b>   |  |  |   |    |     |
| 1. Develop government-sponsored housing units to be used by State and County personnel who reside in the Hāna region only for the purpose of fulfilling their professional responsibilities.<br>2. Review and modify the existing Maui County building code and subdivision code to reduce home construction costs in rural and remote areas. Implement alternative rural standards for items such as road widths, street lighting, etc.<br>3. Seek government funds to assist community-based housing groups, such as the Hāna Affordable Housing and Community Development Corporation, in developing housing projects and housing rehabilitation programs, consistent with the Hāna Community Plan, to meet the needs of Hāna District residents.<br>4. Establish a housing rehabilitation program, including loans, grants, and/or technical assistance and community outreach.<br>5. Provide programs including, but not limited to, home ownership counseling and self-help housing to enhance home ownership opportunities for the residents of the Hāna District.  |  |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect the Housing objectives and policies of the Hāna Community Plan.   |  |  |   |    |     |
| <b>Urban Design</b>  |  |  |   |    |     |
| <b>Goal</b>  |  |  |   |    |     |
| Harmony between the natural and man-made environments through building, infrastructure and landscaping design which ensures that the natural beauty and character of the Hāna region is preserved.   |  |  |   |    |     |
| <b>Objectives and Policies</b>   |  |  |   |    |     |
| 1. Support design controls for Hāna Town and the Hāna region based on maintaining the existing low rise character and rural scale of the area.   |  |  |   |    | X   |
| 2. Encourage roadway, drainage, landscaping and other public improvement standards which are in harmony with an informal rural or natural environment.   |  |  |   |    | X   |
| 3. Maintain the informal rural streetscape which provides character identification for Hāna Town.  |  |  |   |    | X   |

| Table 5-13: Hāna Community Plan   |   | S | NS | N/A |
|---|---|---|----|-----|
| 4.  | Preserve significant view corridors   |   |    | X   |
| Implementing Actions:   |   |   |    | X   |
| 1.  | Prepare "country town" design guidelines for Hāna Town which enhance the natural beauty and Hawaiian character of the region, through appropriate building, infrastructure and landscape design.                  |   |    |     |
| 2.  | Develop and implement appropriate "rural standards" for public facilities and privately sponsored building improvements, roadways and subdivisions.   |   |    |     |
| 3.  | Limit building height to two stories or thirty-five (35) feet above grade throughout the region.  |   |    |     |
| 4.  | Limit the height of man-made walls to avoid visual obstruction of coastal and scenic mauka areas.   |   |    |     |
| 5.  | Identify significant view corridors and seek their protection through covenants, easements, and other planning tools.   |   |    |     |
| Discussion: The Proposed Action will not affect the Urban Design objectives and policies of the Hāna Community Plan.  |   |   |    |     |
|   |   |   |    |     |
| Physical Infrastructure   |   |   |    |     |
| Goal  |   |   |    |     |
| Timely and environmentally sensitive development and maintenance of infrastructure systems which protect and preserve the safety and health of the Hāna region's residents and visitors, including the provision of domestic water, utility and waste disposal services, and effective transportation systems which meet the needs of residents and visitors while protecting the region's rural character. |   |   |    |     |
| Objectives and Policies   |   |   |    |     |
| All Areas   |   |   |    |     |
| 1.  | Ensure community participation, including resident Hawaiian, in all long-term infrastructure planning.  |   |    | X   |
| Transportation  |   |   |    |     |
| 2.  | Improve road conditions through more frequent resurfacing and repair.   |   |    | X   |
| 3.  | Encourage a program of roadway safety improvements, including shoulder widening, pull-over spots and installation of new signage and guardrails that do not detract from the region's scenic and rural character. |   |    | X   |
| 4.  | Balance traffic flow and safety requirements with the preservation of the Hāna region's historic bridges.   |   |    | X   |
| 5.  | Encourage the development of a quasi-public shuttle service to meet the intraregional and/or interregional transportation needs of the residents of the Hāna Community Plan region.                               |   |    | X   |
| 6.  | Ensure that any master plan for the Hāna Airport is consistent with the objectives and policies set forth in the Hāna Community Plan.   |   |    | X   |
| Water   |   |   |    |     |
| 7.  | Improve water source and delivery facilities to ensure that water supplied to the region's residents and visitors is of the highest quality.  | X |    |     |
| 8.  | Identify water service area expansion needs in the Hāna region.   |   |    | X   |
| 9.  | Encourage water conservation measures by residents and businesses.  |   |    | X   |
| Liquid and Solid Waste  |   |   |    |     |
| 10.   | Develop and implement a comprehensive waste management plan which includes reduction, recycling and reuse of solid waste and wastewater as major plan components.   |   |    | X   |
| 11.   | Incorporate household re-use of gray water in the County's wastewater management strategy.  |   |    | X   |
| Energy and Public Utilities   |   |   |    |     |
| 12.   | Promote energy efficiency as the energy resource of first choice, and encourage energy conservation practices by residents and businesses.  |   |    | X   |
| 13.   | Improve energy and communication systems to ensure reliable service to the residents and businesses of the Hāna region.   |   |    | X   |
| 14.   | Identify service area expansion needs for energy services in the Hāna region.   |   |    | X   |



| <b>Table 5-13: Hāna Community Plan</b>   |          | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|----------|----------|-----------|------------|
| 15. Promote the environmentally and culturally sensitive use of renewable energy resources, like biomass, solar energy, and wind energy, in all sectors of the community.  |          |          |           | <b>X</b>   |
| <b>Implementing Actions:</b> <ol style="list-style-type: none"> <li>1. Prepare a Hāna Highway and Pi'ilani Highway roadway management plan which identifies: (1) significant natural and structural features to be preserved; (2) comprehensive road signage requirements; (3) long-term roadway maintenance requirements; and (4) a traffic management system which provides for pull-over spots, and interpretive scenic lookouts.</li> <li>2. Improve Hāna Highway to allow safe passage of two-way vehicular traffic.</li> <li>3. Improve Pi'ilani Highway as an alternative route to Hāna while protecting and preserving the integrity of natural landforms and historic structures.</li> <li>4. Improve walkways and roads within residential areas to ensure safe passage for pedestrians and vehicular traffic.</li> <li>5. Develop appropriate and achievable rural standards for infrastructural improvements.</li> <li>6. Provide a back-up electrical generator which will provide power to the Hāna region during periods of electrical power outages.</li> <li>7. Provide energy services to Kipahulu.</li> <li>8. Provide municipal water service to Kipahulu and Upper Nāhiku.</li> <li>9. Prepare a domestic water system master plan and a wastewater system master plan for the Hāna region.</li> <li>10. Prepare a Hāna Airport master plan.</li> </ol> |          |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action supports the Physical Infrastructure objectives and policies of the Hāna Community Plan.<br><br>The Nāhiku community receives water directly from the EMI Aqueduct System via a development tunnel in the Koolau Ditch. The tunnel draws up 20,000 to 45,000 gallons per day, dependent on weather, directly from the EMI Aqueduct System. The water serves about 43 water meters located along Nāhiku Road. One meter is classified as an agricultural use while all the others are classified as single-family use.<br><br>Without the issuance of the Water Lease, the EMI Aqueduct System may be left in an inoperable state, leaving Upcountry Maui, and the Nāhiku community without a reliable source of water.  |          |          |           |            |
| <b>Social Infrastructure</b>   |          |          |           |            |
| <b>Goal</b>  |          |          |           |            |
| An efficient and responsive system of people-oriented public services which enable residents to live a safe, healthy and enjoyable lifestyle, and offer the youth and adults of the region opportunities and choices for self and community improvement.   |          |          |           |            |
| <b>Objectives and Policies</b>   |          |          |           |            |
| <b>Recreation</b>  |          |          |           |            |
| 1. Encourage recreational programs for all age groups, and provide opportunities for passive recreation.   |          |          |           | <b>X</b>   |
| 2. Improve regulation of commercial activities with public recreational areas in collaboration with community-based organizations.   |          |          |           | <b>X</b>   |
| 3. Recognize and respect the recreational values and pristine character of Hāna's natural land and water resources.  | <b>X</b> |          |           |            |
| <b>Public Health and Safety</b>  |          |          |           |            |
| 4. Improve emergency rescue services and medical services for the Hāna region.   |          |          |           | <b>X</b>   |
| 5. Encourage the provision of public health education programs, including mental health counseling services.   |          |          |           | <b>X</b>   |
| 6. Improve fire protection, prevention and suppression services in the Hāna region.  |          |          |           | <b>X</b>   |
| 7. Encourage the recruitment and retention of police department personnel who are thoroughly familiar with the needs of the community.   |          |          |           | <b>X</b>   |
| 8. Encourage upgrading and expanding the facilities at the Hāna Medical Center.  |          |          |           | <b>X</b>   |
| 9. Encourage the provision of services and development of facilities to meet the current and future "elderly care" needs of the Hāna District.   |          |          |           | <b>X</b>   |
| <b>Education</b>   |          |          |           |            |

| Table 5-13: Hāna Community Plan   |   | S | NS | N/A |
|---|---|---|----|-----|
| 10.   | Maintain and expand educational opportunities for adults.   |   |    | X   |
| 11.   | Expand vocational programs  |   |    | X   |
| 12.   | Support a Hawaiian language immersion program in Hāna.  |   |    | X   |
| 13.   | Enhance educational quality of schools within the Hāna region through collaborative efforts with community-based groups such as the PTSA. |   |    | X   |
| <b>Implementing Actions:</b> <ol style="list-style-type: none"> <li>1. Prepare a recreation management plan for Hāna Bay to identify compatible and conflicting uses and to establish a regulatory context for uses within the bay in conjunction with the Hāna Harbor Advisory Committee.</li> <li>2. Establish and maintain an area for canoes and other similar recreational type boats at Hāna Bay.</li> <li>3. Prohibit dry docking of boats within the Hāna Bay area except during storm and/or high surf conditions.</li> <li>4. Provide water safety officers for Hāna Bay.</li> <li>5. Regulate commercial tour operator use of Hāna Bay Pavilion and picnicking area, Wai'anapanapa, Pua'a Ka'a, and Kaumahina State Parks in order to allow residents and other visitors greater use of these facilities.</li> <li>6. Maintain Hāna Bay Beach Park and Hāna Ball Park as primary recreational areas within Hāna Town. Establish traffic management programs to promote safety during times when events are occurring.</li> <li>7. Develop a larger multi-purpose facility in order to meet the social activity needs of an expanding residential population.</li> <li>8. Establish and maintain passive parks and regional recreation parks to meet the residential needs of remote communities throughout the Hāna region.</li> <li>9. Improve and maintain Ke'anae Community Park.</li> <li>10. Establish and maintain an enforcement officer's position dedicated to enforcing rules and regulations within State parks, beach areas, and conservation lands.</li> <li>11. Establish and maintain a Rescue Squad at the new Hāna Fire Station.</li> <li>12. Maintain a civil defense coordinator position for Hāna and establish emergency evacuation centers for remote centers of the region.</li> <li>13. Increase the police force, possibly by deputizing part-time officers in more remote areas.</li> <li>14. Improve emergency communications equipment.</li> <li>15. Maintain the Hāna Health Advisory Committee to assist in developing programs to meet future medical service needs.</li> <li>16. Establish a full-time mental health case management position and a full-time elderly services case management position in the Department of Health to meet the residents' needs.</li> <li>17. Develop and maintain a "meals-on-wheels" program and a transportation program for senior citizens.</li> <li>18. Establish and maintain a public cemetery.</li> <li>19. Provide sufficient counselor positions in the Department of Education to meet the students' needs at the Hāna High and Elementary School.</li> <li>20. With community participation, identify the causes and develop appropriate incentives to reduce teacher turnover at schools.</li> <li>21. Seek funding to expand skybridge and other community education and telecommunications programs.</li> </ol> |   |   |    | X   |
| <b>Discussion:</b> The Proposed Action will support the Social Infrastructure objectives and policies of the Hāna Community Plan.<br><br>The water source for the EMI Aqueduct System comes from East Maui streams. Twenty-four of the streams that are diverted by the EMI Aqueduct System in the License Area were subject to the CWRM D&O. The CWRM D&O established the IIFS in attempt to properly manage the surface water for habitat restoration, instream uses, offstream uses, scenic value, and recreational opportunities. Should the Water Lease be issued, the Proposed Action will be required to be in compliance with the CWRM D&O. The Proposed Action will not be contrary to the CWRM D&O.   |   |   |    |     |
| <b>Government</b>   |   |   |    |     |
| <b>Goal</b>   |   |   |    |     |

| Table 5-13: Hāna Community Plan   |   | S | NS | N/A |
|---|---|---|----|-----|
| The provision of accessible, cost effective, and responsive government services and programs which meet the unique needs of residents and the cultural, geographic and socio-economic characteristics of the Hāna region. |   |   |    |     |
| <b>Objectives and Policies</b>  |   |   |    |     |
| 1.  | Provide better access to County and State officials by establishing outreach services in the Hāna region.   |   |    | X   |
| 2.  | Encourage improved communication between government agencies and residents in order to improve residents' understanding of the development permit process and compliance with regulatory requirements.  |   |    | X   |
| 3.  | Promote the development of building and subdivision codes and standards which are appropriate for the Hāna region.  |   |    | X   |
| 4.  | Utilize the government budgeting process as a means to carry out the policies and priorities of the Hāna Community Plan.  |   |    | X   |
| 5.  | Ensure the participation of native Hawaiian residents and community representatives in all CIP and program planning that impacts on the Hāna region.  |   |    | X   |
| 6.  | Maintain a policy within the County Council and the State Land Use Commission to hold hearings in Hāna on land use issues which affect the Hāna District.   |   |    | X   |
| 7.  | Maintain the Hāna Advisory Committee to the Maui Planning Commission to make recommendations regarding all land use policies, permits, and changes in designation within the Hāna District.   |   |    | X   |
| <b>Implementing Actions:</b>  |   |   |    |     |
| 1.  | Develop a satellite government center for the Hāna region with scheduled days for different government agencies.  |   |    | X   |
| 2.  | Pursue creative regulatory solutions to provide better government services.   |   |    |     |
| 3.  | Develop recruitment/incentive programs to attract Hāna region residents into positions within the Fire and Police Departments, Department of Land and Natural Resources, the National Parks Service and other government agencies located in the Hāna region.   |   |    |     |
| 4.  | Compile special plans and studies necessary to implement the recommendations of the Community Plan. These would include market studies and assessments of the diversified agricultural economic sector, the current and projected visitor accommodation market mix, water development, housing, local and regional circulation, drainage, solid waste, and other special studies as required. |   |    |     |
| <b>Discussion:</b> The Proposed Action will not affect the Government objectives and policies of the Hāna Community Plan.   |   |   |    |     |

### 5.7.2 Pā'ia -Ha'ikū Community Plan (1995)

The Pā'ia -Ha'ikū Community Plan is one of nine (9) community plans for the County of Maui. The plan reflects current and anticipated conditions in the Hāna region, and advances the community's planning goals, objectives, policies, and implementation to guide the future of the region. The Pā'ia -Ha'ikū Community Plan region is located along the north shore of Maui between the urban center of Kahului and the rural enclave of Hāna, and encompasses portions of the License Area. The planning region encompasses an area of approximately 17,300 acres that can be characterized by the following sub-regions: Pā'ia and Ha'ikū. Table 5-14 below, is a discussion of the relevant objectives and policies of the Pā'ia -Ha'ikū Community Plan that relate to the Proposed Action.

| Table 5-14: Pā'ia -Ha'ikū Community Plan  |  | S | NS | N/A |
|---|--|---|----|-----|
| <b>Land Use</b>   |  |   |    |     |
| <b>Goal</b>   |  |   |    |     |
| A well-planned community that preserves the region's small town ambiance and rural character, coastal scenic vistas, and extensive agricultural land use, and accommodates the future needs of residents at a sustainable rate of growth and in harmony with the region's natural environment, marine resources, and traditional uses of the shoreline and mauka lands. |  |   |    |     |

| <b>Table 5-14: Pā'ia -Ha'ikū Community Plan</b> |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|--|----------|-----------|------------|
| <b>Objectives and Policies</b>                  |  |          |           |            |
| 1.  | Protect the marine environment and quality of the offshore waters.   |          |           | <b>X</b>   |
| 2.  | Preserve important scenic vistas and shoreline resources of the region.  |          |           | <b>X</b>   |
| 3.  | Prohibit hotel/resort development within the region.   |          |           | <b>X</b>   |
| 4.  | Ensure that appropriate lands are available to support the region's current and future agricultural industries, including sugar, pineapple, diversified agriculture, and aquaculture.  |          |           | <b>X</b>   |
| 5.  | Identify prime or productive agricultural lands, and develop appropriate regulations for their protection.   |          |           | <b>X</b>   |
| 6.  | When appropriate, incorporate low-rise town or village forms of development, such as the neotraditional town, with defined growth limits and a village core of mixed public, residential and commercial uses, organized and designed to enhance pedestrian and bicycle access as an alternative to linear forms of development, which are characteristic of more urban areas.  |          |           | <b>X</b>   |
| 7.  | Provide for a range of residential lot sizes in appropriate areas.   |          |           | <b>X</b>   |
| 8.  | Define urban and rural growth limits and densities for the region by determining the needed space to accommodate projected growth, designating the required land using the land use map, and supporting needed development in these areas.   |          |           | <b>X</b>   |
| 9.  | Maintain and expand areas desirable for public recreational uses.  | <b>X</b> |           |            |
| 10.   | Discourage approvals of Special Permits in State Agricultural and Rural Districts unless: (a) necessary to serve the immediate community in remote areas; (b) supportive of agricultural uses; or (c) needed for the use or distribution of locally produced products and services that otherwise do not adversely affect the environment, surrounding agricultural uses, or public safety.  |          |           | <b>X</b>   |
| 11.   | For the outlying areas such as Ha'ikū with existing Urban or Rural Land Use classifications, consideration for expansion of the State Land Use District Boundary should be made on a case by case basis for limited residential development in accordance with the following criteria:<br>a. That the proposed change is contiguous with the Urban or Rural District and compatible with the existing character of the surrounding area;<br>b. That adequate public services and facilities are available or can be provided at reasonable cost to the petitioner; and<br>c. That the proposed land use amendment shall have no significant adverse effects upon agricultural, natural, environmental, recreational, scenic, historic, or other resources of the area. |          |           | <b>X</b>   |
| 12.   | Designate the following areas for park use:<br>a. Baldwin Park to "Small Park" in Pā'ia;<br>b. Hookipa Park expansion including land around the existing park for immediate development, as well as the realignment of Hāna Highway (Note that mauka lands shall be a park reserve which would allow existing agricultural cultivation to continue until the future park expansion);<br>c. Kaulahao Beach ("Blue Tile Beach");<br>d. Near Pa'uwela Road and mauka of the Ha'ikū School and existing residential developments; and<br>e. Mauka of 4th Division Marine Park for an active park area and Kauhikoa Hill for a passive recreational/scenic area   |          |           | <b>X</b>   |
| 13.   | Limit visitor accommodations to owner-occupied "bed and breakfast" establishments that are residential in both scale and character. Any proposed "bed and breakfasts" should not be situated near the shoreline so as to avoid the proliferation of this use and subsequent changes in the character of the region's coast.  |          |           | <b>X</b>   |
| 14.   | Limit and manage windsurfing meets at Hookipa in order to better accommodate traditional uses, such as fishing and surfing, and maintain other public recreational uses of the area.   |          |           | <b>X</b>   |
| 15.   | Avoid development of flood prone areas, stream channels and gulches due to safety concerns, open space relief, and visual separation. Drainage channels should be regularly maintained by appropriate agencies.  |          |           | <b>X</b>   |

| <b>Table 5-14: Pā'ia -Ha'ikū Community Plan</b>   |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|--|----------|-----------|------------|
| 16. Require Special Use Permits for public/quasi-public uses in the State Rural District.   |  |          |           | <b>X</b>   |
| 17. Upon any closure of the Pā'ia Mill, the Mill's Heavy Industrial land use designation shall be evaluated by the Department of Planning to determine whether it is appropriate for such designation to be retained, and the Department shall transmit a report and recommendation to the Council for action as appropriate.   |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b> <ol style="list-style-type: none"> <li>1. Review, amend and adopt, as appropriate, zoning ordinances to carry out the intent of the land use categories identified in the Pā'ia-Ha'ikū Community Plan, including, but not limited to, a Rural Light Industrial zoning classification.</li> <li>2. Adopt rules requiring Special Use Permits for public and quasi-public uses in the State Rural District.</li> <li>3. Establish varying minimum lot sizes and subdivision standards to reflect different kinds of proposed uses and activities, thereby, preventing the improper use of agricultural and rural areas. Moreover, ensure that minimum two-acre lot subdivisions intended for "gentleman estates" are limited to areas that (a) have adequate public services and infrastructure, and (b) would not significantly detract from the agricultural, rural, open space, scenic and environmental qualities of the region.</li> <li>4. Establish and enforce regulations for "bed and breakfast" establishments conducted by owner occupants within single-family residential dwellings to ensure that they will be situated in appropriate areas and not adversely affect the surrounding neighborhood. The regulations should include, but not be limited to, criteria related to location, size of operation, off-street parking, and other appropriate mitigate measures.</li> <li>5. Improve standards and procedures to protect scenic vistas and shoreline resources of the region.</li> <li>6. Designate areas for agricultural parks suitable for diversified agriculture and aquaculture.</li> <li>7. Develop and implement a directed and managed growth plan and strategies to guide and coordinate future development consistent with the provision and availability of public infrastructure.</li> </ol> |  |          |           | <b>X</b>   |
| <p><b>Discussion:</b> The Proposed Action will support the Land Use objectives and policies of the Pā'ia -Ha'ikū Community Plan.</p> <p>The Ko'olau Forest Reserve Hunting Unit encompasses portions of the License Area. The Hunting Unit is administered the DLNR, Division of Forestry and Wildlife. To hunt within the License Area, hunters must obtain a license from the DLNR and an EMI Permit/Waiver. Hunting grounds are limited to one hunting party per hunting area, as regulated by the DLNR. Hunters enter the hunting unit every Saturday and Sunday, as well as holidays observed by EMI. Prior to entering, hunting parties must sign in their license number they obtained from the DLNR, and log in any game that are taken. Access to the hunting grounds is managed by EMI through eight existing EMI access roads. Hunting is permitted year round. Hunting parties may enter the License Areas by vehicular access, however, must traverse by foot in most areas.</p> <p>Hiking is also a permitted recreational use within the License Area, and is limited to hiking clubs. Access to the License Area lands for hiking is acquired through a Hiking Waiver from EMI. Only two hiking clubs currently enter the License Area lands approximately four to six times a year; the Sierra Club Maui Group and Mauna Ala Hiking Club. They enter on foot, and are guided by a club hiking expert with a manageable number of people</p> <p>Other recreational uses are not permitted on the License Area lands for safety reasons.</p> <p>Issuance of the Water Lease would allow EMI staff to continue to manage appropriate access into the License Area to use and enjoy the License Area's recreational and natural resources.</p>   |  |          |           |            |
| <b>Environment</b>  |  |          |           |            |
| <b>Goal</b>   |  |          |           |            |
| The preservation and protection of the natural environment, marine resources and scenic vistas to maintain the rural and natural ambiance and character of the region.  |  |          |           |            |
| <b>Objectives and Policies</b>  |  |          |           |            |

| <b>Table 5-14: Pā'ia -Ha'ikū Community Plan</b>  |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| 1.   | Preserve and protect scenic vistas along Hāna Highway  |          |           | <b>X</b>   |
| 2.   | Preserve and protect unique natural areas with significant conservation value, including, but not limited to, the native rain forest at Waikamoi.  | <b>X</b> |           |            |
| 3.   | Encourage and support the establishment of native forest and vegetation.   | <b>X</b> |           |            |
| 4.   | Preserve the shoreline sand dune formations throughout the planning region. These topographic features are a significant element of the natural setting and should be protected from any actions which would detract from their scenic, cultural or ecological value.  |          |           | <b>X</b>   |
| 5.   | Establish a system of temporary shoreline closures to fishing, alternating various segments of the coast, to minimize depletion and allow the resources to regenerate.   |          |           | <b>X</b>   |
| 6.   | Protect the quality of surface and groundwater resources.  | <b>X</b> |           |            |
| 7.   | Protect all wetland resources. Such resources provide open space and habitat for plant and animal life in the aquatic environment. Ensure that the development of new water sources does not adversely affect in-stream flows.   |          |           | <b>X</b>   |
| 8.   | Protect and maintain the quality of the nearshore and offshore waters and marine environment. Ensure that storm water run-off and siltation from proposed development will not adversely affect the marine environment and nearshore and offshore water quality. Open culverts which empty directly into nearshore waters should be avoided. |          |           | <b>X</b>   |
| 9.   | Encourage the construction of natural grass-lined drainage channels, as opposed to concrete channels, and the installation of siltation basins.  |          |           | <b>X</b>   |
| 10.  | Effectively control agricultural run-off.  |          |           | <b>X</b>   |
| 11.  | Promote greater awareness and opportunities for recycling and sound conservation practices.  |          |           | <b>X</b>   |
| <p><b>Discussion:</b> The Proposed Action will support the Environment objectives and policies of the Pā'ia -Ha'ikū Community Plan.</p> <p>The CWRM D&amp;O was purposefully designed to increase the practical knowledge of stream flows and native habitat restoration. The CWRM D&amp;O establishes a quantity of water that must remain in each stream. Each stream a part of the contested case in East Maui was evaluated individually for their potential for usage, habitat restoration, recreational opportunities, and scenic values. The CWRM D&amp;O ensures the prudent use of the surface water resources in the License Area with the issuance of the Water Lease. Should the Water Lease be issued, the Proposed Action will be required to be in compliance with the CWRM D&amp;O. The Proposed Action is not contrary to the CWRM D&amp;O, and will exercise a conservation ethic in use of the natural resources, and ensure compatibility between land-based activities and natural resources and ecological systems.</p> <p>An objective of the Proposed Action is to maintain and continue the operation of the EMI Aqueduct System. The EMI staff will be trained by qualified individuals on appropriate conduct and measures to take within the License Area during future maintenance work. This will encourage the protection of the rare and endangered plant and animal species and habitats native to Hawai'i that have been identified in the region. The EMI Aqueduct System will be maintained in a way that is compatible with the existing environment and natural resources in the region.</p> |  |          |           |            |
| <b>Cultural Resources</b>  |  |          |           |            |
| <b>Goal</b>  |  |          |           |            |
| Identification, protection, preservation, enhancement and appropriate use of cultural resources, cultural practices and historic sites that provide a sense of history and define a sense of place for the Pā'ia -Ha'ikū region.   |  |          |           |            |
| <b>Objectives and Policies</b>   |  |          |           |            |
| 1.   | Encourage and protect traditional mauka and makai accesses, cultural practices and rural lifestyles. Protect traditional hunting, fishing and gathering.   | <b>X</b> |           |            |
| 2.   | Prevent the desecration of ancient and historic burial sites.  |          |           | <b>X</b>   |
| 3.   | Identify, protect, preserve, and, where appropriate, restore significant archaeological and cultural sites and resources unique to the State of Hawai'i and Island of Maui.  | <b>X</b> |           |            |
| 4.   | Foster an awareness of the diversity and importance of cultural resources and of the history of Pā'ia -Ha'ikū. Promote distinct cultural resources as an identifying characteristic of the region.   |          |           | <b>X</b>   |



| <b>Table 5-14: Pā'ia -Ha'ikū Community Plan</b> |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|--|----------|-----------|------------|
| 5.  | Recognize and respect family ancestral ties to certain sites.  |          |           | <b>X</b>   |
| 6.  | Encourage community stewardship of historic sites.   |          |           | <b>X</b>   |
| 7.  | Encourage the development of "cultural parks" for visitation and education.  |          |           | <b>X</b>   |
| 8.  | Encourage cultural and educational programs to perpetuate Hawaiian and other ethnic heritages.   |          |           | <b>X</b>   |
| 9.  | Encourage the ongoing state and national register nomination process, by government and private property owners, to increase awareness and protection of sites and districts.  |          |           | <b>X</b>   |
| 10.   | Encourage the restoration and traditional use of taro patches, and the re-establishment of breadfruit groves.  | <b>X</b> |           |            |
| 11.   | Recognize and respect the importance of various ethnic representations in the cultural site identification process.  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>                    |  |          |           |            |
| 1.  | Update the County Cultural Resource Management Plan to further identify specific and significant cultural resources in the region and provide strategies for preservation and enhancement. Include a cross section of residents familiar with the various ethnic histories of the region to advise the Cultural Resources Commission in the designation and management of significant cultural resources.  |          |           |            |
| 2.  | Require development projects to identify all archaeological and cultural sites and resources, including traditional accesses, located within or adjacent to the project area as part of initial project studies. Further require that all proposed activity include appropriate measures such as site avoidance, buffer areas and interpretation, to mitigate potential adverse impacts on cultural resources. Establish standards and procedures to be followed during the subdivision, special management area permit, or change in zoning application stage to ensure adequate review of lands involving archaeologically and culturally sensitive sites.   |          |           |            |
| 3.  | Implement a historic or cultural district overlay ordinance to provide protection for areas of significant archaeological, historical and cultural resources. Areas which should be considered for designation include the following: <ul style="list-style-type: none"> <li>a. Pā'ia Town</li> <li>b. Ho'olawa Bay, Huelo</li> <li>c. Kuiaha Bay, Ha'ikū</li> <li>d. Halehaku Bay, Pilale</li> <li>e. Honopou Valley, Peahi (coastal valley area)</li> <li>f. Kaupakulua Gulch (coastal valley area)</li> <li>g. Hanawana Landing, Huelo/Kailua</li> </ul>  |          |           | <b>X</b>   |
| 4.  | Investigate the creation of a "cultural park" at Ho'olawa Bay and other important sites in the region.   |          |           |            |
| 5.  | Flag for preservation the following general site types and areas: <ul style="list-style-type: none"> <li>a. Ancient Trails/Old government roads</li> <li>b. Fishponds</li> <li>c. Landings</li> <li>d. Nearshore marine cultural resources</li> <li>e. Stream valley areas <ul style="list-style-type: none"> <li>(1) habitation complexes (shoreline and interior)</li> <li>(2) lo'i and 'auwai</li> <li>(3) terraces</li> </ul> </li> <li>f. Significant native vegetation zones</li> <li>g. Plantation ditch systems</li> <li>h. Religious structures (shrines, churches and heiau)</li> <li>i. Old bridges</li> <li>j. Plantation camps</li> <li>k. Plantation era structures and homes</li> <li>l. Petroglyphs</li> <li>m. Burials</li> </ul> |          |           |            |
| 6.  | Initiate and adopt, under the auspices of the Department of Planning, a mauka/makai access dedication ordinance pursuant to Chapter 46, H.R.S. and acquire accesses through purchase, dedication, condemnation, or land exchange.  |          |           |            |

| <b>Table 5-14: Pā'ia -Ha'ikū Community Plan</b>  |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| 7. Formulate and adopt rural and historic district roadway standards to promote the maintenance of historic landscapes and streetscapes in character with the region.<br>8. Designate the location of former camps and communities through a historical marker program.<br>9. Implement a community curatorship program, and site reconstruction and interpretation project at Nakalele Point (west of Ho'okipa).<br>10. Require archaeological field checks before issuance of building and grading permits for properties located in gulches or other areas which could hold archaeological resources.<br>11. Recommend to the Arborist Committee for consideration as "Exceptional Trees," all trees, or groves of trees, that have significant historic or cultural value, represent an important community resource, or are exceptional by reason of age, rarity, location, size or aesthetic quality.  |  |          |           |            |
| <p><b>Discussion:</b> The Proposed Action will support Cultural Resources objectives and policies of the Pā'ia -Ha'ikū Community Plan.</p> <p>A recent action taken by the CWRM ordered full restoration for 10 streams. These streams are categorized as "Kalo and Community Streams" and were restored due to the streams historically supporting and currently supporting communities for taro cultivation, an element of Hawai'i's cultural heritage. The Proposed Action will be in compliance with the CWRM D&amp;O.</p> <p>For the subject Water Lease, CSH prepared an Archaeological LRFI report on behalf of A&amp;B. This investigation was designed to determine the likelihood that historic properties (any, building, structure, object, district, area, or site over 50 years old) may be affected by the Proposed Action and, based on findings, consider cultural resource management recommendations. CSH completed an archaeological field inspection between May 15 and 18, 2018 in conjunction with a survey of EMI infrastructure conducted by Mason Architects. While the primary focus of the survey was to visit 21 sluice gates along the EMI Aqueduct System for architectural recordation, CSH used the opportunity to inspect portions of the License Area along access roads, ditch trails, and within upland stream valleys. The field inspection provided an opportunity to inspect some of the upland areas of the License Area within steep-sided valleys that have not been formally surveyed by archaeologists. As expected, ground visibility was poor due to thick vegetation cover throughout the License Area. Additionally, in many cases, the terrain on both the upslope and downslope sides of the access roads and trails consisted of nearly vertical valley walls that were inaccessible. No potential archaeological sites were observed.</p> |  |          |           |            |
| <b>Economic Activity</b>   |  |          |           |            |
| <b>Goal</b>  |  |          |           |            |
| A stable economy that complements the rural character of the region and provides opportunities for economic diversification and community needs.   |  |          |           |            |
| <b>Objectives and Policies</b>   |  |          |           |            |
| 1. Maintain agriculture as the primary economic activity. Enhance opportunities for the cultivation and processing of local agricultural products and encourage the establishment of agricultural parks and support services (i.e., co-op facilities for distribution, marketing and sales) to enhance diversified agricultural activities.  |  |          |           | <b>X</b>   |
| 2. Establish opportunities for rural light industrial uses as a secondary economic activity consistent with the rural character of the region. This would include uses which are related to the agricultural base, light industries which are oriented to servicing the surrounding community, and small skilled-craft operations.   |  |          |           | <b>X</b>   |
| 3. Provide for neighborhood-scale commercial services within or in close proximity to residential areas to accommodate the needs of residents.   |  |          |           | <b>X</b>   |
| 4. Consider "bed and breakfast" establishments as transient visitor facilities, provided that these are conducted by owner-occupants within a single-family residential dwelling and approved for such use.  |  |          |           | <b>X</b>   |
| 5. Encourage the establishment of a farmers' market at an appropriate site in the Pā'ia and Ha'ikū areas.  |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>   |  |          |           |            |
| 1. Encourage the State Department of Agriculture to draft or propose a master plan to promote diversified agriculture by expanding agricultural programs,  |  |          |           | <b>X</b>   |

| <b>Table 5-14: Pā'ia -Ha'ikū Community Plan</b>   |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|--|----------|-----------|------------|
| identifying the specific uses of those agricultural lands, and locating a site(s) for an agricultural park.<br>2. Update the County's socio-economic database to provide an on-going basis for evaluating socio-economic issues and conditions in the Pā'ia-Ha'ikū Community Plan region.   |  |          |           |            |
| <b>Discussion:</b> The Proposed Action will not affect the Economic Activity objectives and policies of the Pā'ia -Ha'ikū Community Plan.   |  |          |           |            |
|   |  |          |           |            |
| <b>Housing</b>  |  |          |           |            |
| <b>Goal</b>   |  |          |           |            |
| A sufficient supply and choice of attractive housing accommodations with emphasis on affordable housing for a broad cross section of residents.   |  |          |           |            |
| <b>Objectives and Policies</b>  |  |          |           |            |
| 1. Meet the 20-year housing needs of the planning region. Provide sufficient land area for residential development only in appropriate areas near public facilities in order to discourage land speculation, and provide for predictable, efficient land use and development patterns in the region.  |  |          |           | <b>X</b>   |
| 2. Expand the inventory of affordable housing. Provide a variety of affordable housing opportunities, including improved lots and self-help projects, and provide for special needs, including the elderly, single-parent families and the disabled. Encourage public sector projects, government programs, public/private joint efforts, and other assistance programs to reduce costs and increase the availability of affordable and gap-group housing projects  |  |          |           | <b>X</b>   |
| 3. Reduce residential home energy and water consumption.  |  |          |           | <b>X</b>   |
| 4. Secure lands for future low-cost residential development by government or private nonprofit corporations.  |  |          |           | <b>X</b>   |
| 5. Credit the donation of improved residential land to the State or County government towards affordable housing requirements by private developers.  |  |          |           | <b>X</b>   |
| 6. Institute measures to prevent speculation in government-assisted or subsidized affordable housing projects   |  |          |           | <b>X</b>   |
| 7. Plan, design and construct off-site public infrastructure improvements (i.e., water, recreation, roads, sewer, drainage and solid waste) in anticipation of residential developments defined in the Community Plan and consistent with a directed and managed growth plan or strategy  |  |          |           | <b>X</b>   |
| 8. Require a mix of affordable and market-priced housing in all major residential projects, unless the project is to be developed exclusively as an affordable housing project.   |  |          |           | <b>X</b>   |
| 9. Ensure that community parks are developed before major new development projects are allowed to occur.  |  |          |           | <b>X</b>   |
| 10. Support efforts to develop housing for the elderly, the homeless and the working poor.  |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>  |  |          |           |            |
| 1. Develop a comprehensive plan for housing assistance programs which coordinates all available public and private financial resources and incorporates appropriate regulatory measures.<br>2. Establish a housing rehabilitation program, including loans, grants and/or technical assistance and community outreach.<br>3. Adopt standards for housing design and construction to reduce energy and water consumption.<br>4. Encourage efforts to provide shelter for Maui's homeless, and low-cost rental housing for its working poor.<br>5. Propose and define growth limits around existing urbanized areas to accommodate residential development while directing growth in an organized manner. |  |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will not affect the Housing objectives and policies of the Pā'ia -Ha'ikū Community Plan.   |  |          |           |            |
|   |  |          |           |            |
| <b>Town Design</b>  |  |          |           |            |

| Table 5-14: Pā'ia -Ha'ikū Community Plan  |  |  | S | NS | N/A |
|---|--|--|---|----|-----|
| <b>Goal</b>   |  |  |   |    |     |
| Attractive rural town development in keeping with the existing scale, form and character of settlement areas in the region.   |  |  |   |    |     |
| <b>Objectives and Policies</b>  |  |  |   |    |     |
| 1. Incorporate design standards, including, but not limited to, lighting, building and roadway design, appropriate for rural communities. In Agricultural and Rural Districts, excessive roadway standards and street lighting requirements should be discouraged.  |  |  |   |    | X   |
| 2. Establish in designated areas a neotraditional village form of development with defined growth limits and a core of low-rise mixed public, residential and commercial uses organized and designed to enhance pedestrian and bicycle access.  |  |  |   |    | X   |
| 3. Limit building heights to two (2) stories or thirty (30) feet above grade throughout the region, with any exceptions being subject to design review by the County  |  |  |   |    | X   |
| 4. Follow the established design standards for the commercial use areas of Pā'ia Town and Ha'ikū based on the following guidelines: <ul style="list-style-type: none"> <li>a. Visually maintain and enhance the low-density town character.</li> <li>b. Require that future development be compatible with the desired scale and rural character.</li> <li>c. Maintain the ambiance of Pā'ia and Ha'ikū Towns.</li> </ul> <p>Design improvements should be undertaken in a coordinated and ongoing fashion so as to ensure compatibility of future development projects with the desired character. Road improvements for drainage, lighting, and safety should be coordinated with the maintenance of the existing rural, informal streetscape which exemplifies the character of Pā'ia and Ha'ikū Towns. For example, urban roadway standards which require excessive street widths detract from a rural character and should be discouraged.</p> |  |  |   |    | X   |
| 5. Save and incorporate healthy, mature trees in the landscape planting plans of subdivisions, roads or any other construction or development.  |  |  |   |    | X   |
| 6. Incorporate the principles of xeriscaping in all future landscape planting.  |  |  |   |    | X   |
| 7. Use "native plants" for landscape planting in all public projects to the extent practicable.   |  |  |   |    | X   |
| 8. Ensure that all future subdivisions, construction projects, and developments comply with the Maui County Planting Plan.  |  |  |   |    | X   |
| 9. Encourage neighborhood communities and citizen groups to upgrade streets and parks in accordance with the Maui County Planting Plan.   |  |  |   |    | X   |
| 10. Enhance existing public rights-of-way and parks with appropriate trees, turfgrass and groundcovers.   |  |  |   |    | X   |
| <b>Implementing Actions:</b> <ul style="list-style-type: none"> <li>1. Revise subdivision standards, including, but not limited to, roadways and street lighting, for rural areas such as Pā'ia-Ha'ikū to maintain a rural character and appearance. In Agricultural and Rural Districts, excessive roadway standards and street lighting requirements should be discouraged.</li> <li>2. Encourage landscape buffering along the makai side of the proposed Alternate Road and along the makai and mauka edges of the sugar mill area in a manner that does not detract from scenic vistas.</li> </ul>   |  |  |   |    | X   |
| <b>Discussion:</b> The Proposed Action will not affect the Town Design objectives and policies of the Pā'ia -Ha'ikū Community Plan.   |  |  |   |    |     |
| <b>Physical Infrastructure</b>  |  |  |   |    |     |
| <b>Transportation</b>   |  |  |   |    |     |
| <b>Goal</b>   |  |  |   |    |     |
| Transportation systems that facilitate the safe and efficient movement of people, produce and goods within and outside the region.  |  |  |   |    |     |
| <b>Objectives and Policies</b>  |  |  |   |    |     |

| Table 5-14: Pā'ia -Ha'ikū Community Plan   |   | S | NS | N/A |
|--|---|---|----|-----|
| 1.   | Strongly encourage the coordinated efforts of all appropriate County, State and Federal agencies to plan, fund and construct an alternate route around Pā'ia Town.  |   |    | X   |
| 2.   | Establish a regional network of bikeways and pedestrian paths. This should include providing adequate space to accommodate bicycle traffic throughout the Pā'ia Town area, including along Baldwin Avenue from Pā'ia to Makawao.        |   |    | X   |
| 3.   | Encourage convenient pedestrian and bicycle access between residences and neighborhood commercial areas, parks and public facilities, in order to minimize use of the automobile within residential communities.                        |   |    | X   |
| 4.   | Require off-street parking as a part of new commercial development in Lower Pā'ia .   |   |    | X   |
| 5.   | Realign Hāna Highway in the vicinity of Hookipa Park to provide an area for park expansion.   |   |    | X   |
| 6.   | Discourage heavy truck traffic through Pā'ia Town.  |   |    | X   |
| <b>Implementing Actions:</b><br>1. Plan, fund and construct an alternative roadway mauka of Pā'ia Town.<br>2. Prepare or update a roadway and drainage master plan for the Pā'ia- Ha'ikū area and incorporate appropriate road standards for rural areas.<br>3. Incorporate a regional pedestrian and bikeway plan as a functional element of the Community Plan.<br>4. Acquire sites for public parking within Pā'ia Town.<br>5. Adopt an in-lieu parking ordinance that allows the payment of fees for the development of public parking in other nearby locations, in lieu of the construction of required off-street parking as part of a commercial project proposed on a small lot.<br>6. Undertake more frequent resurfacing and repair, and widening of road shoulders in dangerous sections, in order to improve road conditions.<br>7. Provide a stop sign on Ha'iku Road at its intersection with West Kuiaha Road, so that West Kuiaha Road becomes a through street.<br>8. Construct sidewalks with landscaping in the commercial areas of Pā'ia and Ha'ikū, so as to retain their existing characters. |   |   |    | X   |
| <b>Water</b>   |   |   |    |     |
| <b>Goal</b>  |   |   |    |     |
| An adequate supply of potable and irrigation water to meet the needs of the region.  |   |   |    |     |
| <b>Objectives and Policies</b>   |   |   |    |     |
| 1.   | Increase water storage capacity with a reserve for drought periods.   |   |    | X   |
| 2.   | Ensure that adequate water capacity is available for domestic and agricultural needs of the region.   | X |    |     |
| 3.   | Ensure that the development of new water sources does not adversely affect in-stream flows.   |   |    | X   |
| 4.   | Continue the conversion to drip irrigation in sugar cane fields, provided that the practice complies with soil conservation standards.  |   |    | X   |
| 5.   | Improve the existing potable water distribution system and develop new potable water sources prior to further expansion of the State Urban District boundary or major subdivision of land in the State Agricultural or Rural Districts. |   |    | X   |
| 6.   | Ensure adequate supply of groundwater to residents of the region before water is transported to other regions of the island.  |   |    | X   |
| <b>Implementing Actions:</b><br>1. Prepare or update a water improvement master plan for the Pā'ia-Ha'ikū region to be incorporated as a functional component of the Community Plan.<br>2. Update the County's Water Use and Development Plan and estimated water use for the Pā'ia-Ha'ikū region based on the adopted Community Plan and include a reserve capacity for drought conditions.<br>3. Develop a comprehensive agricultural water system, including the use of recycled water and a dual water system for domestic and irrigation uses.<br>4. Provide incentives for water conservation.   |   |   |    | X   |
| <b>Liquid and Solid Waste</b>  |   |   |    |     |
| <b>Goal</b>  |   |   |    |     |

| Table 5-14: Pā'ia -Ha'ikū Community Plan   |  | S | NS | N/A |
|--|--|---|----|-----|
| Efficient, safe and environmentally sound systems for the disposal, recycling and reuse of liquid and solid wastes.  |  |   |    |     |
| Objectives and Policies  |  |   |    |     |
| 1.   | Connect urban residential communities to the County's wastewater treatment system.   |   |    | X   |
| 2.   | Reduce the disposal of solid wastes in the landfills through expanded source reduction, reuse and recycling programs and the provision of convenient drop-off facilities.  |   |    | X   |
| Implementing Actions:  |  |   |    | X   |
| 1.   | Develop and implement a comprehensive waste management and recycling program for the region.   |   |    |     |
| 2.   | Extend the service area of the sewer system to include new major urban residential communities delineated in the Community Plan.   |   |    |     |
| Drainage   |  |   |    |     |
| Goal   |  |   |    |     |
| Improvements to the storm drain system which provide for a high standard in preventing flooding and property damage while not adversely affecting the marine environment and nearshore and offshore water quality. |  |   |    |     |
| Objectives and Policies  |  |   |    |     |
| 1.   | Ensure that storm water run-off and siltation from proposed development will not adversely affect the marine environment and nearshore and offshore water quality. Open culverts which empty directly into nearshore waters should be avoided.         |   |    | X   |
| 2.   | Encourage the construction of natural grass-lined drainage channels, as opposed to concrete channels, and installation of siltation basins.  |   |    | X   |
| 3.   | Encourage the incorporation of drainageways into open space, pedestrian way and bikeway networks.  |   |    | X   |
| 4.   | Effectively control storm water run-off in new urban, rural or agricultural subdivisions and developments, so as to avoid net increase in storm water run-off where practicable.   |   |    | X   |
| Implementing Actions:  |  |   |    | X   |
| 1.   | Review County drainage standards as they relate to rural and agricultural areas.   |   |    |     |
| 2.   | Maintain drainageways, swales and spillways.   |   |    |     |
| Energy   |  |   |    |     |
| Goal   |  |   |    |     |
| Greater self-sufficiency in the need for non-renewable energy and more efficiency in use of energy resources.  |  |   |    |     |
| Objectives and Policies  |  |   |    |     |
| 1.   | Promote energy efficiency as the energy resource of first choice and increase the energy efficiency in all sectors of the community.   |   |    | X   |
| 2.   | Promote environmentally and culturally sensitive use of renewable resources such as biomass, solar, wind, and hydroelectric energy in all sectors of the community.  |   |    | X   |
| 3.   | Support the establishment of an alternate fuels distribution infrastructure.   |   |    | X   |
| 4.   | Utilize renewable energy for water pumping and other energy services which can take advantage of intermittent energy resources.  |   |    | X   |
| 5.   | Support the development of communication infrastructure and promote telecommuting to minimize travel.  |   |    | X   |
| 6.   | Support energy-efficient building design and site development practices.   |   |    | X   |
| 7.   | Promote energy conservation and awareness programs   |   |    | X   |
| 8.   | Limit requirements for street lighting in agricultural and rural communities.  |   |    | X   |
| 9.   | Increase the energy security of community "lifeline" facilities and improve energy emergency response capabilities.  |   |    | X   |
| Implementing Actions:  |  |   |    | X   |
| 1.   | Develop incentives and requirements for energy-efficient new building design, existing building retrofit, and site development practices through various approaches, including modifications to building, zoning, and subdivision codes.               |   |    |     |
| 2.   | Develop and adopt an integrated energy functional plan for the County of Maui that includes, but is not limited to, strategies for energy conservation, reuse of treated wastewater, recycling, reduction in the use of fossil fuels, public education |   |    |     |



| <b>Table 5-14: Pā'ia -Ha'ikū Community Plan</b>  |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| <p>and awareness, and other strategies and actions related to transportation and utilities, housing, environment, urban design and economic activity.</p> <ol style="list-style-type: none"> <li>3. Develop, compile and disseminate information on new energy technologies, policies, and programs that may prove helpful to the community's economy and environment.</li> <li>4. Initiate an integrated County energy resource planning program.</li> <li>5. Use energy efficient street lights and develop appropriate street lighting standards for agricultural and rural areas.</li> <li>6. Identify energy-saving measures for all community buildings and facilities.</li> </ol>   |  |          |           |            |
| <p><b>Discussion:</b> The Proposed Action will support Physical Infrastructure objectives and policies for water in the Pā'ia -Ha'ikū Community Plan.</p> <p>The Proposed Action will for the continued conveyance of water to the MDWS to provide Upcountry Maui, which includes the Ha'ikū community as it is a part of the Upcountry Maui Water System. The Proposed Action will ensure that the MDWS has a reliable source of water. Should the water lease not be issued, the EMI Aqueduct System may be abandoned, leaving the MDWS without a reliable source of water, and alternative sources would need to be developed.</p>  |  |          |           |            |
| <b>Social Infrastructure</b>   |  |          |           |            |
| <b>Recreation and Open Space</b>   |  |          |           |            |
| <b>Goal</b>  |  |          |           |            |
| Quality recreational facilities to meet the present and future needs of residents of all ages and physical ability with emphasis on securing shorefront lands.   |  |          |           |            |
| <b>Objectives and Policies</b>   |  |          |           |            |
| 1. Develop a system of bicycle and pedestrian accesses along the shoreline, where practicable.   |  |          |           | <b>X</b>   |
| 2. Secure shorefront lands with scenic and recreational value potential, especially those identified on the Land Use Map.  |  |          |           | <b>X</b>   |
| 3. Develop adequate park land for active and passive recreational uses.  |  |          |           | <b>X</b>   |
| 4. Improve maintenance and provide more facilities at existing recreation areas, including the old Maui High School.   |  |          |           | <b>X</b>   |
| 5. Improve small boat launching facilities at Maliko Bay to accommodate non-commercial boating needs for Central Maui, Upcountry and North Shore residents. "Commercial" in this context refers to charter boat operations or "boats for hire."  |  |          |           | <b>X</b>   |
| 6. Encourage preservation of rodeo arenas at Maliko and Ulumalu.   |  |          |           | <b>X</b>   |
| 7. Support the expansion of youth recreation programs, including team sports, archery, and tennis.   |  |          |           | <b>X</b>   |
| <p><b>Implementing Actions:</b></p> <ol style="list-style-type: none"> <li>1. Adopt a mauka/makai access dedication ordinance pursuant to Chapter 46, H.R.S., and acquire accesses through purchase, dedication, condemnation or land exchange.</li> <li>2. Implement a program to acquire shorefront sites for future parks and lands for new and expanded parks, consistent with the Community Plan Land Use Map. The program should focus on the following areas: <ol style="list-style-type: none"> <li>a. Develop a regional beach park between Baldwin Park and "Small Park".</li> <li>b. Establish a community park near the Ha'ikū School on Pa'uwela Road, as identified on the Land Use Map.</li> <li>c. Expand Hookipa Park and establish parks at Maliko Bay, Kaulahao and Pa'uwela Point.</li> <li>d. Expand camping opportunities in the region in attractive areas such as Hookipa Park.</li> <li>e. Develop a gymnasium for the Ha'ikū region.</li> <li>f. Develop an active recreational park on lands immediately mauka of the 4th Marine Division Park and preserve Kauhikoa.</li> </ol> </li> <li>3. Provide youth recreation programs, including team sports, archery, and tennis.</li> <li>4. Revise standards in the Park Dedication Ordinance to increase the quantity and quality of parks generated by new developments. Strategies which should be explored include increasing park assessment provisions, various cash vs. land</li> </ol> |  |          |           | <b>X</b>   |

| <b>Table 5-14: Pā'ia -Ha'ikū Community Plan</b>   |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|--|----------|-----------|------------|
| dedication options, and provision of active vs. passive recreation parks. The analysis should recognize the importance of on-site recreational facilities as well as the need for parks at the neighborhood, community and regional level.  |  |          |           |            |
| <b>Education</b>  |  |          |           |            |
| <b>Goal</b>   |  |          |           |            |
| Quality education that meets the needs of residents and provides a solid foundation for self-understanding and enrichment, and future educational and employment opportunities.   |  |          |           |            |
| <b>Objectives and Policies</b>  |  |          |           |            |
| 1. Provide permanent school facilities within the region as needed. Avoid the use of portable structures when permanent facilities are warranted.   |  |          |           | <b>X</b>   |
| 2. Support the construction of covered school walkways and bus shelters.  |  |          |           | <b>X</b>   |
| 3. Provide a community library in the Pā'ia -Ha'ikū region.   |  |          |           | <b>X</b>   |
| <b>Health and Public Safety</b>   |  |          |           |            |
| <b>Goal</b>   |  |          |           |            |
| A sense of security for all residents and visitors, and aid in the protection of life and property.   |  |          |           |            |
| <b>Objectives and Policies</b>  |  |          |           |            |
| 1. Improve fire protection capabilities in the Ha'ikū area and ensure adequate water pressure for fire protection, particularly in urban and rural areas.   |  |          |           | <b>X</b>   |
| 2. Expand surveillance of beach park areas  |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>  |  |          |           |            |
| 1. Provide a fire station or sub-station in Ha'ikū in the vicinity of Ha'ikū Elementary School and near Hāna Highway.   |  |          |           | <b>X</b>   |
| 2. Provide more police patrols, especially in beach park areas.   |  |          |           |            |
| <b>Discussion:</b> The Proposed Action will not affect the Social Infrastructure objectives and policies of the Pā'ia - Ha'ikū Community Plan.  |  |          |           |            |
| <b>Government</b>   |  |          |           |            |
| <b>Goal</b>   |  |          |           |            |
| Government that demonstrates the highest standards of fairness and is responsive to the needs of the community, fiscally responsible and prudent, effective in planning and implementing programs to accommodate anticipated growth, fair and equitable in taxation, strict in the implementation of the Community Plan, and managed efficiently to provide coordinated and timely responses and the delivery of necessary services and programs to the public. |  |          |           |            |
| <b>Objectives and Policies</b>  |  |          |           |            |
| 1. Coordinate, direct and manage future development, and provide for necessary public services and infrastructure in a more effective and timely fashion.   |  |          |           | <b>X</b>   |
| 2. Establish a real property tax system that is fair and equitable to homeowners and takes into account the ability to pay.   |  |          |           | <b>X</b>   |
| 3. Inspire and preserve trust and confidence in the integrity of government.  |  |          |           | <b>X</b>   |
| 4. Continue to investigate and pursue ways to streamline the permit process through means such as consolidated public hearings and concurrent processing of applications.   |  |          |           | <b>X</b>   |
| 5. Continue to investigate and pursue ways to expedite the review and approval process for projects which will result in public benefit by various methods such as "fast-tracking" and the assignment of permit expeditors.   |  |          |           | <b>X</b>   |
| 6. Utilize the County's budgeting process as a means to carry out the policies and priorities of the Community Plan.  |  |          |           | <b>X</b>   |
| 7. Utilize the County's real property tax assessment function as both a means to carry out the policies and priorities of the Community Plan and a mechanism for monitoring and updating the Community Plan.  |  |          |           | <b>X</b>   |
| 8. Support a program of incentives, rebates or credits for voluntary energy conservation and the installation of related improvements, such as solar heating, photovoltaic electrical systems and low flow fixtures.  |  |          |           | <b>X</b>   |
| 9. Determine whether applications for government action within the region are in conformance with the goals, objectives and policies of the Community Plan, as well as the land use map, prior to decision making.  |  |          |           | <b>X</b>   |

| <b>Table 5-14: Pā'ia -Ha'ikū Community Plan</b>  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|----------|-----------|------------|
| 10. Require that actions taken by public officials, boards or commissions of the County of Maui be in compliance with the goals, objectives and policies of the Community Plan.  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b><br>1. Revise building, subdivision and roadway standards appropriate for rural areas to maintain its character, and reduce costs of development.<br>2. Formulate and implement a directed and managed growth program, consistent with the adopted community plans.<br>3. Continue to fund and operate mobile/satellite government facilities. |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will not affect the Government objectives and policies of the Pā'ia -Ha'ikū Community Plan.   |          |           |            |

### 5.7.3 Makawao-Pukalani-Kula Community Plan (1996)

The Makawao-Pukalani-Kula Community Plan is one of nine (9) community plans for the County of Maui. The plan reflects current and anticipated conditions in the Makawao-Pukalani-Kula region, and advances the community's planning goals, objectives, policies, and implementation to guide the future of the region. The Makawao-Pukalani-Kula region is located on the western slopes of Haleakala and includes portions of the Haleakala National Park and encompasses the Upcountry Maui Water Service Area. The following is a discussion of the relevant objectives and policies of the Makawao-Pukalani-Kula Community Plan that relate to the Proposed Action.

| <b>Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)</b>   | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|----------|-----------|------------|
| <b>Economic Activity</b>   |          |           |            |
| <b>Goal</b>  |          |           |            |
| A stable and diverse economic environment which supports a level of community prosperity in order to provide social services and environmental amenities and which respects the region's rural and agricultural lifestyle, open space and natural resources.   |          |           |            |
| <b>Objectives and Policies</b>   |          |           |            |
| 1. Provide for the preservation and enhancement of agricultural lands and operations, emphasizing the importance of promoting diversified agriculture to the region's economic base and lifestyle.   | <b>X</b> |           |            |
| 2. Support programs and plans to develop adequate water systems for agricultural use.  |          |           | <b>X</b>   |
| 3. Protect existing agricultural operations from urban encroachment.   |          |           | <b>X</b>   |
| 4. Support bona fide "family subdivisions" that employ rural planned unit or cluster concepts and thereby encourage existing farms to remain in production.  |          |           | <b>X</b>   |
| 5. Recognize the rural, open space character of the Upcountry region as an economic asset of the island.   |          |           | <b>X</b>   |
| 6. Preserve agriculture by actively promoting locally grown agricultural products.   | <b>X</b> |           |            |
| 7. Discourage large scale visitor industry facilities which result in high concentrations of visitors in the Makawao-Pukalani-Kula region (e.g., Maui Tropical Plantation).  |          |           | <b>X</b>   |
| 8. Support existing and new service and retail industry endeavors such as medical, law, accounting and architectural/engineering offices which will diversify the region's economic base without compromising its rural and agricultural integrity, and which will preserve the traditional scale and style of businesses in the Upcountry area. |          |           | <b>X</b>   |
| 9. Encourage the continuation of sugar, pineapple, cattle ranching, and diversified agriculture as major agricultural activities in the region and at the same time encourage the pursuit of alternative agricultural industries.  | <b>X</b> |           |            |
| 10. Promote agricultural practices that encourage energy efficient and environmentally sound measures such as catchment systems, and use of grey water, organic pesticides, organic fertilizers and biomass energy.  |          |           | <b>X</b>   |
| 11. Develop a stable and balanced employment base which will provide opportunities for increasing the standard of living for all of the region's residents.  |          |           | <b>X</b>   |

| Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)  |  | S | NS | N/A |
|--|--|---|----|-----|
| 12. Support the perpetuation of traditional independent grocery stores to preserve the upcountry character   |  |   |    | X   |
| 13. Encourage the establishment of an institution of higher learning to enhance economic and cultural diversity.   |  |   |    | X   |
| Implementing Action:<br>1. Analyze the zoning and subdivision ordinances and revise wherever needed to facilitate and support the maintenance and development of diversified agricultural activities.<br>2. As a condition of subdivision approval for non-agricultural lots, require that lot owners execute agreements which preclude legal action being brought against nearby farmers on issues relating to agricultural operations/nuisances.<br>3. Request a State Department of Agriculture-prepared master plan to support and expand agricultural activities in the Upcountry region.<br>4. Support, develop and implement programs to increase demand and reliable supply of locally grown produce to hotels, restaurants, and other visitor industry establishments.<br>5. Support, develop and implement programs for marketing agricultural products to neighbor island and Pacific Rim basin markets.<br>6. Seek funding to study the development potential of selected low-intensity service industry activities such as retreats, medical services, camps, cultural centers and education programs |  | X |    |     |
| Discussion: The Proposed Action will support the Economic Activity objectives and policies of the Makawao-Pukalani-Kula Community Plan.  |  |   |    |     |
| The EMI Aqueduct System conveys water to the MDWS, which in turn provides water for domestic and agricultural needs in Upcountry Maui, including KAP and the planned 262-acre KAP expansion. The Proposed Action will ensure the County has a reliable water source to provide for Upcountry Maui and to adequately plan, as well as make sound investments, for growth as there are insufficient alternative water sources and infrastructure to meet present and future demands currently.   |  |   |    |     |
|  |  |   |    |     |
| Land Use   |  |   |    |     |
| Goal   |  |   |    |     |
| The maintenance and enhancement of Upcountry's unique and diverse rural land use character with sensitivity to existing land use patterns, natural resource values, and economic and social needs of the region's residents.   |  |   |    |     |
| Objectives and Policies  |  |   |    |     |
| 1. Recognize the value of open space, including agricultural lands and view planes to preserve the region's rural character  |  |   |    | X   |
| 2. Establish land use patterns which recognize the "Right to Farm," in order to minimize conflicts between existing agricultural operations and urban-related activities.  |  |   |    | X   |
| 3. Discourage speculation in agricultural lands.   |  |   |    | X   |
| 4. Encourage land use patterns which will: <ul style="list-style-type: none"><li>• Support the long-term viability of agriculture.</li><li>• Discourage "urban sprawl".</li><li>• Discourage heavy industrial activities.</li><li>• Discourage large scale hotels.</li><li>• Preserve and respect the Haleakala National Park, and protect the region's open space character.</li><li>• Maintain a separation of character between the Upcountry and the Kihei-Makena regions.</li></ul>   |  |   |    | X   |
| 5. Encourage and support the development of land use performance and subdivision standards such as cluster development which will encourage viable farm operations and discourage estate subdivisions on agricultural lands such as Kula 200 or Kula Glen  |  | X |    |     |
| 6. Encourage new residential developments in areas which are contiguous extensions of, or infills within the established residential pattern, and which do not adversely affect agricultural uses.   |  |   |    | X   |
| 7. Ensure that adequate lands are set aside for recreational and open space purposes   |  |   |    | X   |

| <b>Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)</b> |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| 8.   | Preserve and enhance the “country” atmosphere in all communities by maintaining the small-scale, unique and independent character of each of the three sub-regions. “Country” atmosphere is defined by building style, a low density mix of residences, ranches, open spaces, greenways, plantings and cultivated lands.   |          |           | <b>X</b>   |
| 9.   | Encourage the use of mechanisms such as land trusts and farm trusts to preserve open space and agricultural activity.  |          |           | <b>X</b>   |
| 10.  | Support the development of a regulatory review process which encourages and facilitates public participation in all major land development activities.   |          |           | <b>X</b>   |
| 11.  | Make available agricultural lands for those who wish to farm.  | <b>X</b> |           |            |
| 12.  | Eliminate pseudo-agricultural lots such as Kula 200 and Kula Glen, through recognition of such lots as rural residential subdivisions.   |          |           | <b>X</b>   |
| 13.  | Support requests for Special Permits in the State Agricultural and Rural Districts as follows: (a) limited public and quasi-public uses in the more remote areas; (b) public facility uses such as utility installation, landfills, and wastewater treatment plants whose location is determined by technical considerations; (c) uses which are clearly accessory and subordinate to a permitted agricultural use on the property; and (d) extractive industries, such as quarrying, where the operation does not adversely affect the natural environment or Upcountry character.  |          |           | <b>X</b>   |
| 14.  | Discourage additional development of large scale retail outlets and encourage uses which support neighborhood retail stores.   |          |           | <b>X</b>   |
| 15.  | Discourage heavy industrial uses in the Makawao-Pukalani-Kula region.  |          |           | <b>X</b>   |
| 16.  | Recognize the four (4) semi-urban centers of Makawao Town, Pukalani, Hali’imaile and Waiakoa Village. Within them, support the following land use and circulation patterns: <ul style="list-style-type: none"> <li>a. Within Makawao Town: <ul style="list-style-type: none"> <li>• Business use on Baldwin and Makawao Avenues around the established central core</li> <li>• Public use to support public and quasi-public needs</li> <li>• Open space areas which enhance the Makawao Town’s country town ambiance.</li> <li>• Pedestrian, equestrian, and bicycle pathways which provide alternative linkages among the various sections of Makawao</li> <li>• Residential use including elderly housing.</li> </ul> </li> <li>b. Within Pukalani: <ul style="list-style-type: none"> <li>• Diverse business uses in centralized, consolidated locations</li> <li>• Limited multi-family use located adjacent to open space resources and consistent in scale and character with surrounding single family uses.</li> <li>• Single-family expansion contiguous with existing residential uses</li> <li>• Parks and open spaces within and surrounding commercial and residential areas.</li> </ul> </li> <li>c. Within Hali’imaile: <ul style="list-style-type: none"> <li>• Future neighborhood commercial use.</li> <li>• Single-family expansion contiguous with existing residential uses</li> <li>• Public and park uses reflecting existing uses and areas for expansion</li> <li>• Existing agricultural operations and baseyard.</li> </ul> </li> <li>d. Within and surrounding Waiakoa: <ul style="list-style-type: none"> <li>• Agricultural uses and open space.</li> <li>• Low density, rural residential uses</li> <li>• Village center at Waiakoa.</li> <li>• Single family use surrounding Waiakoa Village.</li> <li>• Public and park uses reflecting existing land uses and areas for expansion.</li> <li>• Projects which avoid “urban sprawl”.</li> </ul> </li> </ul> |          |           | <b>X</b>   |
| 17.  | Support the centralization of business activities and avoid the expansion of strip commercial development.   |          |           | <b>X</b>   |

| <b>Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)</b>  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|----------|-----------|------------|
| 18. Where appropriate, support the reclassification of State Land Use districts to ensure consistency between State Land Use designations and land use designations defined by the Makawao-Pukalani-Kula Community Plan land use map.   |          |           | <b>X</b>   |
| 19. Encourage the development of land use performance and subdivision standards which are compatible with the agricultural Upcountry character.   |          |           | <b>X</b>   |
| 20. Require the development of a comprehensive rezoning program to implement the land use objectives of the Makawao-Pukalani-Kula Community Plan.   |          |           | <b>X</b>   |
| 21. Ensure an adequate supply of lands designated for residential use to address the affordable and elderly housing needs of the region's residents.  |          |           | <b>X</b>   |
| 22. Maintain the open space areas along the Makawao-side of Haleakala Highway Bypass to allow a distinct separation between Pukalani and Makawao.   |          |           | <b>X</b>   |
| 23. Recognize Pukalani as the geographic, public service and commercial hub of the region.  |          |           | <b>X</b>   |
| 24. Ensure an adequate supply of land designated for residential use to provide opportunity for residents to participate in housing market "trade-ups".   |          |           | <b>X</b>   |
| 25. Establish water resource availability as a major criteria in establishing land uses.  | <b>X</b> |           |            |
| 26. Support land use spatial patterns which enhance the functional viability of pedestrian-oriented town and village centers  |          |           | <b>X</b>   |
| 27. Ensure and encourage the long-term viability of "Mom and Pop" stores through establishment and availability of appropriate land use designations  |          |           | <b>X</b>   |
| 28. Support a new Rural land use designation with a minimum two-acre lot size which recognizes large-lot residential land use patterns within the backdrop of a semi-rural setting. The use would be typified by "Gentleman Estate" housing or "Pseudo Agricultural" uses in which the residence would be the primary use and any non-intrusive agricultural activities would be secondary  |          |           | <b>X</b>   |
| 29. Explore the development of an additional Ag park.   | <b>X</b> |           |            |
| 30. Utilize the Rural classification to provide a transition and buffer between the Urban and Rural districts   |          |           | <b>X</b>   |
| 31. Support the establishment of religious institutions and other community-oriented centers near growing population centers.   |          |           | <b>X</b>   |
| <b>Implementing Actions:</b> <ol style="list-style-type: none"> <li>1. Revise the subdivision ordinance to require bona-fide agricultural use for agricultural subdivisions.</li> <li>2. Pursue programs to discourage speculation in agricultural lands including: <ul style="list-style-type: none"> <li>• Land banking.</li> <li>• Dedication of lands for agricultural use supported by County tax policies and State programs.</li> <li>• County applied subzone provisions in the State Agricultural District which strictly limit certain lands to agricultural uses.</li> <li>• Transfer of development rights .</li> </ul> </li> <li>3. Adopt zoning standards which use varying minimum lot sizes or other means to differentiate rural residential and agricultural land uses; and implement a program to rezone existing pseudo-agricultural subdivisions to the two-acre rural district.</li> <li>4. Adopt alternative subdivision standards, in regards to roadway widths, street lights, etc., that reflect the rural and agricultural character of the region. Such standards shall at a minimum, provide for sidewalks on one side of the street for County roads within a 3/4-mile radius of developed or proposed school sites.</li> <li>5. Develop guidelines for rural cluster development and planned unit development as part of a comprehensive growth management and open space protection program. Minimum lot size and unity density requirements for specific property designations in this Plan shall be superseded by sizes and densities specified in ordinances that are enacted establishing comprehensive rural zoning and/or agricultural or rural district cluster development standards and procedures.</li> <li>6. Implement cooperative public and private land use activities (e.g., Hale Mahaolu programs) which address the region's social welfare needs.</li> <li>7. Undertake a comprehensive zoning program to implement the Makawao-Pukalani-Kula Community Plan Land Use Map in order to phase out "Interim" zoning within 18 months of the adoption of this plan.</li> </ol> |          |           | <b>X</b>   |



| Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)  | S | NS | N/A |
|--|---|----|-----|
| <ol style="list-style-type: none"> <li>8. Utilize the land productivity inventory and assessment (i.e., Land Study Bureau "D" and "E" lands and ALISH) to identify low productivity lands which may be suitable for housing development.</li> <li>9. For areas along the Pukalani Bypass Highway and along Kula Highway, provide for a minimum 50-foot open space buffer (i.e., no structures) on each side of the highway pavement. Vehicular access onto the Pukalani Bypass Highway should be prohibited. Access should be from Makani Road, Makawao Avenue or Haleakala Highway.</li> <li>10. As a condition of zoning for the Hui No'eau property, limit public/quasi-public uses to those uses directly related to art display, education, performance, crafting and ancillary activities.</li> <li>11. Determine the need for an additional school site(s) within the planning region at the time of LUC boundary amendments and/or zoning applications for additional housing projects. Special consideration should be given in this regard to additional housing in Hali'imaile Town.</li> <li>12. Support the project district zoning and commercial development of the old Crook Estate in Makawao as follows: approximately two acres for commercial development along Makawao and Baldwin Avenues to a depth of 200 feet, with the remaining land to be divided between park/open space and elderly housing.</li> <li>13. Require the dedication to the County of a 3-acre park at Kealahou at the time of single-family zoning and Rural land use classifications are granted for the Raymond von Tempsky property mauka of Kula Highway.</li> <li>14. Require that the development and dedication (pursuant to parks and playgrounds assessment requirements) of the 15.01-acre park and the development of the 5.11-acre public/quasi-public area and 5-acre multi-family/elderly housing in the vicinity of the proposed Kulamalu development along Kula Highway be developed concurrently with the development of the 20-acre commercial site. The commercial site shall be Country-Town Business at the time of zoning.</li> <li>15. The Rural Kula lands in the Crater Road area shall have one-acre lots with one house per lot.</li> <li>16. The 3.75-acre DePonte parcel in Keokea shall be Rural with one-acre lots.</li> <li>17. The approximately 45-acre Gomes/Phillips subdivision shall be Rural with one-half acre lots.</li> <li>18. Access to the .75-acre Tam parcel between the Lower Kula Road and the Kula Highway shall be from the Lower Kula Road only.</li> <li>19. The commercial sites for, and adjacent to, the Ulupalakua Ranch Store and the Tedeschi Winery shall be Country-Town Business at the time of zoning.</li> <li>20. The .38-acre parcel which houses Maui Island Real Estate shall be used for "low impact" (e.g., traffic and noise) commercial operation(s) during daylight hours only.</li> <li>21. The 21-acre Malama Pacific property shall have an appropriate buffer and one row of Rural uses on the mauka side.</li> <li>22. New commercial development along Haleakala Highway in Pukalani should be discouraged out of concern over the impacts on traffic flow and the residential neighborhood. New commercial development along Makawao Avenue in Pukalani should be limited to professional services with minimal traffic and noise impacts.</li> </ol> |   |    |     |
| <p><b>Discussion:</b> The Proposed Action will support the Land Use objectives and policies of the Makawao-Kihei-Makena Community Plan.</p>  |   |    |     |
| <p>The Proposed Action will allow for the continued conveyance of water through the EMI Aqueduct System. The EMI Aqueduct System conveys water to the MDWS, which in turn provides water for domestic and agricultural needs in Upcountry Maui, including KAP and the planned 262-acre KAP expansion. The Upcountry Maui Water System is the second largest on the island and the County anticipates the population dependent on the water system will grow to approximately 43,675 by 2030. Issuing the Water Lease will ensure the County has a reliable water source to provide for Upcountry Maui and to adequately plan for population growth as there are insufficient alternative water sources and infrastructure to meet present and future demands (Draft Maui Island Water Use and Development Plan, March 2019).</p>   |   |    |     |
| <b>Environment</b>   |   |    |     |
| <b>Goal</b>  |   |    |     |

| Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)  |   | S | NS | N/A |
|--|---|---|----|-----|
| Protection of Upcountry's natural resources and environment as a means of preserving and enhancing the region's unique beauty, serenity, ecology, and productivity, in order that future generations may enjoy and appreciate an environment of equal or higher quality. |   |   |    |     |
| Objectives and Policies  |   |   |    |     |
| 1.   | Preserve environmental resources by maintaining important agricultural lands as an integral part of the open space setting in each community.   |   |    | X   |
| 2.   | Recognize agricultural lands as an essential ingredient to the Upcountry atmosphere. Criteria for determining such lands may include: <ul style="list-style-type: none"><li>Land Study Bureau productivity ratings for agricultural lands.</li><li>Lands presently in cultivation</li><li>Agricultural Lands of Importance to the State of Hawai'i (ALISH).</li></ul>   |   |    | X   |
| 3.   | Recognize and protect rare, endangered and unique biological resources in the region  |   |    | X   |
| 4.   | Encourage Federal, State and County cooperation in the preparation of a comprehensive Haleakala summit master plan to promote orderly and sensitive development which is compatible with the natural and native Hawaiian cultural environment of Haleakala National Park.   |   |    | X   |
| 5.   | Support efforts for a comprehensive watershed management program which shall incorporate, as key components, soil conservation, forest management and reforestation/replanting which: <ul style="list-style-type: none"><li>Utilizes endemic and indigenous plant species;</li><li>Protects the environment from exotic plants and animals; and</li><li>Prevents the introduction and establishment of non-native species within this native forest region that may ultimately threaten water supply and native ecosystems.</li></ul> |   |    | X   |
| 6.   | Preserve the existing visual, noise, odor and air quality characteristics found in agricultural/rural neighborhoods of the Makawao-Pukalani-Kula region.  |   |    | X   |
| 7.   | Preserve the health and welfare of the region's residents by encouraging a balanced approach in utilizing man-made pesticides, herbicides and fertilizers.  |   |    | X   |
| 8.   | Encourage and support the use of organic farming as a means of maintaining the integrity of Upcountry's environment.  |   |    | X   |
| 9.   | Promote landscaping which utilizes endemic and indigenous plant species.  |   |    | X   |
| Implementing Actions:  |   |   |    | X   |
| 1.   | Conduct a regional land resource assessment to identify areas suitable for revegetation and reforestation with native plant species.  |   |    |     |
| 2.   | Implement a forest planting program to achieve a goal of an additional 10,000 acres of forested land to enhance the Makawao-Pukalani-Kula region's natural environment (e.g., watershed recharge, soil erosion mitigation).   |   |    |     |
| 3.   | Assist State and Federal government efforts to prevent establishment and spread of invasive alien species.  |   |    |     |
| 4.   | Encourage agencies and educational institutions to increase instructional programs in organic farming and integrated pest management.   |   |    |     |
| 5.   | Identify and implement ways to mitigate aircraft noise which adversely affects Upcountry's rural residential areas and Haleakala National Park.   |   |    |     |
| Discussion: The Proposed Action will not affect the Environment objectives and policies of the Makawao-Kihei-Makena Community Plan.  |   |   |    |     |
| Cultural Resources   |   |   |    |     |
| Goal   |   |   |    |     |
| The identification, preservation and where appropriate, restoration and promotion of cultural resources and practices which reflect the rich and diverse heritage found in the Upcountry region.   |   |   |    |     |
| Objectives and Policies  |   |   |    |     |
| 1.   | Recognize the importance of historically and archaeologically sensitive sites, both known and undiscovered, and encourage their preservation and protection.  | X |    |     |
| 2.   | Support public and private efforts to inventory, evaluate, classify, register, and protect, as appropriate, cultural resources to increase public knowledge of the region's rich and diverse cultural character.  |   |    | X   |

| <b>Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)</b>   |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| 3.   | Promote community awareness of the Makawao-Pukalani-Kula region's cultural and historic backgrounds through the establishment of museums, cultural centers and educational programs.   |          |           | <b>X</b>   |
| 4.   | Recognize and respect the Upcountry region's multi-cultural heritage.  |          |           | <b>X</b>   |
| 5.   | Maintain the integrity of Upcountry's cultural and historical resources through implementation of a controlled access program to designated sites.   |          |           | <b>X</b>   |
| 6.   | Encourage and support the publication of an Upcountry newspaper  |          |           | <b>X</b>   |
| 7.   | Promote distinct cultural resources as an identifying characteristic of the region   |          |           | <b>X</b>   |
| 8.   | Protect the visual integrity of upcountry cultural landscapes.   |          |           | <b>X</b>   |
| 9.   | Legitimize indigenous architecture as viable spaces for living, work and recreation.   |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>   |  |          |           |            |
| 1.   | Expand and update the County Cultural Resource Management Program to identify significant cultural resources and provide recommendations for their protection and preservation.  |          |           | <b>X</b>   |
| 2.   | Promote significant cultural events such as the Makawao Rodeo, Holy Ghost Feast, Obon festivals, Seabury Hall Craft Fair and Makawao Parade.   |          |           |            |
| 3.   | Seek funding to establish and maintain an Upcountry cultural center which will document the rich and diverse heritage of the region. Components of the cultural center should include:   |          |           |            |
|  | a. A Paniolo museum which documents the rich Paniolo history of Makawao Town;  |          |           |            |
|  | b. A cultural practices center which documents and perpetuates ancient arts and crafts of the host culture that are unique the region (e.g., dryland agriculture and adz making);  |          |           |            |
|  | c. A rural history center which records and promotes the history of Kula, Ulupalakua and other rural settlements which were important in the development of the Upcountry area;  |          |           |            |
|  | d. An Upcountry community theater to provide a forum for the practice, preservation and perpetuation of cultural and performing arts.  |          |           |            |
| 4.   | Modify restrictive building code requirements to allow new buildings and renovations to be consistent with historic designs, such as balconies and canopies which protrude over the sidewalk, or others, which do not compromise public safety.  |          |           |            |
| 5.   | Develop a County ordinance for indigenous architecture.  |          |           |            |
| 6.   | Adopt standards for indigenous architecture.   |          |           |            |
| <b>Discussion:</b> The Proposed Action will not affect the Cultural Resources objectives and policies of the Makawao-Kihei-Makena Community Plan. The proposed action will also insure that the EMI Aqueduct System, which has been in operation for more than 100 years, will be preserved. |  |          |           |            |
| <b>Department of Hawaiian Home Lands</b>   |  |          |           |            |
| <b>Goal</b>  |  |          |           |            |
| The immediate implementation of programs and settlement of Native Hawaiians on lands of the Department of Hawaiian Home Lands that diversifies and enriches the Upcountry community.   |  |          |           |            |
| <b>Objectives and Policies</b>   |  |          |           |            |
| 1.   | Encourage and support planning and implementation of Department of Hawaiian Home Lands projects that benefit native Hawaiians, that include a variety of land uses in order to form a complete community, and that are in harmony with the goals and objectives of the Makawao-Pukalani-Kula Community Plan. | <b>X</b> |           |            |
| 2.   | Recognize and support the allocation of water resources for Department of Hawaiian Home Lands projects, consistent with applicable State and Federal laws.   | <b>X</b> |           |            |
| 3.   | Encourage cooperative planning programs between the State, the County, the DHHL and the native Hawaiian community which will foster a desired lifestyle and perpetuate the culture.  |          |           | <b>X</b>   |
| 4.   | Coordinate and integrate the development of Department of Hawaiian Home Lands' projects with surrounding Upcountry communities.  |          |           | <b>X</b>   |
| 5.   | Encourage the development of cooperative planning programs between the State and County and the Department of Hawaiian Home Lands to ensure that infrastructure and public service needs adequately address the needs of the entire Upcountry community. For example, consideration shall be given to the    |          |           | <b>X</b>   |

| Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)  |   | S | NS | N/A |
|--|---|---|----|-----|
|  | identification and development of new school sites, facilities, and programs which will provide adequate choices for education for Upcountry residents.   |   |    |     |
| 6.   | Encourage the development of cooperative agricultural development programs between the County and the Department of Hawaiian Home Lands to support diversified agricultural pursuits (i.e., programs, for example, which may identify opportunities for creating efficiencies in scale which will benefit all Upcountry farmers). |   |    | X   |
| 7.   | Support educational facilities and programs development by the Department of Hawaiian Home Lands.   |   |    | X   |
| 8.   | Recognize the Department of Hawaiian Home Lands' Waiohuli-Keokea region as a potential agricultural and affordable housing community and the eventuality of a Hawaiian sovereign entity.  |   |    | X   |
| <b>Implementing Actions:</b>   |   |   |    |     |
| 1.   | Encourage the creation of a Department of Hawaiian Home Lands-County Task Force to study and identify opportunities for developing cooperative programs and projects.   |   |    | X   |
| 2.   | Develop alternate subdivision standards for infrastructure which: (a) ensure public health, safety and welfare; (b) are consistent with the desired lifestyle of the Native Hawaiian community; (c) reduce construction costs; and (d) speed the settlement of the project area.  |   |    |     |
| <b>Discussion:</b> The Proposed Action will support the Department of Hawaiian Home Lands objectives and policies of the Makawao-Kihei-Makena Community Plan.  |   |   |    |     |
| The Water Lease will include a reservation of water for the DHHL. Non-potable water needs for the DHHL's lands in Ke'anae-Wailuānui amount to 6,868,000 gpd. Although the DHHL holds a reservation for 3,000 gpd of potable water for this area for development over the next 20 years, another 7,000 gpd of potable water may be required for longer-term development. Thus, a potential reservation for this area amounts to 6,875,000 gpd. Ke'anae is fed by Pi'ina'au and Palauhulu Streams; Wailuānui is fed by Wailuānui and Waiokamilo Streams. These four streams are, or will soon be, fully restored. The proposed Water Lease, therefore, would not be affected by such reservations of water for the DHHL. |   |   |    |     |
| For its agricultural and residential lots in Keokea-Waiohuli, the DHHL has already secured a potable water reservation from the CWRM. Non-potable water demand amounts to 10,428,000 gpd for which a water reservation would have to be secured.   |   |   |    |     |
| Until 2016, the DHHL's Pulehunui lands in Central Maui had been leased to HC&S, cultivated in sugar cane, and, thus served by the HC&S irrigation system in existence at the time. The DHHL's current plans for these lands include agricultural, commercial, industrial and civic uses. A reservation of 1,734,000 gpd of ground water has already been secured from the CWRM. A non-potable water demand of 1,027,510 gpd has been identified, and water delivered through the EMI Aqueduct System has been identified as a potential source of this water.  |   |   |    |     |
| The DHHL staff has identified 11,455,510 gpd (10,428,000 gpd for Keokea-Waiohuli + 1,027,510 gpd for Pulehunui) of water as their recommendation for a reservation of water rights sufficient to support current and future homestead needs related to this proposed Water Lease.  |   |   |    |     |
| The DHHL has indicated that reserved water may be available for other purposes until the DHHL has an actual need for the water. In addition, for its Keokea-Waiohuli and Pulehunui lands, the DHHL will be dependent on the EMI Aqueduct System collecting and transporting East Maui stream waters, in order to get waters to these lands.  |   |   |    |     |
| <b>Urban Design</b>  |   |   |    |     |
| <b>Goal</b>  |   |   |    |     |
| Recognition and preservation of the unique design characteristics of the Makawao, Pukalani and Kula communities in order to enhance Upcountry's man-made environment.  |   |   |    |     |
| <b>Objectives and Policies</b>   |   |   |    |     |
| 1.   | Encourage urban design concepts which promote and produce pedestrian orientation, town centers, mixed land uses and energy conservation principles to enhance the identity and livability of new and existing communities   |   |    | X   |
| 2.   | Support the revision of subdivision and roadway design criteria and standards to be more compatible with the rural character of the Upcountry region.   |   |    | X   |

| <b>Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)</b>  |  |  |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|--|--|--|----------|-----------|------------|
| 3.  | Utilize design standards for multi-family residential uses which respect Upcountry's rural residential lifestyle.  |  |  |          |           | <b>X</b>   |
| 4.  | Encourage commercial building scales which are compatible with the low-scale character of existing commercial structures.  |  |  |          |           | <b>X</b>   |
| 5.  | Preserve the unique characteristics of all of the Upcountry towns by recognizing and respecting architectural styles as described in the Country Town Design Guidelines.   |  |  |          |           | <b>X</b>   |
| 6.  | Support the development of pedestrian, equestrian and bikeway connections which provide safe and convenient linkages within and between Upcountry communities.   |  |  |          |           | <b>X</b>   |
| 7.  | Encourage the use of appropriate landscaping, with greenways where possible, along major roadways, parking areas and land use transition areas to establish and maintain landscape themes which are consistent with the character of the each Upcountry community  |  |  |          |           | <b>X</b>   |
| 8.  | Enforce a two-story or 35-foot height limitation throughout the region, except for public/quasi-public uses such as auditoriums, gymnasiums, and fire stations.  |  |  |          |           | <b>X</b>   |
| <b>Implementation Action:</b>   |  |  |  |          |           |            |
| 1.  | Maintain Makawao Avenue and Baldwin Avenue as the primary roadways serving the Makawao Town center.  |  |  |          |           |            |
| 2.  | Provide continuous sidewalks and encourage protective overhangs along Baldwin and Makawao Avenues.   |  |  |          |           |            |
| 3.  | Provide continuous sidewalks along Lower Kula road within Waiakoa Village, from the Kula Community Center to Calasa Road.  |  |  |          |           |            |
| 4.  | Areas designated for multi-family use should adhere to the following design guidelines:  |  |  |          |           |            |
|   | a. Building heights should combine one and two story structures limited to 35 feet which are compatible with surrounding single-family residences;   |  |  |          |           |            |
|   | b. Exterior materials should emphasize natural materials such as wood, with earth-tone colors;   |  |  |          |           |            |
|   | c. Private open spaces should be provided and maintained for each unit; and  |  |  |          |           |            |
|   | d. Generously landscaped common areas should be provided.  |  |  |          |           |            |
| 5.  | Develop and implement alternate rural standards for public facilities and privately sponsored building improvements, roadways and subdivisions.  |  |  |          |           |            |
| 6.  | Develop appropriate street lighting standards for agricultural and rural areas.  |  |  |          |           |            |
| <b>Discussion:</b> The Proposed Action will not affect the Urban Design objectives and policies of the Makawao-Kihei-Makena Community Plan.   |  |  |  |          |           |            |
|   |  |  |  |          |           |            |
| <b>Physical Infrastructure</b>  |  |  |  |          |           |            |
| <b>Goal</b>   |  |  |  |          |           |            |
| The timely and environmentally sensitive development and maintenance of infrastructure systems which protect and enhance the safety and health of Upcountry's residents and visitors, including the provision of domestic water, utility and waste disposal services, and effective transportation systems which meet the needs of residents and visitors while maintaining the region's rural character. |  |  |  |          |           |            |
| <b>Objectives and Policies</b>  |  |  |  |          |           |            |
| <b>Transportation</b>   |  |  |  |          |           |            |
| 1.  | Ensure the safe and convenient movement of people and goods by providing maintained roadways having adequate carrying capacities.  |  |  |          |           | <b>X</b>   |
| 2.  | Give priority consideration to the "no-build" alternative of the proposed Upcountry-Kihei connector highway, and give secondary consideration to the alternative route with the least negative impact to the Upcountry lifestyle and character by locating the Upcountry terminus in the vicinity of the intersection at Hali'imaile Road and Haleakala Highway. |  |  |          |           | <b>X</b>   |
| 3.  | Support the planning of new roadways provided that there would be minimal impact to the Upcountry lifestyle and character.   |  |  |          |           | <b>X</b>   |
| 4.  | If the "no-build" alternative is not chosen, facilitate agricultural traffic movements at the intersection of the proposed Kihei-Upcountry highway and Omaopio Road, and at the intersection of the proposed Kihei-Upcountry highway and Pulehu Road by requiring an overpass and/or underpass for both intersections.   |  |  |          |           | <b>X</b>   |
| 5.  | Provide adequate off-street parking and a loading zone to serve the business center in Makawao Town.   |  |  |          |           | <b>X</b>   |

| <b>Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)</b> |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| 6.   | Improve the road through Hali'imaile or provide an additional access road between the terminus of the proposed Upcountry-Kihei Highway, if built, and the communities east of Baldwin Avenue, in order to relieve traffic congestion in Makawao town.  |          |           | <b>X</b>   |
| 7.   | Encourage and support alternative transportation programs that could include various methods of land use planning and urban design, which reduce reliance on the automobile as the primary mode of travel.   |          |           | <b>X</b>   |
| 8.   | Support the establishment of a limited service public transportation system to key destinations within the Upcountry area to meet the needs of youth, after school needs of students, seniors and physically disabled.   |          |           | <b>X</b>   |
| 9.   | Establish safe pathways connecting schools, recreation facilities, and commercial and residential centers for use by walkers, joggers, equestrians and bicyclists.   |          |           | <b>X</b>   |
| 10.  | Provide transportation improvements in accordance with the Americans with Disabilities Act, including sidewalks, bikeways and other traffic safety improvements at existing and proposed school areas to ensure student safety.  |          |           | <b>X</b>   |
| 11.  | Promote traffic safety through provision of roadway safety and maintenance improvements, and traffic control improvements throughout the region.   |          |           | <b>X</b>   |
| 12.  | Recognize the need to establish designated truck traffic routes.   |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>                                   |  |          |           |            |
| 1.   | If the "no-build" alternative is not chosen, establish an alignment for the Upcountry-Kihei Connector road which provides a connection to Haleakala Highway near its intersection with Hali'imaile Road  |          |           |            |
| 2.   | Establish an additional roadway connection to Haleakala Highway from Pukalani Terrace through the 65-acre single-family area located north of and adjacent to the existing Pukalani Terrace residential subdivision. The alignment of this new roadway shall not displace existing residences.   |          |           |            |
| 3.   | Construct pedestrian, equestrian and bikeway facilities which connect major origin and destination points. Such facilities should include:   |          |           |            |
| a.   | a. Pedestrian/equestrian/bikeway routes which link the Makawao Town center, Eddie Tam Memorial Gym, Kalama Intermediate School, and continuing along Makani Road to Haleakala Highway.   |          |           |            |
| b.   | b. Pedestrian/equestrian/bikeway routes which link Pukalani residential areas with the Pukalani Community Center, Pukalani Elementary School, and the Pukalani Terrace Center, along Pukalani Street from Haleakala Highway to the Pukalani Country Club, with a future extension to the Kulamalu project.   |          |           |            |
| c.   | c. Pedestrian/bikeway route along the Pukalani Bypass and Kula Highway from Makani Road to Ulupalakua.   |          |           |            |
| 4.   | Eliminate as a capital improvement project, the planning, design and funding for the Makena-Ulupalakua connector road.   |          |           | <b>X</b>   |
| 5.   | Develop and implement a County user fee for commercial bicycle tours which shall be used to fund bikeway improvements.   |          |           |            |
| 6.   | Provide roadway shoulder improvements to improve bicycling safety, but do not detract from the rural atmosphere.   |          |           |            |
| 7.   | Prepare and implement an Upcountry master plan for bikeways, equestrian trails and pedestrian ways, including a capital improvements program which can be funded by Federal, State and County monies.  |          |           |            |
| 8.   | Prepare a roadway master plan for the Upcountry region, including the development of appropriate road standards for agricultural and rural areas.  |          |           |            |
| 9.   | Prepare and implement a public bus or van transportation system plan for the Upcountry area.   |          |           |            |
| 10.  | Establish a "park and ride" site(s) in the Upcountry area. Sites should be identified to facilitate carpooling to Wailuku-Kahului and to Kihei-Makena.   |          |           |            |
| 11.  | Improve the safety of Omaopio and Pulehu Roads.  |          |           |            |
| 12.  | Improve upper Kealahoa Avenue, particularly at its intersection with Haleakala Highway, to facilitate movement of heavy weight vehicles. Once such improvements are made, heavy weight vehicles (30,000 GVW) should not be permitted as through traffic between Makawao Avenue and Meha Road. Any improvements shall preserve the scenic qualities of the route to the greatest extent possible. |          |           |            |
| 13.  | Prohibit vehicular access onto the Pukalani Bypass Highway. Access should be from Makani Road, Makawao Avenue or Haleakala Highway.  |          |           |            |



| Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)   |   | S | NS | N/A |
|---|---|---|----|-----|
| 14. New commercial development along Haleakala Highway in Pukalani should be discouraged out of concern over the impacts on traffic flow and the residential neighborhood. New commercial development along Makawao Avenue in Pukalani should be limited to professional services with minimal traffic and noise impacts. |   |   |    |     |
| Water   |   |   |    |     |
| 1.  | Prioritize the allocation of water as new resources and system improvements become available as follows: (a) for maintenance and expansion of diversified agricultural pursuits and for the Department of Hawaiian Homes projects; and then (b) for other uses including development of new housing, commercial and public/quasi-public uses. | X |    |     |
| 2.  | Encourage a flexible and comprehensive water management approach that recognizes the various collection and delivery improvements as one cohesive system.   | X |    |     |
| 3.  | The Department of Water Supply shall expand water supply and distribution systems, including catchment systems, in accordance with the directions set forth in the Makawao-Pukalani-Kula Community Plan.  |   |    | X   |
| 4.  | Restrict the use of any water developed within or imported to the Upcountry region to consumption within the Upcountry region, with exception provided for agricultural use.  |   |    | X   |
| 5.  | Recognize and support the immediate allocation of water resources for Department of Hawaiian Home Lands projects and agriculture.   | X |    |     |
| 6.  | Seek expanded municipal withdrawal from the lowest cost source to serve the Upcountry region.   |   |    | X   |
| 7.  | Support the development of separate domestic and irrigation water systems.  |   |    | X   |
| 8.  | Explore the development of alternative water sources (e.g., grey water, catchment systems, etc.) to meet the needs of diversified agriculture, businesses and residents   |   |    | X   |
| 9.  | Encourage the construction of additional storage capacity by the Department of Water Supply, commercial developers, and individual farmers to help alleviate the inadequate water supply  |   |    | X   |
| 10.   | Recognize the importance of the forested watershed areas and that their health and well-being are vital to all the residents of the Upcountry area.   | X |    |     |
| 11.   | Explore a comprehensive reforestation program to increase and catch more rainwater for the Upcountry area.  |   |    | X   |
| 12.   | Encourage cooperative efforts among Federal, State, and County agencies, and developers to ensure that water storage and delivery needs of the region are met in a timely and orderly manner.   |   |    | X   |
| Implementing Actions:   |   |   |    |     |
| 1.  | Increase catchment efficiency and storage capacity on the upper Kula line to achieve 4 mgd sustained delivery to farms and residences.  |   |    | X   |
| 2.  | Increase the deliverable capacity of the lower Kula line to 7.5 mgd and extend the line to Keokea to serve Department of Hawaiian Home Lands projects.  |   |    |     |
| 3.  | Systematically improve and upgrade the existing water delivery system.  |   |    |     |
| 4.  | Provide incentives for water conservation practices.  |   |    |     |
| 5.  | Provide tax and/or water rate incentives for construction of agricultural water storage facilities.   |   |    |     |
| 6.  | Increase the pumping capacity from low cost sources to upper areas to supplement the surface water supply.  |   |    |     |
| 7.  | Develop and execute an agreement which ensures for the County, long-term rights to water from the lowest cost sources.  |   |    |     |
| 8.  | Conduct a groundwater development feasibility study for the Upcountry region.   |   |    |     |
| 9.  | Implement a water conservation and education program.   |   |    |     |
| Liquid and Solid Waste Disposal   |   |   |    |     |
| 1.  | Improve existing solid waste disposal facilities and services.  |   |    | X   |
| 2.  | Maintain a waste transfer station site in the Makawao-Pukalani-Kula region  |   |    | X   |
| 3.  | Support wastewater reclamation and grey water alternatives as a means of reducing demands upon limited water resources in the Upcountry region.   |   |    | X   |
| 4.  | Support solid waste reduction, recycling and reuse programs in the Upcountry area   |   |    | X   |
| Implementing Actions:   |   |   |    |     |

| <b>Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)</b>   |  |  |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|--|--|----------|-----------|------------|
| <ol style="list-style-type: none"> <li>1. Continue and expand a pro-active County waste management strategy which includes reduction, recycling and reuse of solid waste and wastewater as major components.</li> <li>2. Construct a wastewater collection and treatment system for the Waiakoa, Makawao, Pukalani and all new urban developments.</li> <li>3. Utilize treated effluent for irrigation of farms, golf courses, parks and highway landscaping.</li> </ol>   |  |  |  |          |           |            |
| <b>Drainage</b>  |  |  |  |          |           |            |
| 1. Respect and preserve natural drainageways as part of good land development practices and recognize their value as open-space corridors.   |  |  |  |          |           | <b>X</b>   |
| 2. Implement comprehensive drainage improvements and maintenance procedures to ensure that the overall system will meet public safety and welfare needs of the region's residents.   |  |  |  |          |           | <b>X</b>   |
| 3. Reduce the threat of property loss and environmental degradation attributed to stormwater runoff through a comprehensive reforestation and revegetation program.  |  |  |  |          |           | <b>X</b>   |
| 4. Support the Soil and Water Conservation Districts in their efforts to implement soil erosion and drainage control management programs.  |  |  |  |          |           | <b>X</b>   |
| 5. Prepare a drainage master plan for the Upcountry region, including appropriate standards for drainage systems.  |  |  |  |          |           | <b>X</b>   |
| 6. Plan, program, budget and construct drainage system capital improvement projects to improve safety.   |  |  |  |          |           | <b>X</b>   |
| <b>Energy</b>  |  |  |  |          |           |            |
| 1. Promote conservation and efficiency as the energy resource of first choice  |  |  |  |          |           | <b>X</b>   |
| 2. Develop incentives and requirements for energy efficient building design and site development practices through modifications to building, zoning, and subdivision codes.   |  |  |  |          |           | <b>X</b>   |
| 3. Encourage urban design concepts which promote pedestrian orientation and mixed land uses in order to reduce automobile travel and promote energy conservation.  |  |  |  |          |           | <b>X</b>   |
| 4. Prohibit geothermal energy development that would negatively impact the Upcountry region or diminish culturally sensitive resources.  |  |  |  |          |           | <b>X</b>   |
| 5. Encourage the development and location of public facilities within or in close proximity to the Makawao, Pukalani, and Kula Communities, thereby reducing energy expenditures.  |  |  |  |          |           | <b>X</b>   |
| 6. Achieve the energy efficient movement of people and goods through improvements to the transportation systems serving the planning area  |  |  |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>   |  |  |  |          |           |            |
| <ol style="list-style-type: none"> <li>1. Adopt standards and regulations for the use of solar water heating, low flush toilets and other conservation fixtures in new building construction.</li> <li>2. Develop and adopt an integrated energy functional plan for the County of Maui.</li> <li>3. Use energy efficient street lights and develop appropriate street lighting standards for agricultural and rural areas.</li> <li>4. Study and identify opportunities, including tax incentives, for developing alternative energy sources such as wind, biomass, solar and water driven electricity in the Upcountry region.</li> </ol>  |  |  |  |          |           | <b>X</b>   |
| <p><b>Discussion:</b> The Proposed Action will support the Physical Infrastructure objectives and policies for water of the Makawao-Kihei-Makena Community Plan.</p> <p>The Proposed Action will allow for the continued conveyance of water through the EMI Aqueduct System. The EMI Aqueduct System conveys water to the MDWS, which in turn provides water for domestic and agricultural needs in Upcountry Maui, including KAP and the planned 262-acre KAP expansion. The Upcountry Maui Water System is the second largest on the island and the County anticipates the population dependent on the water system will grow to approximately 43,675 by 2030. Issuing the Water Lease will ensure the County has a reliable water source to provide for Upcountry Maui and to adequately plan for population growth as there are insufficient alternative water sources and infrastructure to meet present and future demands (Draft Maui Island Water Use and Development Plan, March 2019).</p> <p>Non-potable water needs for the DHHL's lands in Ke'anae-Wailuānui amount to 6,868,000 gpd. Although the DHHL holds a reservation for 3,000 gpd of potable water for this area for development over the next 20 years, another 7,000 gpd of potable water may be required for longer-term development. Thus, a potential reservation for</p> |  |  |  |          |           |            |

| <b>Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)</b>   |  |  |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|--|--|----------|-----------|------------|
| <p>this area amounts to 6,875,000 gpd. Ke'anae is fed by Pi'ina'au and Palauhulu Streams; Wailuānui is fed by Wailuānui and Waiokamilo Streams. These four streams are, or will soon be, fully restored. The proposed Water Lease, therefore, would not be affected by such reservations of water for the DHHL.</p> <p>For its agricultural and residential lots in Keokea-Waiohuli, the DHHL has already secured a potable water reservation from the CWRM. Non-potable water demand amounts to 10,428,000 gpd for which a water reservation would have to be secured.</p> <p>Until 2016, the DHHL's Pulehunui lands in Central Maui had been leased to HC&amp;S, cultivated in sugar cane, and, thus served by the HC&amp;S irrigation system in existence at the time. The DHHL's current plans for these lands include agricultural, commercial, industrial and civic uses. A reservation of 1,734,000 gpd of ground water has already been secured from the CWRM. A non-potable water demand of 1,027,510 gpd has been identified, and water delivered through the EMI Aqueduct System has been identified as a potential source of this water.</p> <p>The DHHL staff has identified 11,455,510 gpd (10,428,000 gpd for Keokea-Waiohuli + 1,027,510 gpd for Pulehunui) of water as their recommendation for a reservation of water rights sufficient to support current and future homestead needs related to this proposed Water Lease.</p> <p>The DHHL has indicated that reserved water may be available for other purposes until the DHHL has an actual need for the water. In addition, for its Keokea-Waiohuli and Pulehunui lands, the DHHL will be dependent on the EMI Aqueduct System collecting and transporting East Maui stream waters, in order to get waters to these lands.</p> <p>The Water Lease under the Proposed Action will include a requirement for watershed management for East Maui, recognizing the importance of the forested watershed areas.</p> |  |  |  |          |           |            |
| <b>Housing</b>   |  |  |  |          |           |            |
| <b>Goal</b>  |  |  |  |          |           |            |
| Housing opportunities for the residents of Makawao-Pukalani-Kula, to include all income and age groups, which are affordable, safe, and environmentally and culturally compatible.   |  |  |  |          |           |            |
| <b>Objectives and Policies</b>   |  |  |  |          |           |            |
| 1. Encourage the use of tools such as low-rise planned unit development or rural cluster housing approaches which will allow housing projects to be more compatible with the natural setting and preserve open space   |  |  |  |          |           | <b>X</b>   |
| 2. Provide increased opportunities for affordable housing through: <ul style="list-style-type: none"> <li>Coordinated government assistance programs including the Department of Hawaiian Home Lands</li> <li>Provision of variable housing densities in areas designated for residential use</li> <li>Encourage housing rehabilitation through programs offering loans, grants, and/or technical assistance and community outreach.</li> </ul>  |  |  |  |          |           | <b>X</b>   |
| 3. Provide a mixture of housing types, smaller lot sizes, and coordinated assistance programs aimed at lowering housing costs and expanding housing opportunities.   |  |  |  |          |           | <b>X</b>   |
| 4. In keeping with public health and safety principles, and consistent with the Upcountry character, develop zoning, subdivision and design standards which will facilitate the development of affordable housing  |  |  |  |          |           | <b>X</b>   |
| 5. To establish an efficient settlement pattern, discourage a dispersed pattern of development, thereby reducing public service, infrastructure and maintenance costs.   |  |  |  |          |           | <b>X</b>   |
| 6. Provide independent living and assisted living elderly housing with support facilities and services to meet the needs of the region's elderly residents   |  |  |  |          |           | <b>X</b>   |
| 7. Seek the timely and orderly development of lands designated by the Community Plan for residential purposes.   |  |  |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>   |  |  |  |          |           |            |
| 1. Establish a housing rehabilitation program, including loans, grants, and/or technical assistance and community outreach.  |  |  |  |          |           | <b>X</b>   |
| 2. Provide programs such as home-ownership counseling and self-help housing to enhance home ownership opportunities for Upcountry residents.   |  |  |  |          |           |            |

| <b>Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)</b>   |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| 3. Provide housing opportunities for independent living for Upcountry's elderly within the Kulamalu project along Kula Highway and the new Project District 3/Crook Estate in Makawao Town.<br>4. Explore provisions to provide assisted living services for the elderly and physically disadvantaged at Keokea, provided that water is available for farming and for the Department of Hawaiian Home Lands.<br>5. Rewrite the existing Maui County Building Code and subdivision code to reduce home construction costs in rural and remote areas and to ensure that development is compatible with the Upcountry area.<br>6. Develop and adopt guidelines for rural cluster developments.<br>7. Consider the development of rules which would allow the use of house trailers for temporary residential use while construction of permanent residence is in progress. Such use would be allowed only for a period of two (2) years from issuance of the building permit.   |  |          |           |            |
| <b>Discussion:</b> The Proposed Action will not affect the Housing objectives and policies of the Makawao-Kihei-Makena Community Plan.   |  |          |           |            |
| <b>Social Infrastructure</b>   |  |          |           |            |
| <b>Goal</b>  |  |          |           |            |
| An efficient and responsive system of people-oriented public services which enable residents to live a safe, healthy and enjoyable lifestyle, and offer the youth and adults of the region opportunities and choices for self and community improvement.   |  |          |           |            |
| <b>Objectives and Policies</b>   |  |          |           |            |
| <b>Recreation</b>  |  |          |           |            |
| 1. Develop a system of parks serving dispersed residential areas, including a regional park of at least 50 acres in the Upcountry region   |  |          |           | <b>X</b>   |
| 2. Establish youth centers and programs at locations suitable for and accessible by the youth of the region  |  |          |           | <b>X</b>   |
| 3. Improve park utility and operations by expanding organized sports programs and encouraging use of facilities.   |  |          |           | <b>X</b>   |
| 4. Pursue the development of equestrian trails, pathways, greenways and related facilities which will meet the recreational needs of runners, joggers, walkers, horseback riders and cyclists.   |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>   |  |          |           |            |
| 1. Prepare an Upcountry Greenway Master Plan to identify routing alternatives and capital programming requirements for equestrian trails, jogging and walking paths, and bikeways. The Master Plan shall address the following planning elements: <ul style="list-style-type: none"> <li>a. Identification of user needs;</li> <li>b. Identification of greenway physical requirements (e.g. rights-of-way, slopes, etc.);</li> <li>c. Definition of user characteristics by user groups;</li> <li>d. Landownership, land use, physical and environmental opportunities and constraints in the Upcountry area which shall be considered in greenway routing analysis;</li> <li>e. Development of alternative routing scenarios which address the planning parameters noted above;</li> <li>f. Evaluation of the alternative routing scenarios and recommendation for a preferred scenario;</li> <li>g. Recommendations for phasing and capital programming.</li> </ul> 2. Expand the developed area at Mayor Eddie Tam Memorial Center to provide for additional parking and recreational facilities.<br>3. Provide public swimming pools in Makawao and Kula.<br>4. Explore the use of the old Keokea School as a community recreation resource.<br>5. The County shall condemn or negotiate for a regional park of at least 50 acres in the Upcountry region, and shall appropriate necessary funding for such condemnation or purchase. |  |          |           | <b>X</b>   |
| <b>Health and Public Safety</b>  |  |          |           |            |

| <b>Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)</b>   |   |  |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|---|--|--|----------|-----------|------------|
| 1.   | Establish a centrally located comprehensive health center with full emergency services to all communities.  |  |  |          |           | <b>X</b>   |
| 2.   | Improve street lighting and security around schools, parks and other public facilities.   |  |  |          |           | <b>X</b>   |
| 3.   | Improve police protection services by providing a police sub-station in the Upcountry region.   |  |  |          |           | <b>X</b>   |
| 4.   | Provide public restroom facilities in Makawao Town.   |  |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>   |   |  |  |          |           |            |
| 1.   | Develop an Upcountry public safety center centrally located in Pukalani which will provide facilities for comprehensive health and emergency services, and a police sub-station.  |  |  |          |           | <b>X</b>   |
| 2.   | Explore the establishment of general hospital services at Kula San Hospital.  |  |  |          |           |            |
| 3.   | Move ambulance service from Kula San to the Kula Fire Station.  |  |  |          |           |            |
| <b>Education and Family Services</b>   |   |  |  |          |           |            |
| 1.   | Encourage shared use of school facilities with the community to include such facilities as a community-school library, gymnasium, and public service rooms.   |  |  |          |           | <b>X</b>   |
| 2.   | Support the development of higher education programs and facilities which complement Upcountry's economic, natural resources and cultural base including an institution of higher learning.   |  |  |          |           | <b>X</b>   |
| 3.   | Support development of adequate child care facilities to assist working families.   |  |  |          |           | <b>X</b>   |
| 4.   | Provide adequate school facilities to ensure an effective, efficient and comfortable learning environment for the region's children.  |  |  |          |           | <b>X</b>   |
| 5.   | Coordinate the establishment of child care facilities, senior citizen centers, religious institutions and social service offices to benefit from complimentary and mutually beneficial combination of service delivery.   |  |  |          |           | <b>X</b>   |
| 6.   | Encourage the expansion of programs and facilities for early childhood education, family day care, and youth services.  |  |  |          |           | <b>X</b>   |
| 7.   | Recognize and support the traditional role of religious institutions and their related functions as a central part of the Upcountry community   |  |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>   |   |  |  |          |           |            |
| 1.   | Provide additional elementary schools, as required and establish a student enrollment limit of 700 for each school.   |  |  |          |           | <b>X</b>   |
| 2.   | Provide a new intermediate school when student enrollment at Kalama Intermediate School reaches 1,200. The new intermediate school would serve students from Pukalani and Kula, with Kalama Intermediate School serving students from Makawao and Ha'ikū.   |  |  |          |           |            |
| 3.   | Construct permanent school buildings to replace existing temporary classrooms.  |  |  |          |           |            |
| <b>Discussion:</b> The Proposed Action will not affect the Social Infrastructure objectives and policies of the Makawao-Kihei-Makena Community Plan. |   |  |  |          |           |            |
| <b>Government</b>  |   |  |  |          |           |            |
| <b>Goal</b>  |   |  |  |          |           |            |
| The provision of accessible, cost effective and responsive government services and programs which meet the needs of Upcountry residents.             |   |  |  |          |           |            |
| <b>Objectives and Policies</b>   |   |  |  |          |           |            |
| 1.   | Establish de-centralized government services for Upcountry residents  |  |  |          |           | <b>X</b>   |
| 2.   | Pursue the streamlining of the development permit process through means such as consolidating public hearings and concurrent processing of applications   |  |  |          |           | <b>X</b>   |
| 3.   | Use the County's budgeting process as a means of carrying out the policies and priorities of the Community Plan by targeting important projects designated by the plan for funding.   |  |  |          |           | <b>X</b>   |
| 4.   | Use the County's real property tax function as a mechanism for encouraging private development, rehabilitation or preservation in keeping with the goals, objectives and policies of the Makawao-Pukalani-Kula Community Plan. This function should also be used for monitoring the Community Plan and establishing a computerized land use information base. |  |  |          |           | <b>X</b>   |
| 5.   | Encourage a program for agricultural management and open space preservation   |  |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>   |   |  |  |          |           | <b>X</b>   |

| <b>Table 5-15: Makawao-Pukalani-Kula Community Plan (1996)</b>  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|----------|-----------|------------|
| <ol style="list-style-type: none"> <li>1. Formulate and implement a comprehensive directed and managed growth program, consistent with the adopted Makawao-Pukalani-Kula Community Plan and the Maui County General Plan. This would include methodologies such as rural cluster guidelines, farm trusts, phased development in accordance with available infrastructure, the development of urban growth boundaries, transfer of development rights and open space easements.</li> <li>2. Prepare a progress report five years after the adoption of this plan for review by the public and Maui County Council describing the status of general and community plan implementation and actions taken to comply with same.</li> <li>3. Explore modifications to building and subdivision codes and standards such as minimum lot sizes, and compact parking ratios which will reduce the ultimate cost of housing.</li> <li>4. Continue the review of and modifications to permit management and processing procedures to improve operational efficiencies of regulatory processes.</li> <li>5. Schedule public meetings and hearings on days and at times most convenient to the general public. For proposals located within the Makawao-Pukalani-Kula region, meetings and hearings relating to such proposals shall be held in the Upcountry region.</li> </ol> |          |           |            |
| <b>Discussion:</b> The Proposed Action will not affect the Government objectives and policies for the Makawao-Kihei-Makena Community Plan.  |          |           |            |

#### 5.7.4 Wailuku-Kahului Community Plan (2002)

The Wailuku-Kahului Community Plan is one of nine (9) community plans for the County of Maui. The plan reflects current and anticipated conditions in the Wailuku-Kahului region, and advances the community's planning goals, objectives, policies, and implementation to guide the future of the region. The Wailuku-Kahului region is located on north shore of Maui and encompasses the eastern portion of the agricultural fields in Central Maui. The following is a discussion of the relevant objectives and policies of the Wailuku-Kahului Community Plan that relate to the Proposed Action.

| <b>Table 5-16: Wailuku-Kahului Community Plan (2002)</b>   | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|----------|-----------|------------|
| <b>Economic Activity</b>   |          |           |            |
| <b>Goal</b>  |          |           |            |
| A stable and viable economy that provides opportunities for growth and diversification to meet long-term community and regional needs and in a manner that promotes agricultural activity and preserves agricultural lands and open space resources.   |          |           |            |
| <b>Objectives and Policies</b>   |          |           |            |
| 1. Support agricultural production so agriculture can continue to provide employment and contribute to the region's economic well-being.   | <b>X</b> |           |            |
| 2. Support the revitalization of the Wailuku commercial core and adjacent areas by expanding the range of commercial services; improving circulation and parking; enhancing and maintaining the town's existing character through the establishment of a Wailuku Town design district; redevelopment of the Wailuku Municipal Parking Lot with emphasis on additional public parking; establishing urban design guidelines; and providing opportunities for new residential uses. Improve Wailuku's image and level of service as a commercial center for the region's population. A combination of redevelopment and rehabilitation actions is necessary to meet the needs of a growing center. |          |           | <b>X</b>   |
| 3. Allow opportunities for hotel accommodations within the region at Kahului and Wailuku--at the existing hotel district by Kahului Harbor; near the Kahului Airport; and within the Wailuku Town core.  |          |           | <b>X</b>   |
| 4. Provide industrial growth opportunities through the expansion of existing industrial centers associated with the airport and harbor, and in Wailuku and Kahului. Encourage the fee simple ownership of lots provided by private developers  |          |           | <b>X</b>   |
| 5. Recognize the importance of small businesses to the region's economy  |          |           | <b>X</b>   |



| Table 5-16: Wailuku-Kahului Community Plan (2002)  |  | S | NS | N/A |
|--|--|---|----|-----|
| 6.   | Encourage the development of affordable business incubator spaces with public subsidies or incentives, as necessary, similar in concept to that of the Maui Research and Technology Park.  |   |    | X   |
| 7.   | Provide for the establishment of centralized business districts within the region, in order to minimize the extensive migration of commercial projects into light industrial developments.   |   |    | X   |
| 8.   | Accommodate mixed use residential/commercial development as a “transition” between residential districts and the civic center and business/commercial districts compatible with a residential scale and character and subject to a new zoning classification. Lands intended for this use shall be designated Service Business/Residential on the Community Plan land use map. |   |    | X   |
| 9.   | Support the establishment of agricultural parks for truck farming, piggery operations, bee keeping and other diversified agricultural operations within larger unsubdivided agricultural parcels and in locations that are compatible with residential uses.   | X |    |     |
| Implementing Actions:  |  |   |    |     |
| 1.   | Place a high priority on the planning, design and construction of a multi-level parking facility at the Wailuku Municipal Parking Lot with potential opportunities for mixed use development, such as residential, commercial, park and other public uses.   |   |    | X   |
| 2.   | Establish zoning regulations to implement a Service Business/Residential (SBR) land use designation provided for in the Community Plan policies.   |   |    |     |
| <b>Discussion:</b> The Proposed Action will support the Economic Activity objectives and policies of the Wailuku-Kahului Community Plan.   |  |   |    |     |
| The Proposed Action will enable for the continued conveyance of water to support conversion to diversified agriculture. Mahi Pono plans to convert the agricultural lands in Central Maui to specialty and beverage crops, irrigated and non-irrigated livestock, tropical fruit crops and nuts, community gardens, diversified annual crops, and energy crops. Reopening the land for farming would provide employment opportunities and expand the agriculture sector of Maui’s economy, as well as for the State of Hawai’i. Currently the agricultural land is mostly fallow with minimal agricultural activity. Should the Water Lease not be issued, the ongoing agricultural activities may be unfeasible. Issuance of the Water Lease would facilitate the transition of the agricultural fields in Central Maui to a productive diversified agricultural operation. |  |   |    |     |
|  |  |   |    |     |
| <b>Environment</b>   |  |   |    |     |
| <b>Goal</b>  |  |   |    |     |
| A clean and attractive physical and natural environment in which man-made developments or alterations to the natural environment relate to sound environmental and ecological practices, and important scenic and open space resources are maintained for public use and enjoyment.  |  |   |    |     |
| <b>Objectives and Policies</b>   |  |   |    |     |
| 1.   | Preserve agricultural lands as a major element of the open space setting that which borders the various communities within the planning region. The close relationship between open space and developed areas is an important characteristic of community form.  | X |    |     |
| 2.   | Protect nearshore waters by ensuring that discharges from waste disposal meet water quality standards. Continuous monitoring of existing and future waste disposal systems is necessary to ensure their efficient operation.   |   |    | X   |
| 3.   | Protect shoreline wetland resources and flood plain areas as valuable natural systems and open space resources. These natural systems are important for flood control, as habitat area for wildlife, and for various forms of recreation. Future development actions should emphasize flood prevention and protection of the natural landscape.                                |   |    | X   |
| 4.   | Preserve the shoreline sand dune formations throughout the planning region. These topographic features are a significant element of the natural setting and should be protected from any actions which would detract from their scenic, environmental, and cultural value.   |   |    | X   |
| 5.   | Require that new shoreline development respect shoreline resources and maintain public access  |   |    | X   |
|  | a. Existing dune formations are important elements of the natural setting and should remain intact.  |   |    |     |

| Table 5-16: Wailuku-Kahului Community Plan (2002)   | S | NS | N/A |
|---|---|----|-----|
| <p>b. Indigenous or endemic strand vegetation should remain undisturbed; new development and landscaping should treat such vegetation as given conditions.</p> <p>c. Planning for new shoreline development, as well as redevelopment, shall consider the cyclic nature of beach processes. Setbacks shall be used to provide a sufficient buffer between the ocean and structures to allow for periodic and long-term accretion and erosion of the shoreline. A Coastal Erosion Rate Analysis shall be developed. The planning commissions are encouraged to incorporate data from the analysis into planning decisions for shoreline areas, especially with respect to shoreline building setbacks. In the interim period prior to the completion of the analysis, the planning commissions are further encouraged to utilize minimum setbacks for multi-family and hotel uses, and any undeveloped property, of 150 feet from any shoreline, or 25 percent of the average lot depth, whichever is greater. For other uses, including single family residences and subdivisions along shoreline property, the Department of Planning staff and the Land Use and Codes Division Plans Examiners are encouraged to consult existing data on shoreline trends when discussing minimum shoreline setbacks with developers. Both episodic and long-term erosion rates should be disclosed to current or prospective purchasers of property to assist with the selection of an adequate shoreline setback. Where shoreline erosion threatens existing structures or facilities, beach replenishment shall be the preferred means of controlling erosion, as opposed to sole reliance on seawalls or other permanent shoreline hardening structures.</p> |   |    |     |
| 6. Encourage the use of siltation basins and other erosion control features in the design of drainage systems.  |   |    | X   |
| 7. Mitigate potential hazards associated with oil storage tanks and the bulk containment of other toxic, corrosive or combustible substances.   |   |    | X   |
| 8. Minimize noise, water and air pollution from industrial uses, electric power generating facilities and wastewater treatment plants.  |   |    | X   |
| 9. Maintain coastal open space along the region's shoreline as a scenic amenity and public recreational area.   |   |    | X   |
| 10. Monitor air quality in the planning district and enforce applicable standards with regular public reporting.  |   |    | X   |
| 11. Encourage joint government action in the investigation of seaweed build-up in Kahului Harbor and other affected areas and the implementation of coordinated clean-up and other mitigative actions.  |   |    | X   |
| 12. Promote recycling programs to reduce solid waste disposal in landfills, including convenient drop-off points for recycled material.   |   |    | X   |
| 13. Support energy conservation measures, including the use of solar heating and photovoltaic systems, in conjunction with urban uses.  | X |    |     |
| 14. Promote the planting and maintenance of trees and other landscape planting to enhance the streetscapes and the built-environment  |   |    | X   |
| <p><b>Implementing Actions:</b></p> <ol style="list-style-type: none"> <li>1. Formulate and adopt a regional landscape planting master plan, including standards, for implementation in conjunction with public and private projects.</li> <li>2. Establish and maintain a monitoring program for nearshore water quality.</li> <li>3. Develop a master plan for a recreational coastline access.</li> <li>4. Develop and implement a strategy for sand dune protection.</li> <li>5. New studies should be commissioned that seek to better understand site-specific causes of coastal erosion.</li> </ol>  |   |    | X   |
| <p><b>Discussion:</b> The Proposed Action will support the Environment objectives and policies of the Wailuku-Kahului Community Plan.</p> <p>The Proposed Action will enable for the continued conveyance of water to support conversion to diversified agriculture. Mahi Pono plans to convert the agricultural lands in Central Maui generally to community farms,</p>  |   |    |     |

| <b>Table 5-16: Wailuku-Kahului Community Plan (2002)</b>   |  |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|--|----------|-----------|------------|
| orchards (citrus, mac nuts, and beverage crops), tropical fruits, row and annual crops, energy crops, irrigated and nonirrigated pasture, and energy crops. Currently the agricultural land is mostly fallow with minimal agricultural activity. Should the Water Lease not be issued, the ongoing agricultural activities may be unfeasible. Issuance of the Water Lease would facilitate the transition of the agricultural fields in Central Maui to a productive diversified agricultural operation.   |  |  |          |           |            |
| Mahi Pono intends to use power from two hydro-electric facilities to provide power to pumps and wells, and other infrastructure. Mahi Pono is also committing land to the production of solar energy for the public utility system.  |  |  |          |           |            |
| <b>Cultural Resources</b>  |  |  |          |           |            |
| <b>Goal</b>  |  |  |          |           |            |
| Identification, protection, preservation, enhancement, and where appropriate, use of cultural practices and sites, historic sites and structures, and cultural landscapes and view planes that:  |  |  |          |           |            |
| 1. Provide a sense of history and define a sense of place for the Wailuku-Kahului region; and  |  |  |          |           |            |
| 2. Preserve and protect native Hawaiian rights and practices customarily and traditionally exercised for subsistence, cultural and religious purposes in accordance with Article XII, Section 7, of the Hawai'i State Constitution, and the Hawai'i Supreme Court's PASH opinion, 79 HAW. 425 (1995).  |  |  |          |           |            |
| <b>Objectives and Policies</b>   |  |  |          |           |            |
| 1. Preserve the character and integrity of historic sites in the Wailuku-Kahului region.   |  |  |          |           | <b>X</b>   |
| 2. Recognize the importance of historically and archaeologically sensitive sites and encourage their preservation through development project review.  |  |  |          |           | <b>X</b>   |
| 3. Protect and preserve historic, cultural and archaeological sites and resources through on-going programs to identify and register important sites, and encourage their restoration. This shall include structures and elements that are a significant and functional part of Hawaii's ethnic and cultural heritage.   |  |  |          |           | <b>X</b>   |
| 4. Ensure that the proposed projects are compatible with neighboring historic, cultural, and archaeological sites or districts. Such projects should be reviewed by the Cultural Resources Commission, where appropriate   |  |  |          |           | <b>X</b>   |
| 5. Require development projects to identify all cultural resources located within the project area as part of initial project studies. Further, require that all proposed activity include recommendations to mitigate potential adverse impacts on cultural resources.  |  |  |          |           | <b>X</b>   |
| 6. Support programs for the protection and preservation of historic and archaeological resources and foster an awareness of the diversity and importance of the region's ethnic, cultural, historic, and archaeological resources.   |  |  |          |           | <b>X</b>   |
| 7. Encourage community stewardship of historic buildings and cultural resources and educate private property owners about financial benefits of historic preservation in Maui County.  |  |  |          |           | <b>X</b>   |
| 8. Preserve and restore historic roads, paths, and water systems as cultural resources, and support public access.   |  |  |          |           | <b>X</b>   |
| 9. Recognize and respect family ancestral ties to certain sites including burial sites, and establish cultural and educational programs to perpetuate Hawaiian and other ethnic heritages.   |  |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>   |  |  |          |           |            |
| 1. The Cultural Resources Commission shall update, and the Council shall adopt, the County Cultural Resources Management Plan to further identify specific and significant cultural resources in the region and provide strategies for preservation and enhancement.   |  |  |          |           | <b>X</b>   |
| 2. Require development projects to identify all cultural resources located within or adjacent to the project area and consult with individuals knowledgeable about such cultural resources prior to application as part of the County development review process. Further, require that all proposed activity include recommendations to mitigate potential adverse impacts on cultural resources including site avoidance, adequate buffer areas, and interpretation. Particular attention should be directed toward dune areas, known and probable pre-contact habitation areas, and other sites and areas listed in No. 5 below, with review by the Cultural Resources Commission, where appropriate. |  |  |          |           |            |

| <b>Table 5-16: Wailuku-Kahului Community Plan (2002)</b>   |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| 3. Implement a historic and cultural overlay ordinance to provide protection for areas with significant archaeological, historical, and cultural resources.<br>4. Establish recognition of culturally sensitive areas such as Naniloa Bridge, Waiale Bridge, and burial and habitation sites along Lower Main Street and Kahului Beach Road.<br>5. Significant Wailuku-Kahului region sites and areas include the following: Wahi Pana (Significant Traditional Places), such as:<br>Na Wai Eha (Waihe'e, Waiehu, Wailuku, Waikapu).<br>Waihe'e Dunes Archaeological Complex.<br>Waihe'e Church.<br>Waihe'e Sugar Mill site.<br>Haleki'i-Pihanakalani heiau.<br>Waihe'e Dune complex.<br>Taro lo'i in 'Iao Valley.<br>Traditional surfing sites.<br>Kanaha Pond.<br>Habitation and burial sites along Lower Main Street corridor.<br>Waiale Bridge.<br>Wailuku Civic Center Historic District.<br>Kama Ditch, Spreckels Ditch, and Waihe'e Ditch.<br>Ka'ahumanu Church.<br>Hale Ho'ike'ike (Bailey House Museum).<br>Alexander House (next to Ka'ahumanu Church).<br>Waikapu Stone Church Site.<br>Wailuku School.<br>Pu'unene School.<br>Pu'u One Sand Dune Formation from Kahului Harbor to Waikapu.<br>Coastal sand dunes from Kahului Airport to Baldwin Park.<br>Kahului Railroad System sites (i.e., Roundhouse, Makaweli Rock Crusher Mill Foundation, etc.).<br>Chee Kung Tong Society Hall site.<br>Maui Jinsha Mission.<br>Naval Air Station Kahului Airport (NASKA).<br>Pu'unene Mill/Village.<br>Kahului Railroad Building and Old Kahului Store.<br>Buildings designed by C. W. Dickey-Wailuku Library, the Territorial Building in Wailuku, and the Baldwin Bank (Bank of Hawai'i in Kahului).<br>Wailuku Union Church.<br>Church of the Good Shepherd.<br>'Iao Theatre.<br>Plantation Manager's Residence in Wailuku.<br>St. Anthony's School.<br>Market Street from Main Street through Happy Valley.<br>Vineyard Street from Market Street to end.<br>'Iao Stream |  |          |           |            |
| <b>Discussion:</b> The Proposed Action will not affect the Cultural Resources objectives and policies of the Wailuku-Kahului Community Plan.   |  |          |           |            |
|  |  |          |           |            |
| <b>Indigenous Architecture</b>   |  |          |           |            |
| <b>Goal</b>  |  |          |           |            |
| Reserve for future implementation provisions for indigenous architecture as may be adopted from time to time by the County Council and/or the County Cultural Resources Commission.  |  |          |           |            |
| <b>Objectives and Policies</b>   |  |          |           |            |
| 1. To legitimize and amend County Building Codes to allow indigenous architecture as viable spaces for living, work, and recreation.   |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>   |  |          |           |            |
| 1. Develop a County ordinance for indigenous architecture.   |  |          |           | <b>X</b>   |
| 2. Adopt standards for indigenous architecture.  |  |          |           |            |

| Table 5-16: Wailuku-Kahului Community Plan (2002)   |  |  | S | NS | N/A |
|---|--|--|---|----|-----|
| <b>Discussion:</b> The Proposed Action will not affect the Indigenous Architecture objectives and policies of the Wailuku-Kahului Community Plan.   |  |  |   |    |     |
|   |  |  |   |    |     |
| <b>Housing</b>  |  |  |   |    |     |
| <b>Goal</b>   |  |  |   |    |     |
| A sufficient supply and choice of attractive, sanitary and affordable housing accommodations for the broad cross section of residents, including the elderly.   |  |  |   |    |     |
| <b>Objectives and Policies</b>  |  |  |   |    |     |
| 1. Utilize a project district planning approach for major housing expansion areas which will allow flexibility in project planning. This will provide for flexible development standards and a mix of housing types which can result in more efficient site utilization and potential reductions in housing development costs.  |  |  |   |    | X   |
| 2. Provide sufficient land areas for new residential growth which relax constraints on the housing market and afford variety in type, price, and location of units. Opportunities for the provision of housing are presently constrained by a lack of expansion areas. This condition should be relieved by a choice of housing in a variety of locations, both rural and urban in character.   |  |  |   |    | X   |
| 3. Seek alternative residential growth areas within the planning region, with high priority given to the Wailuku and Kahului areas. This action should recognize that crucial issues of maintaining important agricultural lands, achieving efficient patterns of growth, and providing adequate housing supply and choice of price and location must be addressed and resolved.  |  |  |   |    | X   |
| 4. Encourage the creation of elderly housing communities in various parts of the region that address the range of specialized needs for this population group.  |  |  |   |    | X   |
| 5. Encourage the formulation of an elderly needs assessment study for Maui County by the State Department of Health, including recommendations for elderly housing projects, facilities and programs.   |  |  |   |    | X   |
| 6. Coordinate the planning, design and construction of public infrastructure improvements with major residential projects that have an affordable housing component.  |  |  |   |    | X   |
| 7. Plan, design and construct off-site public infrastructure improvements (i.e. water, roads, sewer, drainage, police and fire protection, and solid waste) in anticipation of residential, commercial and industrial developments defined in the Community Plan.   |  |  |   |    | X   |
| 8. Promote efficient housing designs in order to reduce residential home energy and water consumption.  |  |  |   |    | X   |
| <b>Implementing Actions:</b>  |  |  |   |    |     |
| 1. Develop a comprehensive housing strategy for low and moderate income groups involving government and private industry cooperation that provides an adequate supply of housing for the various strata of income. This approach would combine the resources of Federal, State, County, and private enterprise to improve the availability of rental and ownership housing targeted to various need groups. Anti-speculation and specification of a percentage of low and moderate income units in major projects are tools which should be considered as part of an overall housing program. |  |  |   |    | X   |
| 2. Develop procedures and regulations to streamline government review and approval for housing projects. This should result in cost reductions by expediting the time required for implementation.  |  |  |   |    |     |
| 3. Develop programs to encourage housing rehabilitation in older residential areas. This would designate target areas where low interest loans, grants and flexible code regulations not related to public health, safety and welfare would be available to homeowners.   |  |  |   |    |     |
| 4. Revise zoning, building and housing codes to allow for specialized elderly housing projects.   |  |  |   |    |     |
| <b>Discussion:</b> The Proposed Action will not affect the Housing objectives and policies of the Wailuku-Kahului Community Plan.   |  |  |   |    |     |
|   |  |  |   |    |     |
| <b>Social Infrastructure</b>  |  |  |   |    |     |

| Table 5-16: Wailuku-Kahului Community Plan (2002)   |  | S | NS | N/A |
|---|--|---|----|-----|
| <b>Goal</b>   |  |   |    |     |
| Develop and maintain an efficient and responsive system of public services which promotes a safe, healthy and enjoyable lifestyle, accommodates the needs of young, elderly, disabled and disadvantaged persons, and offers opportunities for self-improvement and community well-being.  |  |   |    |     |
| <b>Recreation</b>   |  |   |    |     |
| 1. Provide park and recreation areas as an integral part of project district specifications which will accommodate the needs of population growth.  |  |   |    | X   |
| 2. Ensure adequate public access to shoreline recreation resources by pursuing access ways identified by the County.  |  |   |    | X   |
| 3. Provide access for persons with disabilities at all park facilities.   |  |   |    | X   |
| 4. Provide for a major regional multi-purpose center for the planning district to accommodate resident needs for banquet and meeting facilities with adequate parking.  |  |   |    | X   |
| 5. Investigate the need for an additional community center facility in Kahului.   |  |   |    | X   |
| 6. Place high priority on utilizing the 'Iao Theatre as a multi-purpose community facility and develop the adjoining property in a manner that retains the integrity of the town core.  |  |   |    | X   |
| 7. Place high priority on implementation of Keopuolani Park, including enhancement of the Kahului Harbor shoreline  |  |   |    | X   |
| 8. Expand shoreline recreation opportunities by extending Kanaha Beach Park and establishing park areas along Spreckelsville, Waiehu and Waihe'e shorelines.  |  |   |    | X   |
| 9. Enhance existing parks by improving maintenance and expanding the range of facilities provided.  |  |   |    | X   |
| 10. Maintain lands acquired or designated for recreational purposes exclusively for those uses.   |  |   |    | X   |
| 11. Provide for additional municipal golf courses.  |  |   |    | X   |
| 12. Maintain existing recreational uses at the Kahului harbor for canoe club activities. When development occurs, provide alternate sites for canoe club activities at the Kahului Bay area.  |  |   |    | X   |
| 13. Establish a linear park with bikeways and pedestrian routes along the shoreline between Waihe'e and Pā'ia.  |  |   |    | X   |
| 14. Establish a permanent fairground site that encourages year-round use as an inter-regional community center and meeting facility.  |  |   |    | X   |
| 15. Establish a linear park, with bicycle and pedestrian facilities where practical, from the Paukukalo oceanfront along 'Iao Stream to Kepaniwai Park.   |  |   |    | X   |
| 16. Ensure that adequate regional/community park facilities are provided to service new residential developments.   |  |   |    | X   |
| 17. Ensure that the development of the North Shore greenway project is done in a manner that respects the dune system and cultural sensitivity of the area. Specifically, the project should: <ul style="list-style-type: none"> <li>a. minimize the excavating, grading, and grubbing for the project, and instead use minimal fill (as necessary to meet engineering standards), especially in the area near Baldwin Beach Park;</li> <li>b. provide appropriate protection to prevent unnecessary traversing of the dune system mauka-makai;</li> <li>c. use the greenway as an opportunity to interpret the significant cultural and historic sites in the area; and</li> <li>d. have the archaeological inventory survey and the design plans for the project reviewed by the Cultural Resources Commission prior to the issuance of the necessary development permits.</li> </ul> |  |   |    | X   |
| <b>Implementing Actions:</b>  |  |   |    |     |
| 1. Undertake a site selection study for a permanent fairgrounds site that encourages year-round use.  |  |   |    | X   |



| <b>Table 5-16: Wailuku-Kahului Community Plan (2002)</b>  |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|--|----------|-----------|------------|
| 2. Undertake a regional park master plan study to identify the needs and potential sites for expanded passive and active recreational uses in the planning region.<br>3. Prepare and implement, as soon as possible, a plan for a major regional multipurpose center to service the entire planning district. Also, investigate the need for an additional community center in Kahului and/or the upgrading and expansion of the existing Kahului Community Center.<br>4. Continue to implement the plan for Keopuolani Park. |  |          |           |            |
| <b>Social Services/Health</b>   |  |          |           |            |
| 1. Support the expansion of services and facilities at the Maui Memorial Medical Center, the major primary care facility on the island, including the construction of a multi-level parking facility and a second roadway access.   |  |          |           | <b>X</b>   |
| 2. Plan for the expansion of community services facilities, such as the Cameron Center.   |  |          |           | <b>X</b>   |
| 3. Expand social services for young and elderly persons.  |  |          |           | <b>X</b>   |
| 4. Continue to assess the social needs in the community and facilitate a coordinated response in the delivery of social services and programs for young, elderly, disabled and disadvantaged persons.   |  |          |           | <b>X</b>   |
| 5. Support the formulation of an elderly needs assessment study for Maui County by the State Department of Health and lobby for the implementation of needed programs and projects.   |  |          |           | <b>X</b>   |
| 6. Coordinate the provision of long-term care facilities and programs with other providers, such as Hale Makua and Hale Mahaolu.  |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>  |  |          |           |            |
| 1. Acquire a minimum of 10 acres of land for expansion of Maui Memorial Medical Center as soon as possible.<br>2. Provide a second roadway access to Maui Memorial Medical Center. As noted in the section on transportation, this access should precede or be concurrent with the extension of Mahalani Street.  |  |          |           | <b>X</b>   |
| <b>Public Safety</b>  |  |          |           |            |
| 1. Maintain adequate police and fire protection services in the region  |  | <b>X</b> |           |            |
| 2. Encourage communities to establish Neighborhood Crime Watch Programs.  |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>  |  |          |           |            |
| 1. Study the feasibility of establishing fire and police protection facilities in the proposed Project Districts within the region.   |  |          |           |            |
| <b>Education</b>  |  |          |           |            |
| 1. Allocate sufficient land areas as part of residential project district specifications to meet future school site needs.  |  |          |           | <b>X</b>   |
| 2. Encourage the Department of Education to provide recreation facilities for schools, thus expanding opportunities for public use of presently shared facilities.  |  |          |           | <b>X</b>   |
| 3. Coordinate the development of school facilities with the State Department of Education in conjunction with planned residential projects.   |  |          |           | <b>X</b>   |
| 4. Support the establishment of a four-year university on Maui.   |  |          |           | <b>X</b>   |
| 5. Encourage apprenticeship or work study programs, in conjunction with higher educational or technical/vocational studies.   |  |          |           | <b>X</b>   |
| 6. Support efforts to expand the Maui Community College facilities and incorporate desired elements of Hawaiian architectural design.   |  |          |           | <b>X</b>   |
| 7. Support the improvement and maintenance of existing school facilities.   |  |          |           | <b>X</b>   |
| 8. Encourage the development of child care and pre-school facilities, in conjunction with major centers of employment.  |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>  |  |          |           |            |
| 1. Where possible during the zoning process, ensure that applicants contribute to the development, funding, and/or construction of school facilities on a fair-share basis as determined by and to the satisfaction of the State Department of Education. Terms of the contribution shall be agreed upon by the applicant and the State Department of Education prior to the applicant applying for building permits.   |  |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will support the Social Infrastructure objectives and policies for Public Safety of the Wailuku-Kahului Community Plan.  |  |          |           |            |

| Table 5-16: Wailuku-Kahului Community Plan (2002)   |   | S | NS | N/A |
|---|---|---|----|-----|
| On the agricultural fields in Central Maui, there are numerous reservoirs, in which a portion of the water conveyed from the EMI Aqueduct System is stored in. A&B had a working relationship with the Maui County Fire Department and in times of need the Maui County Fire Department can draw water from the storage to fight fires. |   |   |    |     |
|   |   |   |    |     |
| Government  |   |   |    |     |
| Goal  |   |   |    |     |
| Government that demonstrates the highest standards of fairness; responsiveness to the needs of the community; fiscal integrity; effectiveness in planning and implementation of programs and projects; a fair and equitable approach to taxation and regulation; and efficient, results-oriented management.                            |   |   |    |     |
| Objectives and Policies   |   |   |    |     |
| 1.  | Utilize the County's budgeting process as a means of carrying out the policies and priorities of the Community Plan.  |   |    | X   |
| 2.  | Utilize the County's real property tax assessment function as both a means to carry out the policies and priorities of the Community Plan and a mechanism for monitoring and updating the Community Plan.   |   |    | X   |
| 3.  | Streamline the land use, building permit and subdivision approval processes.  |   |    | X   |
| 4.  | Monitor the implementation of and compliance with the Community Plan.   |   |    | X   |
| 5.  | Ensure that adequate infrastructure is or will be available to accommodate planned development.   |   |    | X   |
| 6.  | Support public and private partnerships to fund the planning and construction of infrastructure.  |   |    | X   |
| 7.  | Encourage students within Maui County to participate in Maui County governmental affairs through such means as the submittal of testimony and resolutions on issues and concerns related to community affairs.  |   |    | X   |
| 8.  | Encourage cooperation and coordination between agencies, boards and commissions charged with land use planning and urban design and development within Wailuku Town.  |   |    | X   |
| Implementing Actions:   |   |   |    |     |
| 1.  | Streamline the land use, building permit and subdivision processes through means such as consolidated public hearings and concurrent processing of applications.  |   |    | X   |
| 2.  | Adopt a beach-mountain access dedication ordinance pursuant to Chapter 46, Hawai'i Revised Statutes. This should be done as part of an island wide comprehensive mountain and beach access study.   |   |    |     |
| 3.  | Evaluate and modify present zoning and subdivision ordinances to incorporate the land use and design guidelines as well as other recommendations incorporated herein.   |   |    |     |
| 4.  | 4. Establish an additional government complex with adequate public parking in a central location.   |   |    |     |
| 5.  | 5. Maintain the War Memorial Complex for public parking and recreational uses only.   |   |    |     |
| 6.  | Facilitate public access to information through the use of computers, microfiche/microfilm readers, and other tutorial services in County agencies.   |   |    |     |
| 7.  | Re-evaluate the composition, role and boundaries of the Wailuku Redevelopment Agency to support its mission for the revitalization and enhancement of this district and explore ways to coordinate planning for Wailuku Town.   |   |    |     |
| 8.  | Formulate special plans and studies to implement recommendations of the Community Plan. These would include water development and distribution, housing, local and regional circulation, drainage, solid waste and recycling, sewage disposal and treatment, human services, recreation, public safety and other special plans and studies as required. |   |    |     |
| 9.  | Prepare a progress report five years after the adoption of this plan for review by the public and Maui County Council describing the status of General and Community Plan implementation and actions taken to comply with same.□  |   |    |     |
| Discussion: The Proposed Action will not affect the Government objectives and policies of the Wailuku-Kahului Community Plan.   |   |   |    |     |
|   |   |   |    |     |
| Land Use  |   |   |    |     |
| Goal  |   |   |    |     |

| Table 5-16: Wailuku-Kahului Community Plan (2002)  |   | S | NS | N/A |
|--|---|---|----|-----|
| An attractive, well-planned community with a mixture of compatible land uses in appropriate areas to accommodate the future needs of residents and visitors in a manner that provides for the social and economic well-being of residents and the preservation and enhancement of the region's environmental resources and traditional towns and villages. |   |   |    |     |
| <b>Objectives and Policies</b>   |   |   |    |     |
| 1.   | Ensure that adequate lands are available to support the region's present and future agricultural activities.  | X |    |     |
| 2.   | Identify prime or productive agricultural lands, and develop appropriate regulations for their protection.  |   |    | X   |
| 3.   | The direct and cumulative impacts of agricultural subdivisions and the impacts on the community shall be assessed and considered.   |   |    | X   |
| 4.   | Establish administrative procedures and standards within both the Department of Public Works and Waste Management and the Department of Planning, to ensure that agricultural subdivisions shall not be approved unless their uses are expressly permitted by Chapter 205, Hawai'i Revised Statutes.  |   |    | X   |
| 5.   | Encourage traditional Hawaiian agriculture, such as taro cultivation, within the agricultural district, in areas which have been historically associated with this cultural practice.   |   |    | X   |
| 6.   | Establish an adequate supply of urban land use designations to meet the needs of the community over the next 20 years.  |   |    | X   |
| 7.   | The Community Plan map shall define the urban growth limits for the region.   |   |    | X   |
| 8.   | Maintain a project district approach for the major residential growth areas adjacent to Wailuku, Kahului, and Waiehu to allow flexibility in master planning. These project districts may contain a variety of residential unit types as well as supporting community services, including business, public, recreational and educational facilities.  |   |    | X   |
| 9.   | Maintain the existing Kahului Airport district boundaries, as defined in the Community Plan Land Use Map and continue to evaluate the air transportation needs of the County to determine future air transportation facility requirements. Create a direct control overlay district in and around Kahului Airport due to the public investment and the economic importance of the facility. The boundaries of this district shall be generally defined by the 60 Ldn isoline (60 decibels, day night average) of the FAA approved noise contour map for the airport. The intent of this district shall be to establish specific guidelines for development within the area which would define uses compatible with the airport and appropriate design standards, particularly with respect to noise attenuation to reduce interior noise levels to the 45 Ldn level or less. Total closure of structures, as well as air-conditioning, are generally required for this purpose. Residential uses should be discouraged within the 60 Ldn isoline. |   |    | X   |
| 10.  | All zoning applications and/or proposed land uses and developments shall conform with the planned use designations, as specified in the adopted Community Plan Land Use Map, and be consistent with the Community Plan policies.  |   |    | X   |
| 11.  | The subdivision ordinance should be revised to provide for public review of projects with significant impacts. Subdivision approval should consider environmental, economic, and social impacts of the project, including impacts on archaeological, historical and cultural resources.   |   |    | X   |
| 12.  | Establish a Wailuku Town Design District.   |   |    | X   |
| 13.  | Within the Wailuku Town core, formulate and implement flexible land use guidance policies that enhance the various activity centers and maintain the traditional character of the town.<br><br>a. <u>Civic Center District</u> : This district defines the government office center and adjacent blocks of commercial use which are functionally related to the government center. This district is generally bounded by Main, South High, Kaohu, Napua, Uluwehi, South Church, Pakahi, South Market and Wells Streets.   |   |    | X   |

| Table 5-16: Wailuku-Kahului Community Plan (2002)   | S | NS | N/A |
|---|---|----|-----|
| <p>b. <u>Wailuku Historic District</u>: Protection of this complex of historic structures in a park setting will continue under the provisions of the current Community Plan.</p> <p>c. <u>Commercial and Residential</u>: The following comprise the commercial core, commercial areas, and surrounding residential uses:</p> <ol style="list-style-type: none"> <li>1. <u>Commercial Core</u>. This area is generally situated along Central, Wells, Main, High, and Vineyard Streets. It should emphasize commercial uses oriented to serve the business and residential community. Ground floor activities should emphasize commercial retail with expansion of the variety and scope of offerings to serve residents.</li> <li>2. <u>Mixed Use Areas</u>. These occur in several blocks adjacent to the commercial core and act as a transition between the core and single family residential areas. The business residential mix should be retained with intensification to accommodate multifamily and business uses. Patterns of mixed use could allow vertical mixture (residences over ground floor business) or horizontal mixture (business frontage and residences behind), or residential and business uses on adjacent lots. Maintenance and rehabilitation of existing structures should be encouraged in a manner that respects the residential scale that now exists. Intensification of uses through new development would require consolidation of substandard lots. Performance criteria for rehabilitation and upgrading should be developed to permit more flexibility than present zoning and building code standards allow.</li> <li>3. <u>Single Family Residential</u>. These areas surround the commercial and mixed use areas. The emphasis should be on preserving and rehabilitating existing housing, providing adequate circulation, and encouraging home maintenance and rebuilding of deteriorating structures.</li> <li>4. <u>Service Business/Single Family Residential</u>. These uses occur primarily along the Waihe'e side of Kaohu Street, and along the mauka side of South Market Street to permit a mixture of single family and duplex dwellings, with small-scale service and neighborhood oriented businesses which are established in previously utilized residential dwellings or other existing structures. The business use should be compatible with the physical character of the residential neighborhood.</li> </ol> |   |    |     |
| <p>14. Maintain physical separation between traditional towns and villages in the region. Where possible, provide specific design or landscape elements, such as open space buffers or changes in streetscape, to clearly delineate the boundary between Kahului and Wailuku. Maintain open space around traditional rural areas, such as Waikapu and Waihe'e, to provide a sense of community and to prevent envelopment of these areas by urban expansion.</p>  |   |    | X   |
| <p>15. Provide a substantial greenway or greenbelt to serve as a buffer zone, line of demarcation, or definition between Wailuku and Waikapu, and between Waikapu and Ma'alaea, in order to prevent the continuation of urban sprawl. Changes in streetscapes could include landscaping and agricultural planting materials that reflect the character of each community, and are utilized to delineate a substantial boundary between Kahului and Wailuku.</p>   |   |    | X   |
| <p>16. Upon adoption of this plan, allow no further development unless infrastructure, public facilities, and services needed to service new development are available prior to or concurrent with the impacts of new development.</p>  |   |    | X   |

| <b>Table 5-16: Wailuku-Kahului Community Plan (2002)</b>  |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|--|----------|-----------|------------|
| <b>Implementing Actions:</b><br>1. Establish zoning regulations to implement the land use recommendations in the Community Plan, including but not limited to Service Business/Single Family Residential (SBR), Business/Multi-Family, and Business/Industrial.   |  |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will support the Land Use objectives and policies of the Wailuku-Kahului Community Plan.<br><br>The issuance of the Water Lease will allow for the continued conveyance of water to supply the agricultural fields in Central Maui to support Mahi Pono's proposed diversified agriculture operation. Approximately 23,000 acres of the agricultural land in Central Maui are designated as Important Agricultural Land (IAL) to the State, of which the majority is classified as "Prime Agricultural Land" by Agricultural Land of Importance to the State of Hawai'i (ALISH). However, currently the majority of the agricultural land in Central Maui is fallow. Issuance of the Water Lease would allow for the land to be put back into cultivation.   |  |          |           |            |
| <b>Infrastructure</b>   |  |          |           |            |
| <b>Goal</b>   |  |          |           |            |
| Timely and environmentally sound planning, development and maintenance of infrastructure systems which serve to protect and preserve the safety and health of the region's residents, commuters and visitors through the provision of clean water, effective waste disposal and drainage systems, and efficient transportation systems which meet the needs of the community.   |  |          |           |            |
| <b>Objectives and Policies</b>  |  |          |           |            |
| <b>Water and Utilities</b>  |  |          |           |            |
| 1. Coordinate water system improvement plans with growth areas to ensure adequate supply and a program to replace deteriorating portions of the distribution system. Future growth should be phased to be in concert with the service capacity of the water system  |  |          |           | <b>X</b>   |
| 2. Improve the quality of domestic water.   |  |          |           | <b>X</b>   |
| 3. Promote water conservation and education programs.   |  |          |           | <b>X</b>   |
| 4. Protect water resources in the region from contamination, including protecting ground water recharge areas, and wellhead protection areas within a 1.25-mile radius from the wells.  |  |          |           | <b>X</b>   |
| 5. Coordinate the construction of all water and public roadway and utility improvements to minimize construction impacts and inconveniences to the public.  |  |          |           | <b>X</b>   |
| 6. Coordinate expansion of and improvements to the water system to coincide with the development of residential expansion areas.  |  |          |           | <b>X</b>   |
| 7. Promote conservation of potable water through the use of treated waste water effluent for irrigation   |  |          |           | <b>X</b>   |
| 8. Encourage reasonable rates for water and public utility services.  |  |          |           | <b>X</b>   |
| 9. Ensure that proliferation of telecommunication towers does not negatively impact the natural beauty of Maui County and the comfort and health of its residents.  |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b><br>1. Update the County's Water Use and Development Plan and estimated water use for the Wailuku-Kahului region.<br>2. Prepare or update a water improvement master plan for the Wailuku-Kahului region to be incorporated as a functional component of the Community Plan.<br>3. Plan and construct water system improvements, including additional source, transmission, and storage capabilities.<br>4. Provide incentives for water and energy conservation practices.<br>5. Coordinate the development of telecommunication towers by developing an ordinance governing telecommunication facilities.<br>6. Relocate the Kahului Power Generating Facility out of the tsunami zone.<br>7. Adopt a water allocation plan for the region and require that the use of water from the Central Maui Water System for future development shall be subject to the provisions of this water allocation plan.<br>8. Promote and implement programs for ground water and wellhead protection. |  |          |           | <b>X</b>   |
| <b>Liquid and Solid Waste</b>   |  |          |           |            |
| 1. Coordinate sewer system improvement plans with future growth requirements, as defined in the Community Plan.   |  |          |           | <b>X</b>   |

| <b>Table 5-16: Wailuku-Kahului Community Plan (2002)</b> |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| 2.   | As part of a county-wide solid waste management study, address the needs of the planning region for disposal and transfer sites with more convenience to residential areas. The collection system and location of disposal sites need to be improved to better serve residential areas.  |          |           | <b>X</b>   |
| 3.   | Reduce the disposal of solid waste in landfills through reducing the amount of material for disposal at the source (i.e. home composting of lawn or tree trimmings), reuse and recycling programs, bioconversion (i.e. composting) and the provision of convenient drop-off facilities.  |          |           | <b>X</b>   |
| 4.   | Reuse the treated effluent from the County's waste water treatment system for irrigation and other suitable purposes in a manner that is environmentally sound.  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>                             |  |          |           |            |
| 1.   | Coordinate sewer system improvement plans with future growth requirements, as defined in the Community Plan.   |          |           |            |
| 2.   | As part of a county-wide solid waste management study, address the needs of the planning region for disposal and transfer sites with more convenience to residential areas. The collection system and location of disposal sites need to be improved to better serve residential areas.  |          |           |            |
| 3.   | Reduce the disposal of solid waste in landfills through reducing the amount of material for disposal at the source (i.e. home composting of lawn or tree trimmings), reuse and recycling programs, bioconversion (i.e. composting) and the provision of convenient drop-off facilities.  |          |           | <b>X</b>   |
| 4.   | Reuse the treated effluent from the County's waste water treatment system for irrigation and other suitable purposes in a manner that is environmentally sound.  |          |           |            |
| <b>Drainage</b>  |  |          |           |            |
| 1.   | Establish a storm drain improvement program to alleviate existing problems; implement a continuing maintenance program, and ensure that improvements to the system will meet growth requirements. This addresses safety and property loss concerns as well as the need for comprehensive flood control planning.   |          |           |            |
|  | <ul style="list-style-type: none"> <li>a. Design drainage systems that protect coastal water quality by incorporating best management practices to remove pollutants from runoff. Construct and maintain, as needed, sediment retention basins and other best management practices to remove sediments and other pollutants from runoff.</li> <li>b. Construct necessary drainage improvements in flood-prone areas. Where replacement drainage is required for flood protection, these systems shall be designed, constructed, and maintained using structural controls and best management practices to preserve the functions of the natural system that are beneficial to water quality. These functions include infiltration, moderation of flow velocity, reduced erosion, uptake of nutrients and pollutants by plants, filtering, and settlement of sediment particles. The use of landscaped swales and unlined channels shall be urged.</li> </ul> |          |           | <b>X</b>   |
| 2.   | Respect natural drainage ways as part of good land development   |          |           | <b>X</b>   |
| 3.   | Construct and maintain, as needed, desilting basins along major drainage channels.   |          |           | <b>X</b>   |
| 4.   | Ensure that storm water run-off and siltation from proposed development will not adversely affect the marine environment and nearshore and offshore water quality. Minimize the increase in discharge of storm water runoff to coastal waters by preserving flood storage capacity in low-lying areas, and encouraging infiltration of runoff.   |          |           | <b>X</b>   |
| 5.   | Encourage the incorporation of drainage ways, setbacks, and flood protection areas into greenways consisting of open space, pedestrian way and bikeway networks  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>                             |  |          |           |            |
| 1.   | Update and implement a drainage master plan for the planning region that considers the cumulative impacts of existing and planned development. The master plan shall guide future development while preventing flooding and providing guidance to reduce the degradation of coastal waters.  |          |           | <b>X</b>   |
| 2.   | Establish a comprehensive program of improvements to the storm drainage system; implement a maintenance program; and ensure that safety, property loss, pollutant  |          |           |            |



| <b>Table 5-16: Wailuku-Kahului Community Plan (2002)</b>  |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|---|--|----------|-----------|------------|
| removal, and the need for comprehensive planning, are considered. Maintain current drainage ways, swales and spillways.   |  |          |           |            |
| 3. Revise the County drainage rules to require that drainage system design shall not adversely affect downstream and coastal water quality.   |  |          |           |            |
| <b>Energy</b>   |  |          |           |            |
| 1. Promote the use of alternative energy sources, such as biomass, wind and solar.  |  | <b>X</b> |           |            |
| 2. Develop efficient circulation systems, public transportation and promote bicycle and pedestrian travel to reduce energy expenditures for travel.   |  |          |           | <b>X</b>   |
| 3. Promote energy conservation and awareness programs   |  |          |           | <b>X</b>   |
| 4. Reduce domestic energy consumption.  |  |          |           | <b>X</b>   |
| 5. Expand efforts to utilize environmentally and cost effective renewable resources for energy production, such as solar, biomass, and wind energy.   |  | <b>X</b> |           |            |
| 6. Encourage energy efficient building design and site development practices.   |  |          |           | <b>X</b>   |
| 7. Support energy conservation measures, including the use of solar heating and photovoltaic systems, in conjunction with urban uses.   |  |          |           | <b>X</b>   |
| 8. Promote recycling programs to reduce solid waste disposal in landfills.  |  |          |           | <b>X</b>   |
| 9. Promote competition among energy providers to increase options and decrease costs to Maui County residents and government facilities.  |  |          |           | <b>X</b>   |
| <b>Implementing Actions:</b>  |  |          |           |            |
| 1. Adopt standards and regulations for the use of solar heating, low flush toilets and other conservation fixtures in new building construction.  |  |          |           |            |
| 2. Develop and adopt an integrated energy functional plan for the County of Maui, including but not limited to, strategies for energy conservation, reuse of treated waste water, recycling, reduction in the use of fossil fuels, public education and awareness, and other strategies and actions related to transportation and utilities, housing, environment, urban design and economic activity.  |  |          |           |            |
| 3. Develop incentives and requirements for energy efficient building design and site development practices through various approaches, including modifications to building codes and zoning and subdivision ordinances.   |  |          |           | <b>X</b>   |
| 4. Provide incentives to promote the use of alternative energy sources.   |  |          |           |            |
| 5. Develop, compile and disseminate information on new energy technologies, policies, and programs relevant to the community's economy and environment.   |  |          |           |            |
| 6. Identify energy-saving measures for all community buildings and facilities.  |  |          |           |            |
| 7. As part of a County-wide waste management study, pursue the feasibility of utilizing resource recovery systems.  |  |          |           |            |
| 8. Support reduction of entry barriers to distributed generation and other forms of alternative energy.   |  |          |           |            |
| <b>Transportation</b>   |  |          |           |            |
| 1. Enhance circulation by improving road maintenance; improving or providing traffic signals and turning lanes at congested intersections; and by providing street and destination signs. Important intersections include Lono and Papa Avenues, and intersections along Papa Avenue, Wakea Avenue, and North Market Street. Additional turning lanes, traffic signals and roadway improvements in the Wailuku Town core should be designed to facilitate safe traffic movement and be compatible with the traditional character of the area. |  |          |           | <b>X</b>   |
| 2. Provide bikeway and walkway systems in the Wailuku-Kahului area which offer safe and pleasant means of access, particularly along routes accessing residential districts, major community facilities and activity centers, school sites, and the shoreline between Kahului Harbor and Pā'ia .  |  |          |           | <b>X</b>   |
| 3. Expand parking facilities serving the civic and commercial centers of Wailuku. Parking improvements should include expanding the existing public parking facilities off Market Street and around the civic center, and improving controls over existing civic center parking to reserve it for short-term use. Explore the feasibility of a shuttle service for County employees to remote parking facilities.   |  |          |           | <b>X</b>   |
| 4. Support private efforts to expand public transit service, with an emphasis on service to the Kahului Airport and Wailuku Civic Center. Future growth in population will warrant an expanded public transportation system.  |  |          |           | <b>X</b>   |
| 5. For future residential development, prohibit direct lot access from primary roads.   |  |          |           | <b>X</b>   |

| Table 5-16: Wailuku-Kahului Community Plan (2002)   |   | S | NS | N/A |
|---|---|---|----|-----|
| 6.  | Accommodate bicycle and pedestrian ways within planned roadway improvements.  |   |    | X   |
| 7.  | Support the extension of the Kahului Airport runway, access road improvements, and other related facility improvements, including expansion of the adjacent shoreline area for public park uses.  |   |    | X   |
| 8.  | Support the expansion of Kahului Harbor, the island's primary commercial harbor, to accommodate long-term needs. The State Department of Transportation should be encouraged to allow recreational uses by canoe clubs or provide an alternative site for such uses in its long range master plan. The harbor master plan should also incorporate safe bicycle and pedestrian access. Support the investigation of alternative sites for a second commercial harbor facility on the island of Maui. Further, the State Department of Transportation should be strongly encouraged to mitigate its traffic impacts prior to or in conjunction with the Harbor expansion, including, but not limited to, the following:<br><br>a. improve the intersections between Ka'ahumanu Avenue and Wharf Street and Hobron Avenue;<br><br>b. provide alternative and bypass routes for vehicular traffic, possibly including a direct route to Kahului Airport;<br><br>c. provide safe (possibly underpass) routes for pedestrian traffic;<br><br>d. acquire pockets of land for more efficient facility location within Kahului Harbor; and<br><br>e. work with the community to plan a second commercial harbor. |   |    | X   |
| 9.  | Support the extension of Waiale Drive to a new intersection with Honoapiilani Highway south of Waikapu Village.   |   |    | X   |
| 10.   | Preserve the Waiale Bridge and the significant subsurface archaeological sites in the Waiale Drive corridor, from the Mahalani Street intersection to Lower Main Street, by maintaining the existing roadway width.   |   |    | X   |
| 11.   | Preserve the character of Honoapiilani Highway between Waikapu and Wailuku by maintaining two travel lanes and the existing trees.  |   |    | X   |
| Implementing Actions:   |   |   |    |     |
| 1.  | Establish ordinances to designate truck or other heavy vehicle weight commercial traffic routes to relieve traffic impacts on residential neighborhoods and the traditional town center.  |   |    | X   |
| 2.  | Re-establish school bus routes and stops to minimize impacts on residential neighborhoods and provide sheltered stops where appropriate.  |   |    |     |
| 3.  | Study traffic patterns and circulation at intersections adjacent to school sites prior to road construction, to ensure safe access.   |   |    |     |
| 4.  | Study circulation patterns at school sites.   |   |    |     |
| 5.  | Implement the State Department of Transportation Bikeway Master Plan and the County Bikeway Plan.   |   |    |     |
| 6.  | Update and implement the Department of Transportation's Maui Long Range Planning Study: Islandwide Plan and other traffic master plans to implement the Community Plan.   |   |    |     |
| Discussion: The Proposed Action will not affect the Infrastructure objectives and policies of the Wailuku-Kahului Community Plan, although Mahi Pono is committing land to the production of solar energy for the public utility system.  |   |   |    |     |
|   |   |   |    |     |
| Urban Design  |   |   |    |     |
| Goal  |   |   |    |     |
| An attractive and functionally integrated urban environment that enhances neighborhood character, promotes quality design, defines a unified landscape planting and beautification theme along major public roads and highways, watercourses and at major public facilities, and recognizes the historic importance and traditions of the region. |   |   |    |     |
| Objectives and Policies for the Wailuku-Kahului Region in General   |   |   |    |     |

| <b>Table 5-16: Wailuku-Kahului Community Plan (2002)</b> |   | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|---|----------|-----------|------------|
| 1.   | Enhance the appearance of major public roads and highways in the region.  |          |           | <b>X</b>   |
| 2.   | Maintain a design quality for commercial and public projects and large-scale master planned developments.   |          |           | <b>X</b>   |
| 3.   | Improve pedestrian and bicycle access within the region.  |          |           | <b>X</b>   |
| 4.   | Establish, expand and maintain parks, public facilities and public shoreline areas.   |          |           | <b>X</b>   |
| 5.   | Integrate stream channels and gulches into the region's open space system for purposes of safety, open space relief, greenways for public use and visual separation. Drainage channels and siltation basins should not be used for building sites, but rather for public open space. Drainage channel rights-of-way and easements may also be used for pedestrian and bikeway facilities.   |          |           | <b>X</b>   |
| 6.   | Promote a unified street tree planting program along major highways and streets.  |          |           | <b>X</b>   |
| 7.   | Buffer public and quasi-public facilities and light-heavy industrial/commercial type facilities from adjacent residential uses with appropriate landscape planting.   |          |           | <b>X</b>   |
| 8.   | Maintain shrubs and trees at street intersections for adequate sight distance.  |          |           | <b>X</b>   |
| 9.   | Save and incorporate healthy mature trees in the landscape planting plans of subdivisions, roads and other developments.  |          |           | <b>X</b>   |
| 10.  | Incorporate drought tolerant plant species and xeriscaping in future landscape planting.  |          |           | <b>X</b>   |
| 11.  | Use native Hawaiian plants for landscape planting in public projects to the extent practicable.   |          |           | <b>X</b>   |
| 12.  | Existing and future public rights-of-way along roads and parks shall be planted with appropriate trees, turfgrass and ground covers.  |          |           | <b>X</b>   |
| 13.  | Encourage neighborhoods and community organizations to upgrade and maintain streets and parks in accordance with the Maui County Planting Plan of the Arborist Committee.   |          |           | <b>X</b>   |
| 14.  | Require all future subdivisions, construction projects and developments to comply with the adopted Maui County Planting Plan.   |          |           | <b>X</b>   |
| 15.  | Emphasize contrasting earth-tone color schemes for buildings and avoid bright or garish colors. Within Wailuku Town, require buildings that have bright or garish colors to comply with earth-tone color schemes.   |          |           | <b>X</b>   |
| 16.  | Encourage the review of architectural and landscape architectural plans for major government projects by the County's Urban Design Review Board.  |          |           | <b>X</b>   |
| <b>Objectives and Policies for Wailuku Town</b>          |   |          |           |            |
| 1.   | Maintain the existing character of historic Wailuku Town.   |          |           | <b>X</b>   |
| 2.   | Support the creation of a Wailuku Town Design District and the adoption of design guidelines for the town core, excluding properties designated for single family residential use. The objective is to integrate the design elements of multifamily, commercial and public properties in Wailuku Town and to retain the traditional town character. The design district boundaries should include the following areas, as depicted on the attached map: <ul style="list-style-type: none"> <li>a. the area bounded by High, Vineyard, Central and Main Streets, including the Wailuku Redevelopment District;</li> <li>b. the area bounded by High, Main, North Market and Kaohu Streets, including the Civic District;</li> <li>c. both sides of Main Street from Central Avenue to the Wailuku Bridge; and</li> <li>d. both sides of Market Street from Vineyard Street to Piihana Road in Happy Valley.</li> </ul> |          |           | <b>X</b>   |
| 3.   | Circulation and Parking. <ul style="list-style-type: none"> <li>a. Provide for the Waiale Drive bypass to Honoapiilani Highway and road connection from Lower Main Street across 'Iao Stream to Kahekili Highway.</li> </ul>  |          |           | <b>X</b>   |

| Table 5-16: Wailuku-Kahului Community Plan (2002)   | S | NS | N/A |
|---|---|----|-----|
| <ul style="list-style-type: none"> <li>b. Maintain the existing character of streets in the commercial core along Vineyard, Market, Central and Main Streets.</li> <li>c. Expand public parking facilities at the Wailuku Municipal Parking Lot and provide for safe and convenient bicycle parking in Wailuku town.</li> <li>d. Provide a continuous and pleasant pedestrian pathway connecting the Historic District, Civic Center, commercial office areas and park and public facilities.</li> </ul>  |   |    |     |
| <p>4. Building Form and Character. The following design policies shall express the Council's intent as it relates to urban design for properties designated for commercial and business multi-family use along and bounded by Spreckels Ditch and Wells, High, and Vineyard Streets--Wailuku Town's commercial district. They shall serve as a supporting rationale during the development and adoption of design guidelines for the above area. They shall also serve as a reminder of the Council's intent as the guidelines are amended.</p> <ul style="list-style-type: none"> <li>a. Maintain the area's small-town profile and character to allow present land uses, and to allow mixed use zoning with residential uses above and in back of commercial properties. The identifying core and focus is the County seat with its present government building heights, with decreasing heights through the concepts of "Step Zoning" and "Stepping a Building" as one moves away from the streetscape. A mixture of one, two, three and four story heights is desirable because it will support the type of land use intensity that is needed to encourage investment and economic viability; yet it is compatible with the area's small-town profile and character.</li> <li>b. Where commercial areas abut residential blocks, a transition in height should be required to achieve compatibility with the residential scale.</li> <li>c. Utilize architectural treatments such as facade and roof modulation to break up the mass and reduce the apparent size of the buildings.</li> <li>d. Protect mauka (mountain) and makai (ocean) view planes.</li> <li>e. Foster an interesting and active street scene by developing a community gathering place, providing historically sensitive street furniture and making streetscape enhancements.</li> <li>f. Emphasize the continuity of commercial frontages along the main shopping streets, primarily on Market, Main and Vineyard Streets, by maintaining uniform building setbacks along the street frontages. Commercial displays should continue to emphasize and enhance the pedestrian experience. Interruptions, such as blank facades, should be avoided.</li> <li>g. Emphasize continuity in architectural details and materials through the following facade treatments: <ul style="list-style-type: none"> <li>1. Second story balconies and recesses to create interest.</li> <li>2. Ground floor display windows to heighten visual interest.</li> <li>3. Compatibility in color by emphasizing earth tones and avoidance of bright or garish building colors which greatly contrast with their surroundings.</li> <li>4. A variety of signs which do not compete for attention or distract from the overall street appearance.</li> </ul> </li> </ul> |   |    | X   |

| <b>Table 5-16: Wailuku-Kahului Community Plan (2002)</b>   |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| 5. Awnings or canopies that provide shelter over sidewalk areas and protect store entrances.   |  |          |           |            |
| 5. Landscape Character: pending adoption of design guidelines for Wailuku Town, utilize the following interim guidelines in the review of projects. <ul style="list-style-type: none"> <li>a. Maintain the landscape character and open space of the Wailuku entry along South High Street by preserving mature vegetation.</li> <li>b. Establish a unified street tree planting theme for streets within the commercial core which are to be pedestrian oriented.</li> <li>c. Foster the development of mini-parks where appropriate and a community beautification program.</li> </ul>   |  |          |           | <b>X</b>   |
| 6. The Maui Redevelopment Agency shall be encouraged to consult with the Cultural Resources Commission in the formulation of and/or amendments to the Wailuku Town Design Guidelines.  |  |          |           | <b>X</b>   |
| <b>Objectives and Policies for Kahului</b>   |  |          |           |            |
| 1. Within industrial subdivisions, encourage the establishment of design standards for individual projects, including a unified streetscape planting theme and program, in order to enhance the visual quality of industrial developments.   |  |          |           | <b>X</b>   |
| 2. Circulation: provide and maintain sidewalks and bikeways for convenient and pleasant connections between activity centers, such as shopping centers, schools, Maui Community College and public parks. These pathways should have adequate separation from vehicular traffic for safety purposes.   |  |          |           | <b>X</b>   |
| 3. Building Form and Character: maintain compatible scale relationships between the existing low-scale character of the area, adjacent public uses and higher buildings. <ul style="list-style-type: none"> <li>a. Building heights for the hotel-designated district fronting the ocean side of Ka'ahumanu Avenue shall not exceed ten stories in order to provide a dynamic skyline and identifiable hotel district.</li> <li>b. The low-rise character of the central business area should be maintained. Higher building forms up to six stories should be sited in the central portion of commercial blocks.</li> <li>c. Building heights along the perimeter of commercial blocks should provide a transition in scale to adjacent public and quasi-public uses.</li> <li>d. Commercial uses along the perimeter of central business area blocks should be low-rise and provide sufficient setbacks to allow landscaped buffers along street frontages.</li> </ul> |  |          |           | <b>X</b>   |
| 4. Landscape Character <ul style="list-style-type: none"> <li>a. A coordinated landscape theme should be established from the airport to Kahului, with landscape buffers established along Keolani Place, Hāna Highway, and Ka'ahumanu Avenue.</li> </ul>  |  |          |           | <b>X</b>   |

| <b>Table 5-16: Wailuku-Kahului Community Plan (2002)</b>   |  | <b>S</b> | <b>NS</b> | <b>N/A</b> |
|--|--|----------|-----------|------------|
| b. Landscaping along Dairy Road between Keolani Place and Pu'unene Avenue should be established and coordinated with the landscaping of the airport-Kahului roadway approach routes.<br><br>c. Parkway character should be established along Ka'ahumanu Avenue, from Kahului to Wailuku. Keopuolani Park plans should be updated and made an integral part of the area's landscaping.<br><br>d. Open parking areas should be landscaped to provide visual screening and shade.<br><br>e. The perimeters of the central business area blocks should provide landscape buffers as part of a coordinated landscape theme to enhance their visual image.<br><br>f. The mature landscape character of Kahului's commercial areas should be preserved and incorporated into future development plans, subject to review by the County's Arborist Committee.<br><br>g. The landscape treatment along streets within the central business area should be extended along major collector roads serving adjacent residential neighborhoods, including Pu'unene, Kamehameha and Lono Avenues. |  |          |           |            |
| <b>Implementing Actions:</b><br>1. Implement a unified landscape planting theme along Ka'ahumanu Avenue from Kahului to Wailuku and along other major public roadways.<br>2. Establish a Wailuku Town Design District with adopted design guidelines.<br>3. Implement related actions specified in the Transportation section of the Community Plan related to roadways, pedestrian and bikeway improvements.<br>4. Provide pedestrian and bicyclist amenities within Wailuku Town, including shaded rest stops, bicycle parking, trash receptacles and public restroom facilities.  |  |          |           | <b>X</b>   |
| <b>Discussion:</b> The Proposed Action will not affect the Urban Design objectives and policies of the Wailuku-Kahului Community Plan.   |  |          |           |            |

## 5.8 Permits and Approvals

The Proposed Action constitutes the issuance of a Water Lease after public auction by the DLNR/BLNR. Thus, BLNR approval is necessary to implement the Proposed Action. It is anticipated that the terms of the Water Lease would govern any modifications to the existing EMI Aqueduct System, and there are no reasonably foreseeable plans for the construction of any additional facilities that would expand the EMI Aqueduct System within the License Area in connection with the issuance of the Water Lease. Any work on the EMI Aqueduct System would be limited to repair and maintenance activities. Consequently, no additional permits and approvals are anticipated to be required to implement the Proposed Action.

Should the Water Lease be issued in accordance with the Proposed Action, surface water will become available for the various domestic and agricultural uses. This would, in turn, lead to anticipated secondary effects including construction activities such as for expanding the KAP and building facilities in support of diversified agriculture in Central Maui. Such activities would be subject to various permits and approvals, depending on its location, proposed use and type of construction activity involved, but such permits and approvals are not required for the issuance of the Water Lease.



(This page intentionally left blank)

---

# **Chapter 6:**

## Irretrievable and Irreversible Commitments of Resources



## **6. IRRETRIEVABLE AND IRREVERSIBLE COMMITMENTS OF RESOURCES**

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be recovered or reversed. Examples include permanent conversion of wetlands, the loss of cultural resources, soils, wildlife, agricultural production, or socioeconomic conditions. Irreversible is a term that describes the loss of future options for a resource. Irretrievable is a term that applies to the loss of a resource that is not renewable and cannot be recovered for future use.

### **6.1. Use of Non-Renewable Resources**

The issuance of the Proposed Action (Water Lease) will not result in the irreversible use of the water resource because the Water Lease will be for a term, and not perpetual. Additionally, the Water Lease will be subject to the CWRM D&O and the reservation in favor of the DHHL, meaning that the water resource will not be exclusively and permanently committed to the Water Lease. For the term of the Water Lease the water resource will be available to the identified uses, such as providing water to the agricultural fields in Central Maui and continuing to provide water to the MDWS for Upcountry Maui and Nāhiku. To the extent such uses are not made, the water will not be diverted and will remain in the streams.

The use of surface/stream water for domestic and agricultural purposes could be viewed as an irretrievable use of the resources, to the extent that the water has been removed from its natural course. However, the use of this surface water is part of the cycle to return the water to the environment. For example, some of the water applied to land will return to the atmosphere through evaporation and transpiration through plants while water entering the ground will eventually discharge into the ocean. Water consumed by humans and animals, will evaporate through breathing and perspiration, and wastewater effluent from cesspools, septic systems and wastewater treatment plants that discharge into the ground will eventually reach the ocean. Water in the atmosphere, including water evaporating from the ocean and land, will fall as rain, including in East Maui, completing the cycle. This is an open cycle involving the movement of water through the atmosphere, land and oceans of the earth.

As part of a global hydrologic cycle, water is generally considered a renewable resource. In any particular location and time, however, there may only be a limited amount available, for example, to flow in streams or be diverted for other uses. To the extent that a commitment is made as to where that water goes or is used, the result is an irreversible use of that water for that period of time. The Proposed Action is a Water Lease with 30-year commitment to the proposed use of water. With careful management and responsible usage, water is a renewable resource and with that understanding the Water Lease would not involve an irretrievable commitment of the water resource.

The impacts of the use of the surface water resources associated with the Proposed Action will be offset by the considerable economic, social, and environmental benefits to the residents of the region, the County of Maui, and the State of Hawai'i that would be supported by the issuance of the subject Water Lease, as discussed in Section 4.7.3.

The Water Lease does not involve new construction within the License Area. The operation of the EMI Aqueduct System does not require the use of nonrenewal sources because the transmission of water through the EMI Aqueduct System is conducted through gravity rather

than through water pumping stations that require the use of non-renewable energy sources for operations. The diversified agricultural operations planned for the Central Maui agricultural fields will involve the commitment of some resources for the modifications of the field irrigation system and the construction of fencing, agricultural operating facilities and potentially renewable energy facilities. Building materials (concrete, wood, metal, etc.) will be used along with energy resources related to the construction of those items. However, similar improvements are planned even if no Water Lease is issued but, on a reduced scale. The use of such fuels and resources is not expected to be significant and the use of the Central Maui agricultural fields for diversified agriculture is considered to be beneficial because there would be considerably more green open space in Central Maui in the form of farms and irrigated pasture and approximately three times as much food production, including greater food self-sufficiency, should the Water Lease be issued. There would also be more local jobs.

"Resources" also includes natural and cultural resources. The Water Lease will authorize the use of diverted surface water, resulting in certain streams having less flow than under natural conditions. However, the Water Lease will also be subject to the IIFS established under the CWRM D&O, which has identified the streams most important for biological habitat purposes and mandated certain minimum flows to support those streams. Water is also identified as a cultural resource. A Water Lease that authorized the use of all surface waters in disregard to cultural practices would be a commitment involving loss or destruction of the cultural resource. However, the CWRM D&O specifically identified streams important for the cultivation of taro and other community purposes, and ordered an end to all diversions on those streams. Therefore it is not expected that the Water Lease, which will be subject to the CWRM D&O and subject to a reservation in favor of the DHHL, will result in the loss or destruction of cultural resources. The Proposed Action will not include partial or total destruction or alteration of historic properties, detrimental alteration of the surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, nor neglect resulting in deterioration or destruction.

## **6.2. Irreversible Curtailment of the Range of Beneficial Uses**

The Water Lease will allow the continued use of surface water for recognized beneficial purposes such as domestic and agricultural uses. There are also two hydroelectric facilities that utilize this water, one located in the area historically known as Kaheka Village, and the other at Pā'ia. Generation of the hydroelectric power is a non-consumptive use of water and the water can be subsequently used for agricultural purposes after flowing through the hydroelectric facilities. The State water code (HRS Chapter 174C), emphasizes that maximum beneficial use of the waters of the State includes domestic uses, aquaculture uses, irrigation and other agricultural uses, power development, and commercial and industrial uses, and that there should also be protection of traditional and customary Hawaiian rights, the protection and procreation of fish and wildlife, the maintenance of proper ecological balance and scenic beauty, and the preservation and enhancement of waters of the State for municipal uses, public recreation, public water supply, agriculture, and navigation. The Water Lease will promote recognized beneficial uses of the water.

The implementation of the Proposed Action is consistent with existing and adjacent land uses, and would not prevent or curtail any uses allowable under applicable land use policies or controls. As discussed in Chapter 5, the use of diverted surface waters allowed under the subject Water Lease is consistent with the goals, policies, and objectives outlined in the Hawai'i

State Plan, State Functional Plans, Maui Countywide Policy Plan, Maui Island Plan, and a range of other County sponsored community plans. The Proposed Action also supports the use and preservation of IAL.

The amount of water allowed to be diverted by the Water Lease will be significantly less than the amount diverted for sugar cultivation. Mahi Pono's farm plan projects use of the total amount of water available after compliance with the IIFS requirements of the CWRM D&O, although it is understood that the DHHL will eventually convert its water reservation to active use. Mahi Pono's water use will be incremental as diversified agriculture is brought back to Central Maui. However, if more water were available, more crop options would also be available. The issuance of the Water Lease should not curtail the use and access to adjacent lands (e.g., for recreation, environmental research, etc.) as the EMI Aqueduct System has been in place for over 100 years.

### **6.3. Potential for Environmental Accidents**

The implementation of the Proposed Action is not associated with activities that could directly trigger potential environmental accidents, nor pose a significant risk for potentially triggering environmental accidents. Specifically, the Proposed Action constitutes the issuance of a Water Lease, and is not associated with any construction or development activities. The EMI Aqueduct System has been operating for over 100 years, and issuance of the Water Lease should ensure continued operations and maintenance of the EMI Aqueduct System.

The use of the Central Maui agricultural fields for diversified agriculture could be associated with potential impacts to soil or groundwater from accidental spillage of pesticides. To mitigate this, Mahi Pono will implement a NRCS & USDA-approved conservation plan that will limit surface water runoff and soil erosion that could carry agricultural chemicals and nutrients offsite. Mahi Pono will also be subject to inspections conducted by the Hawai'i Department of Agriculture (HDA) that will ensure that the equipment used to apply agriculture chemicals is properly calibrated. HDA and the U.S. EPA will also have regulatory oversight over Mahi Pono's application of agriculture chemicals going forward. Mahi Pono will also make investments in equipment and storage facilities aimed at developing closed systems to safeguard against agriculture chemical spills.

### **6.4. Unavoidable Impacts**

The diversion of surface waters from the License Area in East Maui to the agricultural fields in Central Maui under the Proposed Action, as well as delivery of water to the MDWS to service Upcountry Maui and Nāhiku would not involve the construction of any new facilities, hence, it is not anticipated that there would be any unavoidable impacts or probable adverse effects. Past access into the License Area to construct, operate and maintain the EMI Aqueduct System may have resulted in the inadvertent introduction of invasive species, as discussed in Section 4.4. In the future, with continued access for maintenance of the EMI Aqueduct System, the possibility of inadvertently introducing additional invasive species remains.

The Water Lease will authorize the use of diverted surface water, resulting in certain streams having less flow than under natural conditions. However, the Water Lease will also be subject to the CWRM D&O, issued in June 2018, which has identified the streams most important for biological habitat purposes and mandated certain minimum flows to support those streams. As



such, the biological impacts of the Water Lease are far less than the impacts that were in place at least since the time of the completion of the EMI Aqueduct System (in 1923), if not even earlier, e.g. the completion of the first portion of the EMI Aqueduct System in 1878.

Additionally, Mahi Pono's proposed agricultural operations are anticipated to use less water than what was previously used during sugarcane operations, thereby leaving more water in the streams. However, by using less water to irrigate the Central Maui agricultural fields, it is expected that there will be a lower level of groundwater recharge to the region's groundwater aquifers as discussed in Section 4.2.2. Consequently, the lower level of groundwater recharge in combination with periods of lower rainfall, could result in lower levels of groundwater supply to serve the agricultural users in Central Maui, as well as other users of that water for domestic or municipal purposes.

---

## **Chapter 7:**

Relationship Between Local Short-Term Uses of  
Humanity's Environment and the Maintenance and  
Enhancement of Long-Term Productivity



## **7. RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF HUMANITY'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY**

This section discusses the relationship between the Proposed Action's short-term uses of the environment and how those uses may compromise or enhance the long-term productivity of that environment. Explored are the economic, social and cultural gains anticipated from the Proposed Action which are weighed against how the Proposed Action may narrow or expand other comparable long-term opportunities the environment offers, including avoidance of any risks posed to health and safety.

### **7.1 Tradeoffs Among Short- and Long-Term Gains and Losses**

The Proposed Action is a Water Lease for a 30-year commitment of government-owned water collected by the EMI Aqueduct System from the License Area for various uses, including domestic and agricultural uses served by the MDWS in Upcountry Maui, the KAP and the Nāhiku community in East Maui; diversified agricultural operations on approximately 30,000 acres in Central Maui; and, preservation of the EMI Aqueduct System. While the utilization of the present configuration of the EMI Aqueduct System has been in place since 1923, this Water Lease authorize the use of less water than was diverted in the past because the Water Lease must be in compliance with the CWRM D&O that was issued in June 2018.

Considering the Water Lease as a short-term use of humanity's environment, the beneficial gains over the term of the Water Lease include the benefits accrued to the various recipients of the water described above for domestic, commercial and agricultural uses. The Water Lease will maintain the lifestyle and livelihood of those who receive their water through the MDWS. These include the communities and agricultural users served by the MDWS in Upcountry Maui and Nāhiku. In Central Maui the Water Lease will provide irrigation water for Mahi Pono to develop diversified agriculture on former sugar land, with associated economic gains from the sale of crops and job creation, and increased local food sustainability.

The CWRM D&O established IIFS, which includes water arising on both State- and privately - owned lands within East Maui. Therefore, as to those streams subject to the CWRM D&O, the maximum amount of water that can be awarded through the Water Lease is the amount of water that is available for diversion after implementation of the CWRM D&O. Through the CWRM D&O, the CWRM ordered full restoration of ten streams, primarily for taro growing areas for irrigation and for community and non-municipal domestic uses. Flow in one "habitat" stream was fully restored while five other "habitat streams" were ordered to have 64% of their BFQ<sub>50</sub> restored, which generally represents the H<sub>90</sub>, based on the biological diversity and habitat that already exists. Seven streams were ordered to have 20% of their BFQ<sub>50</sub> restored to provide connectivity for migrating stream fauna. While the Water Lease would have a term of 30 years, the CWRM D&O and the associated benefits to the kalo growing areas, communities and environment, would not be affected by that term and, if not otherwise revised by the CWRM, it will continue indefinitely.

### **7.2 Extent to which the Proposed Action Forecloses Future Options**

The Proposed Action is a Water Lease for a 30-year commitment of governmental-owned water for various uses described in this DEIS, and as summarized in the preceding section.

Therefore, if the Water Lease is awarded based on this DEIS, any proposed uses of the surface water that deviate significantly from those described herein would be foreclosed. For example, Mahi Pono could not use water obtained from the Water Lease to pursue urban development in the Central Maui agricultural fields without restarting the process for obtaining a new Water Lease, including preparation of a supplemental or new EIS.

The Proposed Action would not foreclose different uses of water obtained through the EMI Aqueduct System after the 30-year term of the Water Lease expires.. All laws regarding the issuance of a new Water Lease at that future time would be applicable.

### **7.3 Narrows the Range of Beneficial Uses**

As discussed in the preceding section, awarding of the Water Lease based on this DEIS would foreclose options that deviate significantly from those described herein. Some of those uses could be considered beneficial. While such options may be foreclosed during the 30-year term of the Water Lease, they could be pursued through a subsequent Water Lease.

As previously discussed, the amount of government-owned water that may be diverted out of the License Areas has been limited by the CWRM D&O. If the Water Lease is not awarded, government-owned water would be returned to the streams, adding to the minimum required streamflow in streams subject to the CWRM D&O. For the ten streams that are fully restored, their productivity would remain unchanged and no additional benefit would be gained. For the five "habitat streams" that had 90% of their habitat restored through the CWRM D&O, any additional flow restored would only provide only a marginal improvement in habitat. The seven streams ordered to have 20% of the BFQ<sub>50</sub> restored for "connectivity" (CWRM D&O, COL 30) are those with low biological ratings and or do not have the potential to improve drastically with increased flows. Any additional flows restored to these streams would also have marginal benefit.

### **7.4 Environmentally Significant Consequences**

The proposed Water Lease would also provide the lessee access into the License Area during the term of the Water Lease to operate and maintain the EMI Aqueduct System, which is a resource that requires maintenance to retain its integrity as a continually working water system for over 134 years since its initial construction. Should the Water Lease not be awarded, the EMI Aqueduct System could be abandoned and deteriorate over time, losing its value as an important piece of infrastructure and a historical resource. However, if EMI finds that it is economically feasible to maintain the EMI Aqueduct System to divert non-governmental water this historic resource could be preserved for as long as it is maintained.

In addition to the historic EMI Aqueduct System, the License Area has a rich archaeological landscape and post-contact history, as discussed in Section 4.5. While the Proposed Action would provide the lessee access into the License Area during the term of the Water Lease to operate and maintain the EMI Aqueduct System, such activities would not result in the partial or total destruction or alteration of historic properties. If the Water Lease is not awarded, EMI could abandon the EMI Aqueduct System and relinquish its management activities in the License Area. As a result, there is a potential that unmanaged access could adversely and irreversibly affect documented and undocumented historic and cultural resources in the License Area. If EMI were to continue to maintain the EMI Aqueduct System to divert non-

governmental water, their role in managing access into the License Area would determine the extent to which access could increase the risk of detrimentally affecting historic and cultural resources.

Access for the operation and maintenance of the EMI Aqueduct System, as well as other sanctioned and unsanctioned activities such as hiking, hunting and gathering in the License Area have introduced alien species of flora and fauna, primarily in the vicinity of the access roadways, as discussed in Section 4.4. The establishment of these alien species in this area have likely irreplacably displaced some native species, which are a biological and cultural resource. As a result of the Proposed Action, it is possible that additional alien species could be unintentionally introduced and if they are particularly invasive, more native species could be displaced. Section 4.4. discusses mitigation measures that would reduce the potential for adverse impact by invasive alien species. If the Water Lease is not awarded, EMI could abandon the EMI Aqueduct system and relinquish its management activities in the License Area. With less control over access, the potential for introducing alien species in the License Area would likely increase. If EMI continues to maintain the EMI Aqueduct System to divert non-governmental water, their role in managing access in License Area would determine the extent to which such access could increase the potential for introducing invasive alien species that could displace native species.

With the awarding of the Water Lease, a reduction from current stream flows would occur over time as more water is used for irrigation to support diversified agriculture in Central Maui. However, the use of steam water for diversified agriculture will always be limited by the amount of diversion allowed by the CWRM D&O.

Under the Proposed Action, a portion of the water awarded through the Water Lease will be used for diversified agriculture on the approximately 30,000 acres of land in Central Maui. If the Water Lease is not awarded, EMI may find it economically feasible to continue maintaining the EMI Aqueduct System to divert non-governmental water for a reduced diversified agricultural operation in Central Maui. In such a scenario, Mahi Pono would be unable to take full advantage of the potential long-term productivity that the fields of Central Maui offer for diversified agriculture. If EMI finds that it is economically unfeasible to maintain the EMI Aqueduct System without the Water Lease, there will be little opportunity to realize the potential long-term agricultural productivity of the fields of Central Maui. The only remaining water source would be the existing groundwater wells which have low SY without input from imported irrigation water provided by the EMI Aqueduct System.

If agriculture in the Central Maui fields is abandoned, the natural arid conditions would return. According to the SWCA's Terrestrial Flora and Fauna Report, there would be succession of weedy plants with few or no native species. More frequent wildfires may occur while reservoirs would dry up and fill in, eliminating nest and foraging habitat for endangered Hawaiian waterbirds and foraging habitat for migrant shorebirds and migrant waterfowl. On the other hand, the potential for tree tobacco to colonize abandoned fields would be beneficial for the endangered Blackburn's sphinx moth because it would increase available breeding habitat.



## **7.5 Long-term Risks to Health and Safety**

If the Water Lease is not awarded, and even if EMI finds it finds it economically feasible to continue maintaining the EMI Aqueduct System to divert non-governmental water for diversified agriculture in Central Maui, there may not be enough water to allocate much or any to the MDWS. In Upcountry Maui, the loss would exacerbate the effects of drought when other surface water sources are unreliable. For the KAP and the Nāhiku community served the MDWS, this could eliminate their primary source of water. Insufficient water for these areas, will likely affect the availability of water for sanitary functions like wastewater disposal, washing and bathing which could pose long-term risks to health.

If agriculture in the Central Maui fields is abandoned, the natural arid conditions would return. Exposed soils in the Central Maui fields would be susceptible to wind erosion and airborne dust could create a nuisance or potential health hazard under windy conditions. Dry windy conditions would also increase the potential for wildfires, which could pose a public safety hazard.

---

# **Chapter 8:**

## Summary of Unresolved Issues



## **8. SUMMARY OF UNRESOLVED ISSUES**

Unresolved issues for the Proposed Action have to do with the steps that must be completed before the Water Lease can be issued, which issues must necessarily be resolved before the "commencement of the action", that is to say, before the BLNR issues any Water Lease.

The Water Lease must accommodate a reservation in favor of the DHHL. The DHHL is formulating the reservation amount that it will ultimately present to CWRM, as discussed in Chapter 2. However, the exact timing for when the DHHL will wish to make use of any reservation or portions thereof is not known at this time. In any event,, the Water Lease will be subject to the DHHL's reservation. Similarly, by law the Water Lease must either contain a covenant requiring the lessee and the DLNR to jointly develop and implement a watershed management plan, or a watershed management plan must be in place at the time of the approval of the Water Lease. The content and parameters of a watershed management plan related to the proposed Water Lease are unresolved at this time, but will be resolved before the BLNR can issue the Water Lease.

Other unresolved issues related to the proposed Water Lease will also be resolved before the Water Lease is issued. The BLNR must set upset rental through appraisal of fair market value, and disposition of the Water Lease must be by public auction, including extensive public notice and bidder qualification requirements. Therefore, at this point the amount of rental payment that will be required under the Water Lease, the identity of the awarded lessee, and the specific terms of the Water Lease, are unknown, and therefore may be considered "unresolved" for the purposes of this DEIS.

(This page intentionally left blank)

---

# **Chapter 9:**

## Consultation





## 9. CONSULTATION

The pre-assessment consultation process included efforts to inform the community and solicit input in scoping the DEIS well beyond the requirements of Chapter 343, HRS. This process included consultation both prior to the publication of the EISPN on February 8, 2017 and during the 30-day public comment period on the EISPN in the form of formal written consultation pursuant to Chapter 343, HRS and Title 11, Chapter 200, HAR; meetings with elected officials, agencies, and stakeholders; and a community outreach process, including two public scoping meetings. These outreach efforts are documented below.

### 9.1 Early Consultation

The following agencies, organizations, and individuals were sent early consultation letters on November 23, 2016, requesting comments on the Proposed Action prior to the publication of the EISPN (See second column in Table 9-1). Those who provided written responses to the early consultation letters are listed in the third column of Table 9-1. Copies of all written comments received are reproduced herein as Appendix J. Response letters to those who submitted substantive comments during early consultation but did not submit written or oral comments during the 30-day public review period after publication of the EISPN are also included in Appendix J. Response letters to those who submitted substantive comments during early consultation and who also provided written or oral comments during the 30-day public review period are provided in Appendix M.

**Table 9-1. Early Consultation Participants**

| Agency / Organization / Individual Name                                | Sent Early Consultation Request | Responded to Early Consultation |
|--|---------------------------------|---------------------------------|
| <b><u>Federal Agencies</u></b>   |                                 |                                 |
| U.S. Army Corps of Engineers   | ✓                               |                                 |
| U.S. Department of Agriculture, Natural Resources Conservation Service | ✓                               |                                 |
| U.S. Environmental Protection Agency                                   | ✓                               |                                 |
| U.S. National Parks Service  | ✓                               |                                 |
| U.S. Fish and Wildlife Service   | ✓                               | ✓                               |
| U.S. National Marine Fisheries Service                                 | ✓                               |                                 |
| U.S. Department of the Navy  | ✓                               |                                 |
| Federal Transit Administration   | ✓                               |                                 |
| Federal Highways Administration  | ✓                               |                                 |
| U.S. Department of Homeland Security                                   | ✓                               |                                 |
| National Oceanic and Atmospheric Association                           | ✓                               |                                 |
| Federal Aviation Administration  | ✓                               |                                 |
| <b><u>State Agencies</u></b>   |                                 |                                 |
| Civil Defense  | ✓                               |                                 |
| Department of Agriculture  | ✓                               | ✓                               |
| Department of Accounting and General Services                          | ✓                               | ✓                               |
| Department of Accounting and General Services Archives Division        | ✓                               |                                 |
| Department of Business, Economic Development and Tourism (DBEDT)       | ✓                               |                                 |

| Agency / Organization / Individual Name              | Sent Early Consultation Request | Responded to Early Consultation |
|--|---------------------------------|---------------------------------|
| DBEDT, Research Division Library                     | ✓                               |                                 |
| DBEDT, Strategic Industries Division                 | ✓                               |                                 |
| DBEDT, Hawai'i State Energy Office                   | ✓                               |                                 |
| DBEDT, Land Use Commission                           | ✓                               |                                 |
| DBEDT, Office of Planning                            | ✓                               | ✓                               |
| Department of Defense                                | ✓                               |                                 |
| Department of Education                              | ✓                               |                                 |
| Department of Hawaiian Homelands                     | ✓                               | ✓                               |
| Department of Health (DOH)                           | ✓                               |                                 |
| DOH, Environmental Management Branch                 | ✓                               |                                 |
| DOH, Environmental Planning Office                   | ✓                               | ✓                               |
| DOH, Clean Water Branch                              | ✓                               | ✓                               |
| DOH, Hazard Evaluation and Emergency Response Office | ✓                               |                                 |
| DOH, Maui District Office                            |                                 | ✓                               |
| DOH, Office of Environmental Quality Control         | ✓                               |                                 |
| Department of Land and Natural Resources (DLNR)      | ✓                               | ✓                               |
| DLNR, Historic Preservation Division                 | ✓                               | ✓                               |
| DLNR, Na Ala Hele, Trails & Access Program           |                                 | ✓                               |
| DLNR, Land Division Administration                   | ✓                               | ✓                               |
| DLNR, Land Division, Maui District Land Agent        |                                 | ✓                               |
| DLNR, Division of Forestry and Wildlife              |                                 | ✓                               |
| DLNR, Engineering Division                           |                                 | ✓                               |
| DLNR, Commission on Water Resource Management        |                                 | ✓                               |
| DLNR, Division of Aquatic Resources                  | ✓                               |                                 |
| Department of Transportation                         | ✓                               |                                 |
| Department of Transportation, Airports Division      | ✓                               |                                 |
| Hawai'i State Library                                | ✓                               |                                 |
| Hawai'i State Library, Kahului Regional Library      | ✓                               |                                 |
| Office of Hawaiian Affairs                           | ✓                               |                                 |
| University of Hawai'i Environmental Center           | ✓                               |                                 |
| <b><u>County of Maui Agencies</u></b>                |                                 |                                 |
| Department of Fire and Public Safety                 | ✓                               |                                 |
| Department of Environmental Management               | ✓                               |                                 |
| Department of Housing and Human Concerns             | ✓                               | ✓                               |
| Department of Parks and Recreation                   | ✓                               |                                 |
| Department of Planning                               | ✓                               | ✓                               |
| Department of Public Works                           | ✓                               | ✓                               |
| Department of Transportation                         | ✓                               |                                 |
| Department of Water Supply                           | ✓                               | ✓                               |
| Office of Economic Development                       | ✓                               |                                 |
| Department of the Corporation Counsel                | ✓                               | ✓                               |
| Police Department                                    | ✓                               | ✓                               |

| Agency / Organization / Individual Name                                       | Sent Early Consultation Request | Responded to Early Consultation                            |
|---|---------------------------------|--|
| <b><u>Other Organizations</u></b>   |                                 |  |
| Maui Electric Company   | ✓                               |  |
| Verizon Hawai'i   | ✓                               |  |
| Hawai'i Gas   | ✓                               |  |
| Hawaiian Telcom   | ✓                               |  |
| Oceanic Time Warner Cable   | ✓                               |  |
| Hawai'i Farm Bureau Foundation  | ✓                               |  |
| Maui Tomorrow Foundation  |                                 | ✓<br>(through I. Hall, Esq.)                               |
| Native Hawaiian Legal Corporation - Camille Kalama, Esq. & Summer Sylva, Esq. | ✓                               | ✓<br>(on behalf of NāMoku Aupuni o Ko'olau Hui and others) |
| Public Access Trails Hawaii   |                                 | ✓  |
| <b><u>Individuals</u></b>   |                                 |  |
| Senator Kalani English  | ✓                               |  |
| Representative Kyle Yamashita   | ✓                               |  |
| Representative Lynn DeCoite   | ✓                               |  |
| Edward Wendt, Nā Moku Aupuni O Ko'olau Hui, Inc.                              | ✓                               |  |
| Isaac Hall, Esq.  | ✓                               | ✓<br>(on behalf of Maui Tomorrow Foundation)               |
| Jeffrey Paisner   | ✓                               |  |
| John Blumer-Buell   | ✓                               |  |
| Lucienne de Naie  | ✓                               |  |
| Napua Puaoi   |                                 | ✓  |
| Randy Cabral  | ✓                               |  |
| Robert Thomas, Esq.   | ✓                               |  |
| Elaine Wender   |                                 | ✓  |

## 9.2 Summary of Applicant's Community Outreach and Consultation Efforts During the EISPN Comment Period

The following agencies, organizations, and individuals were consulted following publication of the EISPN. Consultation was conducted to solicit comments from agencies, organizations, and individuals regarding any concerns with the Proposed Action and agency requirements. Notice of the availability of the EISPN was published in the February 8, 2017 issue of *The Environmental Notice*. Copies of all written comments received during the EISPN comment

period along with response letters are reproduced in Appendix M. Table 9-2 lists the agencies, organizations, and individuals who were provided a copy of the EISPN or otherwise participated in the EISPN consultation process. Table 9-2 also indicates the agencies, organizations, and individuals who will receive notice of the DEIS.

Public input on the EISPN was provided via oral testimony at two public scoping meetings, as well as by e-mail, fax, and letters received during the 30-day EISPN comment period. Substantive comments on the EISPN related to scoping of the DEIS were carefully evaluated during the preparation of this DEIS and incorporated, as appropriate, into the document. Full consideration was given to the concerns, suggestions, information, and documentation provided by the commenting individuals, groups, and agencies. In addition, although the 30-day public comment period provided on the EISPN ended on March 10, 2017, public comments received after that date were also considered. Transcripts for both scoping meetings comprise Appendix K and L of this document.

As a key component of the DEIS outreach process for the Proposed Action, the applicant hosted two scoping meetings to engage stakeholders and solicit input on the EIS process. Both scoping meetings were held on the island of Maui in February of 2017.

Notification of the EIS scoping meetings was published in the Maui News on February 19, 2017, as shown on Figure 9-1. In addition, a comprehensive effort was made to reach out to engage as many neighborhood stakeholders and community members as possible to participate in each scoping meeting. At each meeting, more than 100 participants made up of neighborhood residents, general community members, community stakeholders and leaders, and City and State officials were in attendance.

EIS Scoping Meeting #1: The first community scoping meeting was held at the Maui Electric Company Community Meeting Room in Kahului on the evening of February 22, 2017.

EIS Scoping Meeting #2: The second community scoping meeting was held on the evening of February 23, 2017, at the Ha'ikū Park and Community Center in Pā'ia.

The format for each meeting was identical. Each meeting was facilitated by a meeting facilitator who introduced the EIS preparers from WOC, set courtesy rules for comment and/or response interaction, notified participants that a court stenographer was present to record the meeting, notified participants that those who signed up to give oral comments would be called upon to speak, and encouraged participants to submit comments before the comment deadline. Project display materials and hand-out sheets, comment forms with submittal information, and a comment drop box were provided at each meeting.

Figures 9-2 and 9-3 reflect the number of participants who signed in at each scoping meeting and the number of speakers who signed up to share oral comments. The number of registered participants is based on the number of individuals who signed an attendance sheet upon arriving at each hearing. A total of 114 people signed the attendance sheet for the February 22, 2017 meeting at the Maui Electric Company Community Meeting Room in Kahului and a total of 36 people signed up to share oral comments although not everyone that signed up spoke. Only 34 people shared oral comments for the scoping meeting held on February 22,

2017. A total of 140 people signed the attendance sheet for the February 23, 2017 at the Ha'ikū Park and Community Center in Pā'ia and a total of 47 people signed up to share oral comments although not everyone spoke. Only 34 people were able to share oral comments for the scoping meeting held on February 23, 2017. The total attendance for both meetings was higher than the number of those who registered as not everybody signed the attendance sheet. A total of 144 written comments were received during the EISPN comment period. However, not every person that commented on the EISPN provided an address (physical or electronic mailing address). Therefore, response letters, including the Draft EIS Notification, could not to be sent to those people. Nonetheless, comments from those that did not provide an address are reproduced with an appropriate response letter in Appendix M. These people are indicated below, in Table 9-2, without a checkmark in the "Draft EIS Notification" column.

**Table 9-2: List of Agencies, Organizations, and Individuals Consulted During the 30-Day EISPN Comment Period**

| Agency / Organization / Individual Name                                | Provided Notice of Availability of EISPN | Provided Written Comments on the EISPN | Provided Comments at Public Scoping Meeting (Written or Oral) | Draft EIS Notification |
|--|--|--|---|------------------------|
| <b><u>Federal Agencies</u></b>   |  |  |   |                        |
| U.S. Army Corps of Engineers   | ✓  |  |   | ✓                      |
| U.S. Coast Guard   | ✓  |  |   | ✓                      |
| U.S. Department of Agriculture, Natural Resources Conservation Service | ✓  |  |   | ✓                      |
| U.S. Environmental Protection Agency                                   | ✓  |  |   | ✓                      |
| U.S. National Parks Service  | ✓  |  |   | ✓                      |
| U.S. Fish and Wildlife Service   | ✓  |  |   | ✓                      |
| U.S. National Marine Fisheries Service                                 | ✓  |  |   | ✓                      |
| U.S. Department of the Navy  | ✓  |  |   | ✓                      |
| Federal Transit Administration   | ✓  |  |   | ✓                      |
| Federal Highways Administration  | ✓  |  |   | ✓                      |
| U.S. Department of Homeland Security                                   | ✓  |  |   | ✓                      |
| National Oceanic and Atmospheric Association                           | ✓  |  |   | ✓                      |
| Federal Aviation Administration  | ✓  |  |   | ✓                      |
| <b><u>State Agencies</u></b>   |  |  |   |                        |
| Aha Moku o Hāmākua Loa/Hāmākua Poko – Joyclynn Costa                   |  | ✓                                      | ✓   | ✓                      |
| Aha Moku o Kaupo – Jade Alohalani Smith                                |  | ✓                                      | ✓   | ✓                      |



| Agency / Organization / Individual Name                          | Provided Notice of Availability of EISPN | Provided Written Comments on the EISPN | Provided Comments at Public Scoping Meeting (Written or Oral) | Draft EIS Notification |
|--|--|--|---|------------------------|
| Department of Agriculture  |  |  |   | ✓                      |
| Department of Accounting and General Services                    |  |  |   | ✓                      |
| Department of Accounting and General Services Archives Division  |  |  |   | ✓                      |
| Department of Business, Economic Development and Tourism (DBEDT) | ✓  |  |   | ✓                      |
| DBEDT, Research Division Library                                 | ✓  |  |   | ✓                      |
| DBEDT, Strategic Industries Division                             | ✓  |  |   | ✓                      |
| DBEDT, Hawai'i State Energy Office                               | ✓  |  |   | ✓                      |
| DBEDT, Land Use Commission                                       | ✓  |  |   | ✓                      |
| DBEDT, Office of Planning  | ✓  | ✓                                      |   | ✓                      |
| Department of Defense  | ✓  |  |   | ✓                      |
| Department of Education  | ✓  |  |   | ✓                      |
| Department of Hawaiian Homelands                                 |  |  |   | ✓                      |
| Department of Health (DOH)                                       | ✓  |  |   | ✓                      |
| DOH, Environmental Management Branch                             | ✓  |  |   | ✓                      |
| DOH, Environmental Planning Office                               |  |  |   | ✓                      |
| DOH, Clean Water Branch  |  | ✓                                      |   | ✓                      |
| DOH, Office of Environmental Quality Control                     | ✓  | ✓                                      |   | ✓                      |
| DOH, Maui District Health Office                                 |  | ✓                                      |   | ✓                      |
| Department of Land and Natural Resources (DLNR)                  |  |  |   | ✓                      |
| DLNR, Historic Preservation Division                             |  |  |   | ✓                      |
| DLNR, Na Ala Hele, Trails & Access Program                       |  |  |   | ✓                      |
| DLNR, Land Division, Maui District Land Agent                    |  |  |   | ✓                      |
| DLNR, Division of Forestry and Wildlife                          |  |  |   | ✓                      |
| DLNR, Engineering Division                                       |  |  |   | ✓                      |
| DLNR, Commission on Water Resource Management                    |  |  |   | ✓                      |
| Department of Transportation, Highways Division                  | ✓  |  |   | ✓                      |
| Department of Transportation, Airports Division                  | ✓  |  |   | ✓                      |

| Agency / Organization / Individual Name                  | Provided Notice of Availability of EISPN | Provided Written Comments on the EISPN | Provided Comments at Public Scoping Meeting (Written or Oral) | Draft EIS Notification |
|--|--|--|---|------------------------|
| Department of Transportation, Harbors Division           | ✓  |  |   | ✓                      |
| Office of Hawaiian Affairs                               | ✓  | ✓                                      |   | ✓                      |
| University of Hawai'i Honolulu Community College         |  |  |   | ✓                      |
| University of Hawai'i Environmental Center               | ✓  |  |   | ✓                      |
| University of Hawai'i Sea Grant                          |  |  |   | ✓                      |
| Hawai'i State Library                                    | ✓  |  |   | ✓                      |
| Hawai'i State Library – Kahului Regional Library         | ✓  |  |   | ✓                      |
| <b><u>County of Maui Agencies</u></b>                    |  |  |   |                        |
| Department of Fire and Public Safety                     | ✓  |  |   | ✓                      |
| Department of Environmental Management                   | ✓  | ✓                                      |   | ✓                      |
| Department of Housing and Human Concerns                 |  |  |   | ✓                      |
| Department of Parks and Recreation                       | ✓  |  |   | ✓                      |
| Department of Planning                                   |  |  |   | ✓                      |
| Department of Public Works                               |  |  |   | ✓                      |
| Department of Transportation                             | ✓  |  |   |                        |
| Department of Water Supply                               |  |  |   | ✓                      |
| Office of Economic Development                           | ✓  |  |   |                        |
| Department of the Corporation Counsel                    |  |  |   | ✓                      |
| Maui County Council – Kelly T. King                      |  | ✓                                      |   | ✓                      |
| Police Department  |  |  |   | ✓                      |
| <b><u>Other Organizations</u></b>                        |  |  |   |                        |
| Aurora Foundation – Jeffrey Bronfman                     |  | ✓                                      |   | ✓                      |
| Clifton Hasegawa & Associates, LLC – Clifton M. Hasegawa |  | ✓                                      |   | ✓                      |
| Hawai'i Farm Bureau Foundation                           | ✓  |  |   | ✓                      |
| Hawai'i Gas  | ✓  |  |   | ✓                      |
| Hawaiian Telcom  | ✓  |  |   | ✓                      |

| Agency / Organization / Individual Name                           | Provided Notice of Availability of EISPN | Provided Written Comments on the EISPN | Provided Comments at Public Scoping Meeting (Written or Oral) | Draft EIS Notification |
|---|--|--|---|------------------------|
| Kipahulu 'Ohana, Inc. – Scott Crawford                            |  | ✓                                      |   | ✓                      |
| Maui Electric Company   | ✓  |  |   | ✓                      |
| Maui Tomorrow – Albert Perez                                      |  | ✓                                      | ✓   | ✓                      |
| Native Hawaiian Legal Corporation – Camille Kalama & Summer Sylva |  | ✓                                      |   | ✓                      |
| Nāhiku Community Association – Kamalu Kaho'okele, Maluhia Stoner  |  | ✓                                      | ✓   | ✓                      |
| Na Moku Aupuni O Ko'olau Hui Inc. – Edward and Māhealani Wendt    | ✓  | ✓                                      | ✓   | ✓                      |
| Oceanic Time Warner Cable (Now Spectrum Hawai'i)                  | ✓  |  |   | ✓                      |
| Public Access Trails Hawaii                                       |  |  |   | ✓                      |
| Sierra Club Maui Group – Adrienne Raff Corwin                     |  | ✓                                      | ✓   | ✓                      |
| Verizon Hawai'i   | ✓  |  |   | ✓                      |
| <b><u>Individuals</u></b>   |  |  |   |                        |
| Senator Kalani English  | ✓  |  |   | ✓                      |
| Representative Kyle Yamashita                                     | ✓  |  |   | ✓                      |
| Representative Lynn DeCoite                                       | ✓  |  |   | ✓                      |
| Adam Lonig  |  | ✓                                      | ✓   |                        |
| Al  |  | ✓                                      |   | ✓                      |
| Alana Dandrea   |  | ✓                                      |   | ✓                      |
| Alan Bradbury   |  | ✓                                      |   | ✓                      |
| Alex Beers  |  | ✓                                      |   | ✓                      |
| Alex Franco   |  |  | ✓   | ✓                      |
| Alex Haller   |  |  | ✓   | ✓                      |
| Alice Lee   |  | ✓                                      | ✓   | ✓                      |
| Alvin Kalehuawehe   |  | ✓                                      | ✓   | ✓                      |
| Andrew Isoda  |  | ✓                                      |   | ✓                      |
| Ann Lentz   |  | ✓                                      |   | ✓                      |
| Arianna Feinberg  |  | ✓                                      |   | ✓                      |
| Aubrie Murphy   |  | ✓                                      | ✓   | ✓                      |
| Barbara Barry   |  | ✓                                      |   | ✓                      |
| Barbara Best  |  | ✓                                      |   | ✓                      |
| Bob Ferguson  |  | ✓                                      |   | ✓                      |
| Bob Martin  |  | ✓                                      | ✓   | ✓                      |
| Brendan Balthazar   |  | ✓                                      | ✓   | ✓                      |

| Agency / Organization / Individual Name | Provided Notice of Availability of EISPN | Provided Written Comments on the EISPN | Provided Comments at Public Scoping Meeting (Written or Oral) | Draft EIS Notification |
|---|--|--|---|------------------------|
| Brian Wittman                           |  | ✓                                      | ✓   | ✓                      |
| Cal Shinyama                            |  | ✓                                      |   |                        |
| Charlotte O'Brien                       |  |  | ✓   | ✓                      |
| Chelsea Huddleston                      |  | ✓                                      |   | ✓                      |
| Cheryl Kekahuna                         |  |  | ✓   |                        |
| Chi Guyer                               |  | ✓                                      |   | ✓                      |
| Christina Hemming                       |  |  | ✓   |                        |
| Christine Carter                        |  | ✓                                      | ✓   | ✓                      |
| Clive Drew                              |  | ✓                                      |   | ✓                      |
| Cody Nemet                              |  |  | ✓   | ✓                      |
| Corinna Kekahuna                        |  | ✓                                      |   | ✓                      |
| Dan Clark                               |  | ✓                                      | ✓   | ✓                      |
| Darrell Tanaka                          |  | ✓                                      | ✓   | ✓                      |
| Darren Strand                           |  |  | ✓   | ✓                      |
| David-John Fernandez                    |  | ✓                                      |   | ✓                      |
| David Prais                             |  |  | ✓   |                        |
| Debra Nix                               |  | ✓                                      |   | ✓                      |
| Denise Boisvert                         |  | ✓                                      |   | ✓                      |
| Devika Ghai                             |  | ✓                                      |   | ✓                      |
| Diana Dahl                              |  | ✓                                      |   | ✓                      |
| Diane Hakamatsu                         |  |  | ✓   | ✓                      |
| Dianne Shimizu                          |  |  | ✓   | ✓                      |
| Donald Erway                            |  | ✓                                      |   | ✓                      |
| Douglas Berry                           |  | ✓                                      |   | ✓                      |
| Douglas Sheehan                         |  | ✓                                      | ✓   | ✓                      |
| Dwight Baldwin                          |  |  | ✓   | ✓                      |
| Edie Van Hoose                          |  | ✓                                      |   | ✓                      |
| Edwin Young                             |  |  | ✓   | ✓                      |
| Elaine Wender                           |  | ✓                                      | ✓   | ✓                      |
| Elden Liu                               |  |  | ✓   | ✓                      |
| Eileen Naaman                           |  | ✓                                      |   | ✓                      |
| Erika Disalvo                           |  | ✓                                      |   | ✓                      |
| Eva Roberts                             |  | ✓                                      |   | ✓                      |
| Faith Chase                             |  | ✓                                      | ✓   | ✓                      |
| Frank Caprioni                          |  |  | ✓   | ✓                      |
| Gabe Johnson                            |  | ✓                                      |   | ✓                      |
| George Vierra                           |  | ✓                                      |   | ✓                      |
| Grace Woods                             |  | ✓                                      |   | ✓                      |
| Harriet Witt                            |  | ✓                                      | ✓   | ✓                      |

| Agency / Organization / Individual Name | Provided Notice of Availability of EISPN | Provided Written Comments on the EISPN | Provided Comments at Public Scoping Meeting (Written or Oral) | Draft EIS Notification |
|---|--|--|---|------------------------|
| Haweookalani Johnson                    |  | ✓                                      |   | ✓                      |
| Helen Barrow                            |  | ✓                                      |   | ✓                      |
| His Highness Kialoa                     |  | ✓                                      |   | ✓                      |
| Isaac Hall                              |  | ✓                                      | ✓   | ✓                      |
| Jack Rollens                            |  | ✓                                      |   | ✓                      |
| Jacquelyn Ching                         |  | ✓                                      |   | ✓                      |
| Jacqui Skill                            |  | ✓                                      |   | ✓                      |
| James Coon                              |  | ✓                                      | ✓   | ✓                      |
| James Falconer                          |  | ✓                                      |   | ✓                      |
| James Franzen                           |  | ✓                                      |   | ✓                      |
| James Padgett                           |  | ✓                                      |   | ✓                      |
| Jean Power                              |  | ✓                                      |   | ✓                      |
| Jeffrey Paisner                         | ✓  |  |   | ✓                      |
| Jennifer Ahia                           |  | ✓                                      |   | ✓                      |
| Jessica Mitchell                        |  | ✓                                      |   | ✓                      |
| Jette Slater                            |  | ✓                                      |   | ✓                      |
| Jill Blakeley                           |  | ✓                                      |   | ✓                      |
| Joan Heartfield                         |  | ✓                                      |   | ✓                      |
| Joel Kubby                              |  | ✓                                      |   | ✓                      |
| John Blumer-Buell                       | ✓  |  |   | ✓                      |
| John Gelert                             |  | ✓                                      | ✓   | ✓                      |
| John Naylor                             |  | ✓                                      |   | ✓                      |
| John Nix                                |  | ✓                                      |   | ✓                      |
| John Norman                             |  | ✓                                      |   | ✓                      |
| Joseph Kohn                             |  | ✓                                      |   | ✓                      |
| Judith Michaels                         |  | ✓                                      |   | ✓                      |
| Justin Tombe                            |  |  | ✓   | ✓                      |
| Kahikina Kahiamoe                       |  |  | ✓   |                        |
| Kaleikoa Kā'eo                          |  |  | ✓   | ✓                      |
| Kamalani Pahukoa                        |  |  | ✓   |                        |
| Kamaile Aipa                            |  | ✓                                      |   | ✓                      |
| Kapulani Antonio                        |  | ✓                                      |   | ✓                      |
| Katharyn Morgan                         |  | ✓                                      |   | ✓                      |
| Kathy Pang                              |  | ✓                                      | ✓   | ✓                      |
| Kawika Stoner                           |  |  | ✓   | ✓                      |
| Keith Ranney                            |  | ✓                                      |   | ✓                      |
| Kelli Medeiros                          |  | ✓                                      |   | ✓                      |
| Kim Jorgensen                           |  | ✓                                      |   | ✓                      |
| Konaneakamahina de la Nux               |  | ✓                                      |   | ✓                      |

| Agency / Organization / Individual Name | Provided Notice of Availability of EISPN | Provided Written Comments on the EISPN | Provided Comments at Public Scoping Meeting (Written or Oral) | Draft EIS Notification |
|---|--|--|---|------------------------|
| Konnie Fox                              |  | ✓                                      |   | ✓                      |
| L. Cummings                             |  | ✓                                      |   | ✓                      |
| Lafayette Young                         |  | ✓                                      | ✓   | ✓                      |
| Lany Young                              |  |  | ✓   |                        |
| Larry Koss                              |  |  | ✓   | ✓                      |
| Lauren Tyler                            |  | ✓                                      |   | ✓                      |
| Lauri Fritsch                           |  | ✓                                      |   | ✓                      |
| Leialoha Medeiros                       |  | ✓                                      |   | ✓                      |
| Lehua Simon                             |  | ✓                                      |   | ✓                      |
| Leslie Kuloloio                         |  |  | ✓   |                        |
| Lezley Jacintho                         |  | ✓                                      |   | ✓                      |
| Lina Gooley                             |  | ✓                                      |   | ✓                      |
| Lipoa Kahaleuahi                        |  | ✓                                      |   | ✓                      |
| Lisa Ann Pauahi                         |  | ✓                                      |   | ✓                      |
| Lloyd Fischel                           |  |  | ✓   |                        |
| Lory Ono                                |  | ✓                                      |   | ✓                      |
| Lorin Pang                              |  |  | ✓   | ✓                      |
| Lucienne de Naie                        | ✓  |  | ✓   | ✓                      |
| Lurlyn Scott                            |  | ✓                                      |   | ✓                      |
| Madeleine Migenes                       |  | ✓                                      |   | ✓                      |
| Madelynn Kanakaole                      |  | ✓                                      |   | ✓                      |
| Malia Datr                              |  | ✓                                      |   | ✓                      |
| Maluhia Stoner                          |  | ✓                                      | ✓   | ✓                      |
| Mapu Kekahuna                           |  |  | ✓   |                        |
| Mavis Oliveira-Medeiros                 |  |  | ✓   | ✓                      |
| Marc Drehsen                            |  | ✓                                      |   | ✓                      |
| Mark Kijima                             |  | ✓                                      |   | ✓                      |
| Mark Sheehan                            |  | ✓                                      |   | ✓                      |
| Martha Martin                           |  |  | ✓   | ✓                      |
| Matthew Nall                            |  | ✓                                      |   | ✓                      |
| Matti Christensen                       |  | ✓                                      |   | ✓                      |
| Megan Loomis Powers                     |  | ✓                                      | ✓   | ✓                      |
| Melanie Padgett                         |  | ✓                                      |   | ✓                      |
| Melanie Ulman                           |  | ✓                                      |   | ✓                      |
| Michelle Anderson                       |  | ✓                                      |   | ✓                      |
| Michelle Ramos                          |  | ✓                                      |   | ✓                      |
| Michael Pasco                           |  |  | ✓   | ✓                      |
| Michelle Waikīkī                        |  | ✓                                      | ✓   | ✓                      |
| Mikiala Pua'a-Frietas                   |  |  | ✓   | ✓                      |



| Agency / Organization / Individual Name | Provided Notice of Availability of EISPN | Provided Written Comments on the EISPN | Provided Comments at Public Scoping Meeting (Written or Oral) | Draft EIS Notification |
|---|--|--|---|------------------------|
| Miranda Camp                            |  | ✓                                      |   | ✓                      |
| Moke Kahiamoe                           |  |  | ✓   |                        |
| Mugs Ivanovich                          |  | ✓                                      |   | ✓                      |
| Nalani Kaninau                          |  |  | ✓   | ✓                      |
| Napua Puaoi                             |  |  |   | ✓                      |
| Nicholi Stoyanoff                       |  | ✓                                      |   |                        |
| Nicole Harrell                          |  | ✓                                      |   | ✓                      |
| Nik Hilawanda                           |  |  | ✓   | ✓                      |
| Patricia Lailey                         |  | ✓                                      |   | ✓                      |
| Penny Levin                             |  | ✓                                      |   | ✓                      |
| Randall Rospond                         |  | ✓                                      |   | ✓                      |
| Randy Cabral                            | ✓  |  |   |                        |
| Responsible Citizenry Response          |  | ✓                                      |   | ✓                      |
| Ricardo Padilla                         |  | ✓                                      |   | ✓                      |
| Robert Thomas                           | ✓  |  |   |                        |
| Rosalind McKeivitt                      |  | ✓                                      |   | ✓                      |
| Rose Reilly                             |  |  | ✓   | ✓                      |
| Roxy Duarte                             |  | ✓                                      |   | ✓                      |
| Sallyjane Bodnar                        |  | ✓                                      |   | ✓                      |
| Sean Lester                             |  |  | ✓   | ✓                      |
| Sesame Shim                             |  |  | ✓   | ✓                      |
| Shannon Rudolph                         |  | ✓                                      |   | ✓                      |
| Shari Rospond                           |  | ✓                                      | ✓   | ✓                      |
| Sherri Mora                             |  | ✓                                      |   | ✓                      |
| Stacey Sills                            |  |  | ✓   | ✓                      |
| Steve Slater                            |  | ✓                                      | ✓   | ✓                      |
| Susan Byrne                             |  | ✓                                      |   | ✓                      |
| Susan Douglas                           |  | ✓                                      |   | ✓                      |
| Suzan Wilson                            |  | ✓                                      | ✓   | ✓                      |
| Sylvia Litchfield                       |  | ✓                                      |   | ✓                      |
| Tammy Luat-Huen                         |  |  | ✓   |                        |
| Terese Wormser                          |  | ✓                                      |   | ✓                      |
| Tiare Lawrence                          |  |  | ✓   | ✓                      |
| Timothy Hills                           |  | ✓                                      |   | ✓                      |
| Tom Blackburn-Rodriguez                 |  | ✓                                      | ✓   | ✓                      |
| Tony Angelini                           |  | ✓                                      |   | ✓                      |
| Valerie Toro                            |  | ✓                                      |   | ✓                      |
| Zack Williams                           |  |  | ✓   |                        |
| Zen Kekoa Powers                        |  | ✓                                      |   | ✓                      |

| <b>Agency / Organization / Individual<br/>Name</b> | <b>Provided<br/>Notice of<br/>Availability<br/>of EISPN</b> | <b>Provided<br/>Written<br/>Comments<br/>on the<br/>EISPN</b> | <b>Provided<br/>Comments<br/>at Public<br/>Scoping<br/>Meeting<br/>(Written or<br/>Oral)</b> | <b>Draft EIS<br/>Notification</b> |
|--|---|---|--|-----------------------------------|
| Unidentified speaker                               |   |   | ✓  |                                   |

### **9.3 Draft EIS Consultation**

Pursuant to Chapter 343, HRS and Title 11, Chapter 200, HAR, the DEIS will be available for public review during the 45-day DEIS comment period to solicit comments from public agencies, elected officials, and community organizations regarding their concerns and agency requirements. Copies of all written comments received, along with their respective responses, will be reproduced and included in the Final EIS.

(This page intentionally left blank)

# Figure 9-1 Affidavit of Publication of Scoping Meeting Notice

## AFFIDAVIT OF PUBLICATION

STATE OF HAWAII, }  
County of Maui. } ss.

Rhonda M. Kurohara being duly sworn  
deposes and says, that she is in Advertising Sales of  
the Maui Publishing Co., Ltd., publishers of THE MAUI NEWS, a  
newspaper published in Wailuku, County of Maui, State of Hawaii;  
that the ordered publication as to \_\_\_\_\_

### PUBLIC NOTICE

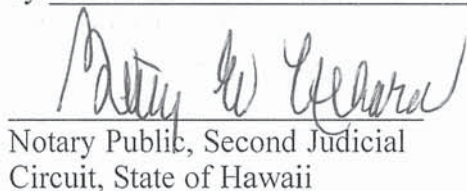
of which the annexed is a true and correct printed notice, was  
published 1 times in THE MAUI NEWS, aforesaid, commencing  
on the 19th day of February, 2017, and ending  
on the 19th day of February, 2017, (one day  
inclusive), to-wit: on \_\_\_\_\_  
February 19, 2017

and that affiant is not a party to or in any way interested in the above  
entitled matter.



This 1 page Public Notice, dated  
February 19, 2017,

was subscribed and sworn to before me this 21st day of  
February, 2017, in the Second Circuit of the State of Hawaii,  
by Rhonda M. Kurohara

  
Notary Public, Second Judicial  
Circuit, State of Hawaii

BETTY E. UEHARA  
My Commission expires 09-26-2019



### PUBLIC NOTICE

Alexander & Baldwin, Inc./ East Maui Irrigation Company, Limited (A&B) will be conducting public scoping meetings in conjunction with the thirty-day public review and comment period on the EIS Preparation Notice for the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Water Lease). The purpose of the meetings is to provide an overview of the EIS process and solicit input pertaining to the scope of the Draft EIS. The meetings will be held on: Wednesday, February 22, 2017 from 5:00 p.m. to 7:00 p.m. at the Maui Electric Company Community Meeting Room (210 W. Kamehameha Avenue), and Thursday, February 23, 2017 from 5:00 p.m. to 7:00 p.m. at the Ha'ikū Park and Community Center (2830 Hāna Highway - Hāna Highway at Piliāloha Street). The EISPN for the East Maui Water Lease is published in the February 8, 2017 edition of the Office of Environmental Quality Control's The Environmental Notice.  
(MN: Feb. 19, 2017)

# Figure 9-1 Affidavit of Publication of Scoping Meeting Notice

## AFFIDAVIT OF PUBLICATION

STATE OF HAWAII, }  
County of Maui. } ss.

Rhonda M. Kurohara being duly sworn  
deposes and says, that she is in Advertising Sales of  
the Maui Publishing Co., Ltd., publishers of THE MAUI NEWS, a  
newspaper published in Wailuku, County of Maui, State of Hawaii;  
that the ordered publication as to \_\_\_\_\_

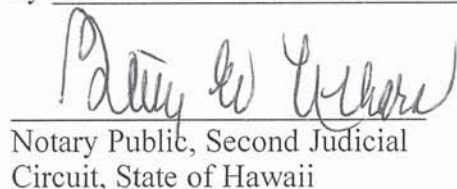
### PUBLIC NOTICE

of which the annexed is a true and correct printed notice, was  
published 1 times in THE MAUI NEWS, aforesaid, commencing  
on the 19th day of February, 2017, and ending  
on the 19th day of February, 2017, (one day  
inclusive), to-wit: on \_\_\_\_\_  
February 19, 2017

and that affiant is not a party to or in any way interested in the above  
entitled matter.



This 1 page Public Notice, dated  
February 19, 2017,  
was subscribed and sworn to before me this 21st day of  
February, 2017, in the Second Circuit of the State of Hawaii,  
by Rhonda M. Kurohara.

  
Notary Public, Second Judicial  
Circuit, State of Hawaii

BETTY E. UEHARA  
My Commission expires 09-26-2019



### PUBLIC NOTICE

Alexander & Baldwin, Inc./ East Maui Irrigation Company, Limited (A&B) will be conducting public scoping meetings in conjunction with the thirty-day public review and comment period on the EIS Preparation Notice for the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Water Lease). The purpose of the meetings is to provide an overview of the EIS process and solicit input pertaining to the scope of the Draft EIS. The meetings will be held on: Wednesday, February 22, 2017 from 5:00 p.m. to 7:00 p.m. at the Maui Electric Company Community Meeting Room (210 W. Kamehameha Avenue), and Thursday, February 23, 2017 from 5:00 p.m. to 7:00 p.m. at the Ha'ikū Park and Community Center (2830 Hāna Highway - Hāna Highway at Piliāloha Street). The EISPN for the East Maui Water Lease is published in the February 8, 2017 edition of the Office of Environmental Quality Control's The Environmental Notice.  
(MN: Feb. 19, 2017)

000521

Figure 9-2 February 22, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME            | ADDRESS / EMAIL ADDRESS | PHONE # |
|-----------------------|-------------------------|---------|
| MICHAEL D PASCOJA     |                         |         |
| Mary Sherritt         |                         |         |
| Ronald Ross           |                         |         |
| Jonathan Greenberg    |                         |         |
| Jerold Suarez         |                         |         |
| Susan Halas           |                         |         |
| Rebecca Narrowe       |                         |         |
| Darren Strand         |                         |         |
| Kaumakani<br>Quipotha |                         |         |
| BLICE L. LEE          |                         |         |
| Brian W. Fisman       |                         |         |
| Kahale Dubek          |                         |         |
| Kailie Aina           |                         |         |
| Marta Greenleaf       |                         |         |



Figure 9-2 February 22, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME           | ADDRESS / EMAIL ADDRESS | PHONE # |
|----------------------|-------------------------|---------|
| Edwin Young          |                         |         |
| KAHIKINI KAHIMU      |                         |         |
| Jodee Inouye-Agsalog |                         |         |
| Bobbie Best          |                         |         |
| Diane Warden         |                         |         |
| Albert Perez         |                         |         |
| EARL Inouye          |                         |         |
| Kelly T. King        |                         |         |
| Lorrie Pang MD       |                         |         |
| ALEX BEERS           |                         |         |
| Lucy Fernberg        |                         |         |
| Alicia Wood          |                         |         |
| Dwight Baldwin       |                         |         |
| Michael Couch        |                         |         |

Figure 9-2 February 22, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME         | ADDRESS / EMAIL ADDRESS | PHONE # |
|--------------------|-------------------------|---------|
| Jon Webb           |                         |         |
| Faith Chase        |                         |         |
| Eric Kaikala       |                         |         |
| Jocelyn Huell      |                         |         |
| Michelle WaiKiki   |                         |         |
| Cy K. WAIKIKI      |                         |         |
| John Gevert        |                         |         |
| Naomi Tanigawa     |                         |         |
| Martha Martin      |                         |         |
| ALEX FRANCE        |                         |         |
| J. Alshafani Scott |                         |         |
| Dianne Shimizu     |                         |         |
| Nancy Kariyuk      |                         |         |
| Felicita Guerrero  |                         |         |

Figure 9-2 February 22, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME                  | ADDRESS / EMAIL ADDRESS | PHONE # |
|-----------------------------|-------------------------|---------|
| Misty Vierra                |                         |         |
| Jayson Vierra               |                         |         |
| James Friedrich             |                         |         |
| Jonathan Scheuer            |                         |         |
| Kate Brewster               |                         |         |
| Healoha Cormichael          |                         |         |
| Mahealani Wendt             |                         |         |
| Ed Wendt                    |                         |         |
| Brittany Skiller            |                         |         |
| Lipoa Kahalekahi            |                         |         |
| Mike Opgenorth              |                         |         |
| Loxley Clovis               |                         |         |
| Dave Tayler                 |                         |         |
| Natalie Forster             |                         |         |
| Curen Ohama<br>Aukahi Ohama |                         |         |

Figure 9-2 February 22, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME             | ADDRESS / EMAIL ADDRESS | PHONE # |
|------------------------|-------------------------|---------|
| Lilou Akoi             |                         |         |
| Waipahu Akoi           |                         |         |
| Phnelopi McKenz        |                         |         |
| Adriane<br>Reff Corwin |                         |         |
| JOE PARK               |                         |         |
| Skippy Hau             |                         |         |
| Napua Huen             |                         |         |
| Tina Rothman           |                         |         |
| Kathleen Pang          |                         |         |
| Joey Roche.            |                         |         |
| Sacha-mane Holi        |                         |         |
| Charlene<br>Cassidy    |                         |         |
| Brian Brubaker         |                         |         |
| JAMES LEE              |                         |         |

Figure 9-2 February 22, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME              | ADDRESS / EMAIL ADDRESS | PHONE # |
|-------------------------|-------------------------|---------|
| JUSTIN TOMBE            |                         |         |
| Tina Rothman            |                         |         |
| Diane Nakamatsu         |                         |         |
| KATHI M. KAHANE         |                         |         |
| MISHY SOUZA             |                         |         |
| Erin Mizumoto           |                         |         |
| Laya Akana              |                         |         |
| Celestine Casserley     |                         |         |
| Mary Lane               |                         |         |
| Tom Blackburn-Rodriguez |                         |         |
| LARRY KOSS              |                         |         |
| Stacey Ellis            |                         |         |
| Kiulei Kuata'u          |                         |         |
| Jon Irvine              |                         |         |

Figure 9-2 February 22, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME      | ADDRESS / EMAIL ADDRESS | PHONE # |
|-----------------|-------------------------|---------|
| Nalei Pokipala  |                         |         |
| Konane delaNuy  |                         |         |
| Joycynn Costa   |                         |         |
| Tammy Lnat Huen |                         |         |
| Kelly Lnat Huen |                         |         |
| Katekor Ka'eo   |                         |         |
| Noelani Kaauano |                         |         |
| Hahinenua Ka'eo |                         |         |
| KALAPUHI ALOWA  |                         |         |
| MIKIALA PUNA    |                         |         |
| Kanoa Raheka    |                         |         |
|                 |                         |         |
|                 |                         |         |
|                 |                         |         |



**Figure 9-2 February 22, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet**

| PRINT NAME            | ADDRESS / EMAIL ADDRESS | PHONE # |
|-----------------------|-------------------------|---------|
| Frank Caproni         |                         |         |
| WYLCI FABLES          |                         |         |
| MITCH IOFE            |                         |         |
| Shavonn Matsuda       |                         |         |
| KAHOKU CARL MICHAEL   |                         |         |
| VICTORIA<br>CHEREMSKA |                         |         |
|                       |                         |         |
|                       |                         |         |
|                       |                         |         |
|                       |                         |         |
|                       |                         |         |
|                       |                         |         |
|                       |                         |         |
|                       |                         |         |
|                       |                         |         |
|                       |                         |         |
|                       |                         |         |
|                       |                         |         |

**Figure 9-2 February 22, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet**

[illegible]

Figure 9-2 February 22, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PUBLIC MEETING: SCOPING SIGN UP   |  |
|---|--|
| PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS – ENVIRONMENTAL IMPACT STATEMENT          |  |
| FEBRUARY 22 <sup>nd</sup> , 2017, WEDNESDAY, 5:00 PM TO 7:00 PM<br>FEBRUARY 23 <sup>rd</sup> , 2017, Thursday, 5:00 PM TO 7:00 PM |  |
|   | PRINT NAME                               |
| 1   | Joe Chesdon [Chesdon] - LETTER SUBMITTED |
| 2   | BRENDAN BALTHAZAR                        |
| 3   | JAMES COON                               |
| 4   | Nalani Kaninai [Kaninai]                 |
| 5   | Darrell Tanaka                           |
| 6   | <del>Mary Sherritt</del>                 |
| 7   | mahealani wendel                         |
| 8   | LLOYD Fischel                            |
| 9   | John Gelert                              |
| 10  | Darren Strand                            |
| 11  | Martha Martini                           |

Figure 9-2 February 22, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

|    | PRINT NAME:          | Scoping Participation Sign Up Page 2 |
|----|----------------------|--------------------------------------|
| 12 | Edwin Young          |                                      |
| 13 | MICHAEL PASCO        |                                      |
| 14 | MORRIS KAHAMOR       |                                      |
| 15 | ALEX FRANCO          |                                      |
| 16 | Brian Wittman        |                                      |
| 17 | ALICE L. LEE         |                                      |
| 18 | Dianne Shimizu       |                                      |
| 19 | Albert Perez         |                                      |
| 20 | Lorrian Pang         |                                      |
| 21 | <del>DUPLICATE</del> |                                      |
| 22 | Cody Nemet           |                                      |
| 23 | Frank Caprioni       |                                      |
| 24 | Adriane Raff Corwin  |                                      |
| 25 | TIARE LAWRENCE       |                                      |

Figure 9-2 February 22, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

|    | PRINT NAME:               | Scoping Participation Sign Up Page 3 |
|----|---------------------------|--------------------------------------|
| 26 | Diane Nakamatsu           |                                      |
| 27 | JUST TIME                 |                                      |
| 28 | Zack Williams             |                                      |
| 29 | Kamalani Pahukoa          |                                      |
| 30 | <del>Kamalani</del> Smith |                                      |
| 31 | Elaine Wender             |                                      |
| 32 | Tom Blackburn-Rodriguez   |                                      |
| 33 | LARRY KOSS                |                                      |
| 34 | Stacey Sills              |                                      |
| 35 | Joycelyn Costa            | Aha Moku                             |
| 36 |                           |                                      |
| 37 |                           |                                      |
| 38 |                           |                                      |
| 39 |                           |                                      |

**Figure 9-2 February 22, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet**

|    | PRINT NAME:     | Scoping Participation Sign Up Page 4 |
|----|-----------------|--------------------------------------|
| 40 | Kale, Koa Ka'eo |                                      |
| 41 | Mikiala Pua'a   |                                      |
| 42 | Sesame Shim     |                                      |
| 43 |                 |                                      |
| 44 |                 |                                      |
| 45 |                 |                                      |
| 46 |                 |                                      |
| 47 |                 |                                      |
| 48 |                 |                                      |
| 49 |                 |                                      |
| 50 |                 |                                      |
| 51 |                 |                                      |
| 52 |                 |                                      |
| 53 |                 |                                      |



(This page intentionally left blank)

Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

PUBLIC MEETING:

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND  
HUELO LICENSE AREAS – ENVIRONMENTAL IMPACT STATEMENT

FEBRUARY 22<sup>nd</sup>, 2017, WEDNESDAY, 5:00 PM TO 7:00 PM

FEBRUARY 23<sup>rd</sup>, 2017, Thursday, 5:00 PM TO 7:00 PM

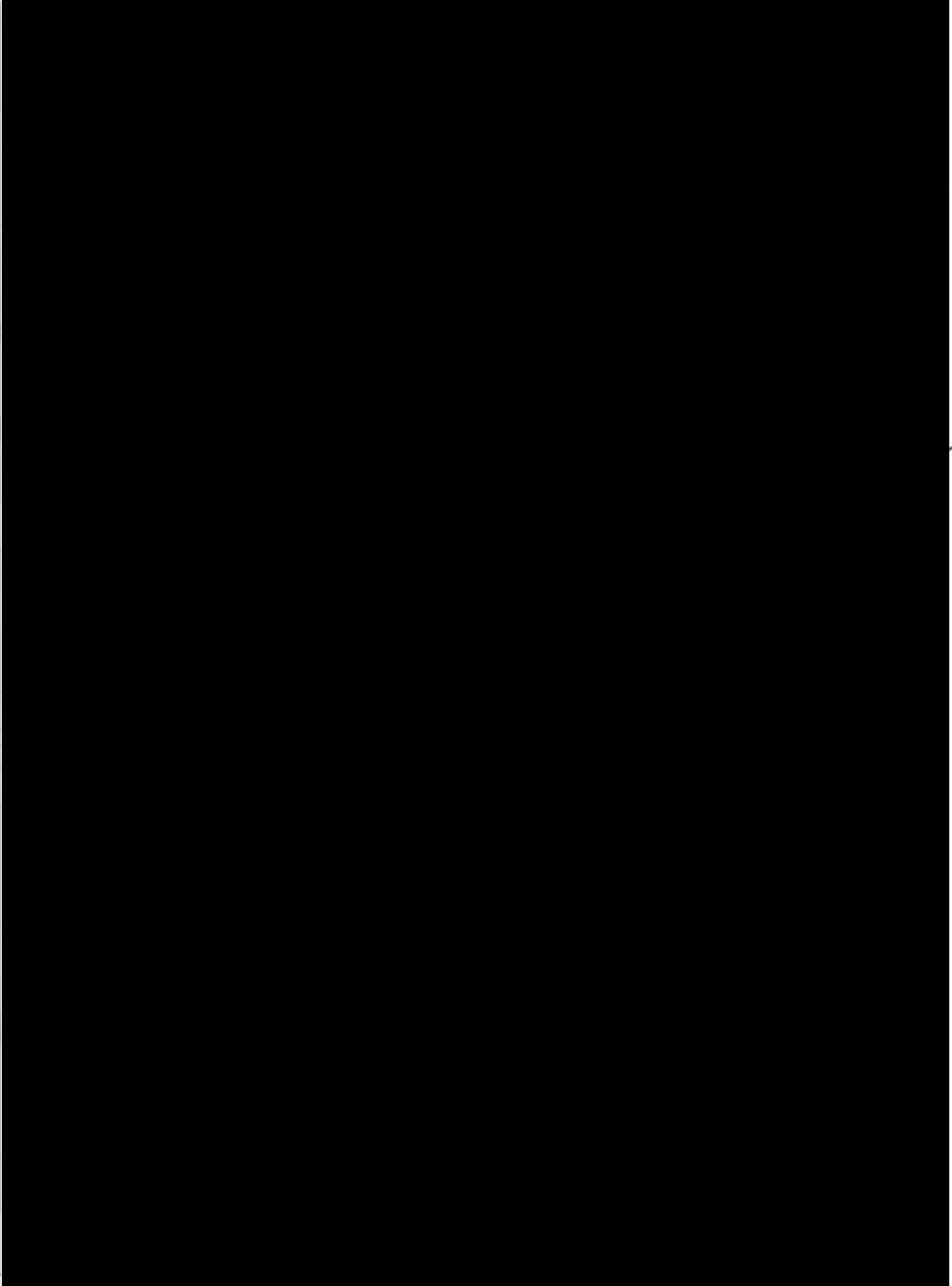
| PRINT NAME              | ADDRESS / EMAIL ADDRESS   | PHONE # |
|-------------------------|---|---------|
| mahealani & Ed<br>Wendt |  |         |
| Michelle<br>Waikiki     |   |         |
| SUSAN VENO              |   |         |
| Kitty Spaulding         |   |         |
| ROBERT<br>CARROLL       |   |         |
| WYLCI<br>FABES          |   |         |
| Sarah<br>Marshall       |   |         |
| SEAN<br>LESTER          |   |         |
| Dan Clark               |   |         |
| Eve Kikak               |   |         |
| Kawika Stoner           |   |         |

Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME                   | ADDRESS / EMAIL ADDRESS | PHONE # |
|------------------------------|-------------------------|---------|
| Arvon Guerrero               |                         |         |
| Malukia Stones               |                         |         |
| Beverly Young                |                         |         |
| Manz Olvera-Medina           |                         |         |
| Andrea Christian             |                         |         |
| Ernest Schupp                |                         |         |
| Jan Kinnel                   |                         |         |
| Sue Wilson                   |                         |         |
| Curlyn Scott                 |                         |         |
| MATTHEW H PLACE<br>KAHIA MOE |                         |         |
| DARRYL TALIA                 |                         |         |
| Lorri n Pang                 |                         |         |
| ANDY RIDINGER                |                         |         |
| Brian Jacques                |                         |         |

Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME           | ADDRESS / EMAIL ADDRESS | PHONE # |
|----------------------|-------------------------|---------|
| Kaleo Manuel         |                         |         |
| Rikki Torres-Boston  |                         |         |
| NILES JAMES          |                         |         |
| Kaumakani            |                         |         |
| Quipotha             |                         |         |
| Jauntylu             |                         |         |
| Juhaw                |                         |         |
| Tim                  |                         |         |
| WOLFE                |                         |         |
| Kelayale             |                         |         |
| Armitage             |                         |         |
| EARLE MEDEIROS       |                         |         |
| PHILLIP              |                         |         |
| SWATEK               |                         |         |
| James Sagawinf       |                         |         |
| Jayclyn Costa        |                         |         |
| Mary Greener-Liboten |                         |         |
| Thompson             |                         |         |
| Theresa              |                         |         |
| KAHOKU               |                         |         |
| CARMICHAEL           |                         |         |
| CHELSEA              |                         |         |
| HIDDLESTON           |                         |         |

Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME        | ADDRESS / EMAIL ADDRESS | PHONE # |
|-------------------|-------------------------|---------|
| KERRI BALLARD     |                         |         |
| Trinette Turtado  |                         |         |
| Christina Henn    |                         |         |
| Nalia Hullenman   |                         |         |
| JOE PAK           |                         |         |
| STEPHANIA SCHMIDT |                         |         |
| JOANNA BARNES     |                         |         |
| Beth Savitt       |                         |         |
| noah vand         |                         |         |
| Janet Mercier     |                         |         |
| Patti Hawkey      |                         |         |
| Char O'Brien      |                         |         |
| Kaiie Aina        |                         |         |
| Tyler Aina        |                         |         |

Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME                  | ADDRESS / EMAIL ADDRESS | PHONE # |
|-----------------------------|-------------------------|---------|
| LAF Young                   |                         |         |
| Noelida Oliveira            |                         |         |
| John A. H. Tamura           |                         |         |
| James Kunk                  |                         |         |
| Josalind Ato                |                         |         |
| Alana Dandrea               |                         |         |
| Nina Respio                 |                         |         |
| Norman Martin Jr            |                         |         |
| Cecilia Reilly              |                         |         |
| Cordelia Tignone            |                         |         |
| Healoha Carmichael          |                         |         |
| CHRIS Cruikshank            |                         |         |
| Noelani Hesslee             |                         |         |
| Lynsun/Kualoa<br>Kealohakui |                         |         |



Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet


| PRINT NAME   | ADDRESS / EMAIL ADDRESS | PHONE # |
|--|-------------------------|---------|
| Isaiiah Kana'kua   |                         |         |
| Brendan Welch  |                         |         |
| KIMO FEIAS-KAAUANO   |                         |         |
| NIKHILANANDA   |                         |         |
| Tammy Lnat   |                         |         |
|  |                         |         |
| Denise Armistga  |                         |         |
| Liloa Akoi   |                         |         |
| Brian<br>McSaffery   |                         |         |
| <sup>S</sup> Jocelyn Huen  |                         |         |
| Jaelle Huen  |                         |         |
| MICHAEL GAGROE   |                         |         |
| Jana Sinencio  |                         |         |
| LAUREN TYLER   |                         |         |

Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME                      | ADDRESS / EMAIL ADDRESS | PHONE # |
|---------------------------------|-------------------------|---------|
| Susana +<br>Roan Browne         |                         |         |
| Liz CUTLER                      |                         |         |
| <del>Leila</del> Leilani Andaya |                         |         |
| JOSEPH KOHN                     |                         |         |
| Saleha Makia                    |                         |         |
| Sesame Shim                     |                         |         |
| Ty FREIBERG                     |                         |         |
| Keolu Pannister                 |                         |         |
| Valerie Toro                    |                         |         |
| Lorraine Zane                   |                         |         |
| Michael Call                    |                         |         |
| Toma Craig                      |                         |         |
| MARNA DAIAN                     |                         |         |
| Alexa Rauhman                   |                         |         |

Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME          | ADDRESS / EMAIL ADDRESS | PHONE # |
|---------------------|-------------------------|---------|
| NIKEI WANG          |                         |         |
| Robert T. Martin    |                         |         |
| JUDY LEVY           |                         |         |
| Kecia Joy           |                         |         |
| Laurie Crawford     |                         |         |
| Lerley Jaenitho     |                         |         |
| AJ Piotrowski       |                         |         |
| CLAIRE FLORIO       |                         |         |
| LEA GIDDEN          |                         |         |
| DeBoratt May        |                         |         |
| Puahi Hokano        |                         |         |
| Edwin Young         |                         |         |
| ADAM LOTTIG         |                         |         |
| ANDREE CONLEY-KAPOI |                         |         |

Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME              | ADDRESS / EMAIL ADDRESS | PHONE # |
|-------------------------|-------------------------|---------|
| Kā'eo Mairiua           |                         |         |
| Dwight Baldwin          |                         |         |
| Carley Kimokeo          |                         |         |
| Wyonette Wallatt        |                         |         |
| geryce simoes           |                         |         |
| Arianna Feinberg        |                         |         |
| Kate Griffiths          |                         |         |
| KAAUKA ROWLAND          |                         |         |
| Moki Fernandez          |                         |         |
| Claire Garrigue         |                         |         |
| MAURIE LASCIANO         |                         |         |
| ZARIN SEVENICH          |                         |         |
| Sneila McLaughlin       |                         |         |
| MONSERRATE<br>DEL DA GO |                         |         |

Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME             | ADDRESS / EMAIL ADDRESS | PHONE # |
|------------------------|-------------------------|---------|
| Gladys Baisa           |                         |         |
| Celestine Cusier       |                         |         |
| Elden Liu              |                         |         |
| MICHAEL RAMOS          |                         |         |
| Amy BOWD               |                         |         |
| Sari Rospond           |                         |         |
| MICHAEL LONCARIC       |                         |         |
| Matt Mercado           |                         |         |
| Heidi Sarkoz           |                         |         |
| Felix Vindye           |                         |         |
| Charles K. MA'ALEA     |                         |         |
| Christine Carter       |                         |         |
| Kutira<br>Decoster     |                         |         |
| Alvanette<br>Viteovich |                         |         |

Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

| PRINT NAME              | ADDRESS / EMAIL ADDRESS | PHONE # |
|-------------------------|-------------------------|---------|
| Douglas<br>Vitcovec Jr. |                         |         |
|                         |                         |         |
|                         |                         |         |
|                         |                         |         |
|                         |                         |         |
|                         |                         |         |
|                         |                         |         |
|                         |                         |         |
|                         |                         |         |
|                         |                         |         |
|                         |                         |         |
|                         |                         |         |
|                         |                         |         |
|                         |                         |         |
|                         |                         |         |



Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

PUBLIC MEETING: SCOPING SIGN UP

PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS – ENVIRONMENTAL IMPACT STATEMENT

FEBRUARY 22<sup>nd</sup>, 2017, WEDNESDAY, 5:00 PM TO 7:00 PM

FEBRUARY 23<sup>rd</sup>, 2017, Thursday, 5:00 PM TO 7:00 PM

PRINT NAME

✓ 1 Lorrin Pang

✓ 2 Edward Wendt

✓ 3 Mahealani Wendt

✓ 4 Michelle Wai Kiki

EM ✓ 5 Cheryl Kekahuna Nahiku

EM ✓ 6 Mapu Kekahuna Nahiku

EM ✓ 7 Tumu Tamaru Taito Tele. <sup>founder/President of the</sup> ~~Chākeke Community Assoc.~~

EM ✓ 8 Maluhia Stoner

\* ✓ 9 ~~Laf Young - Honopou~~

\* ✓ 10 Isaac Hall - Hāiku

✓ 11 Christina Hemming Hāiku

Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet


|       | PRINT NAME:                                       | Scoping Participation Sign Up Page 2  |
|-------|---|---|
| EM 12 | <del>Mahatani Wedat</del> Mavis Oliveira-Medeiros | UH Maui student   |
| 13    | Andrea Christian                                  |   |
| 14    | Ernest Schupp                                     |   |
| 15    | <del>MICHAEL HOWDEN</del>                         |   |
| 16    | Leslie Kuloloio                                   | Hamakua's<br>Hamakua's Ko   |
| 17    | Sean Lester -                                     | KEANAE<br>HUGH O  |
| EM 18 | Larry<br>Hubert & Young                           | UPPER<br>NAHIKU   |
| 19    | <del>Roan + Siwana Browne</del>                   |   |
| 20    | Charlotte O'Brien                                 |   |
| 21    | NIKHILANANDA                                      | HUEL O  |
| 22    | LUCIENNE de laire                                 |  |
| EM 23 | Tammy Luat-Huen                                   | HUEL O<br>KEANAE  |
| EM 24 | David K.K. Prais                                  | Mokupuni O Maui   |
| 25    | Trinette Furtado                                  | Hamakua's   |

Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

|    | PRINT NAME:             | Scoping Participation Sign Up Page 3 |
|----|-------------------------|--------------------------------------|
| 26 | CJ JAMES                | Sustainability<br>KULA RESIDENT      |
| 27 | ✓ Dan Clark             |                                      |
| 28 | Wayne Armitage          |                                      |
| 29 | Denise Armitage         |                                      |
| 30 | Uleia Akoi              |                                      |
| 31 | Brian McCafferty        |                                      |
| 32 | Alana Dandrea           |                                      |
| 33 | James Sagawinit Kanihau |                                      |
| 34 | Joydyn Costa            |                                      |
| 35 | <del>KATHY RANG</del>   |                                      |
| 36 | ROBERT MARTIN           |                                      |
| 37 | KATHY RANG              |                                      |
| 38 | STEVE SLATER            |                                      |
| 39 | Rose Reilly             |                                      |

EM Kawika Stone  
EM Edwin Young

✓ EM Bob Martin

Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

|       | PRINT NAME:        | Scoping Participation Sign Up Page 4 |
|-------|--------------------|--------------------------------------|
| 40    | Malia Hullman      |                                      |
| 41    | Kecia Joy          |                                      |
| 42    | Josalind Akoi      |                                      |
| 43    | Lahele Dukela      |                                      |
| EM 44 | Kaleikoa Ka'eo     |                                      |
| 45    | Dwight Baldwin     |                                      |
| 46    | Many Ann Pahukoa   |                                      |
| 47    | VIKTOR KosATschkow |                                      |
| 48    | James D. Kimmel    |                                      |
| 49    |                    |                                      |
| 50    |                    |                                      |
| 51    |                    |                                      |
| 52    |                    |                                      |
| 53    |                    |                                      |

Figure 9-3 February 23, 2017 Scoping Meeting Sign-In Sheet and Oral Comments Sign-up Sheet

|    | PRINT NAME:         | Scoping Participation Sign Up Page 5 |
|----|---------------------|--------------------------------------|
| 54 | Elden K. Hiu        |                                      |
| 55 | Megan Loomis Powers |                                      |
| 56 | Alex Haller         |                                      |
| 57 |                     |                                      |
| 58 |                     |                                      |
| 59 |                     |                                      |
| 60 |                     |                                      |
| 61 |                     |                                      |
| 62 |                     |                                      |
| 63 |                     |                                      |
| 64 |                     |                                      |
| 65 |                     |                                      |
| 66 |                     |                                      |
| 67 |                     |                                      |

---

# **Chapter 10:**

## List of Preparers





## **10.0 LIST OF PREPARERS**

This DEIS was prepared by Wilson Okamoto Corporation, 1907 South Beretania Street, #400, Honolulu, Hawai'i 96826. Key technical consultants involved in the preparation of the DEIS and their company affiliations and specialties are listed below:

### **Firm**

Akinaka & Associates, Ltd.  
Cultural Surveys Hawai'i, Inc.

Sea Engineering, Inc.  
Marine Research Consultants, Inc.  
Earthplan  
Mason Architects, Inc.  
Munekiyo & Hiraga, Inc.  
Plasch Econ Pacific, LLC  
SWCA Environmental Consultants  
Trutta Environmental Solutions, LLC

### **Area of Expertise**

Hydrology  
Cultural Impact Assessment;  
Archaeological Literature Review and Field  
Inspection  
Stream and Ocean Chemistry  
Stream and Ocean Chemistry  
Social Impact Assessment  
Historical Structure Assessment  
Economic and Fiscal Impact Assessment  
Agricultural and Related Economic Assessment  
Terrestrial Flora and Fauna  
Environmental Impact of Stream Diversions

(This page intentionally left blank)

---

# **Chapter 11:**

## References



## 11. REFERENCES

- Akinaka and Associates. (2019). [Alternative Analysis and Hydrology Discussions for the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas Environmental Impact Statement]. Unpublished work prepared for Wilson Okamoto Corporation.
- Anderson, T.R., et al. (2015) *Doubling of coastal erosion under rising sea level by mid century in Hawaii*. *Natural Hazards*. 78(1): p. 75-103.
- ASCE (2001) Historic Civil Engineering Landmark Nomination East Maui Irrigation System. American Society of Civil Engineers, Hawaii Section, Honolulu, Hawai'i.
- Atkinson CT, Utzurrum RB, Lapointe DA, Camp RJ, Crampton LH, Foster JT, Giambelluca TW (2014) Changing climate and the altitudinal range of avian malaria in the Hawaiian Islands—an ongoing conservation crisis on the island of Kaua'i. *Glob Change Biol* 20(8):2426–2436. <https://doi.org/10.1111/gcb.12535>
- Beckwith, Martha W. (1970) *Hawaiian Mythology*. University of Hawaii Press, Honolulu.
- Brown and Caldwell. (2014). Petition to Amend Interim Instream Flow Standards for Waikamoi, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Waiohue, Paakea, Kapaula & Hanawi Streams, Case No. CCH-MA13-01, Letter to Mr. Caleb P. Row, Deputy Corporation Counsel
- County of Maui Planning Department. (2012) *Maui Island Plan: General Plan 2030*.
- County of Maui, Department of Water Supply, (2018) *Fiscal Year 2018 Annual Report*.
- County of Maui, Department of Water Supply. (2019) *Upcountry Priority List*.
- Commission on Water Resources Management. (2009) *Instream Flow Standard Assessment Reports for each of 21 East Maui Streams (Interim Instream Flow Standards Petition – 2008, 2009)*.
- Commission on Water Resource Management. (2018). *Petition to Amend Interim Instream Flow Standards for Honopou, Hanehoi/Puolua (Huelo), Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, Ohia (Waianu), Waiokamilo, Kualani (Hamau), Wailuanui, Waikani, West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Waiohue, Paakea, Waiaaka, Kapaula, Hanawi, and Makapipi Streams, Findings of Fact, Conclusions of Law, & Decision and Order (CCH MA 13-01)*.
- Cordy, Ross (2000) *Exalted Sits the Chief*. Mutual Publishing, Honolulu, Hawaii.
- Cultural Surveys Hawai'i, Inc (2018). *Archaeological Literature Review and Field Inspection for the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and*



*Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna District, Maui Island* TMKs: [2] 1-1-001:044, 50, 1-1-002:002, 1-2-004:005, 007 (por.), 2-9-014:001, 005, 011, 012, 017. Job Code: MAUI 26

Cultural Surveys Hawai'i, Inc. (2019). *Final Cultural Impact Assessment for the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna District, Maui Island*, TMKs: [2] 1-1-001:044, 50, 1-1-002:002, 1-2-004:005, 007 (por.), 2-9-014:001, 005, 011, 012, 017. Job Code: MAUI 27

Earthplan. (2019). *A&B Proposed Water Lease for the Nāhiku, Ke'anae, Huelo, and Honomanū License Area Social Impact Assessment*.

Environment-Hawai'i. (1997) *Complex Legal Issues Surround A&B's Taking of East Maui Water*. Available at: <http://www.environment-hawaii.org/?p=3441>

FEMA, (2000). *The Disaster Mitigation Act of 2000*.

Fleming, Martha Foss (1933) *Old trails of Maui, being the research of Martha Foss Fleming*. [n.p.].

Foote, Donald E., E.L. Hill, S. Nakamura and F. Stephens (1972). *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. United States Soil Conservation Service, Washington DC.

Frame, William V. and Horwitz, Robert H. (1965). *Public Land Policy in Hawaii: The Multiple Use Approach*. Report No.1 (Rev. 1969). University of Hawaii

Fredericksen, Erik M. and Demaris L. Fredericksen (1998) *Archaeological Inventory Survey of Ho'olawa Ranch Property, Ho'olawa Ahupua'a, Makawao District, Maui Island* (TMK: 2-9-02: 14). Pukalani, Hawa'i.

Garza, J.A., P.-S. Chu, C.W. Norton, and T.A. Schroeder (2012) *Changes of the prevailing trade winds over the islands of Hawai'i and the North Pacific*. Journal of Geophysical Research, 117, D11109, doi:10.1029/2011JD016888

George A. L. Yuen and Associates, Inc. (1990) *Water Resources Protection Plan Volumes I & II*. Commission on Water Resource Management, Department of Land and Natural Resources, State of Hawai'i.

Giambelluca, T.W., and Nullet, Dennis, (1991), Influence of the trade-wind inversion on the climate of a leeward mountain slope in Hawai'i: Climate Research, v. 1, p. 207–216.

Gingerich, S.B., and Wolff, R.H. (2005). *Effects of Surface-Water Diversions on Habitat Availability for Native Macrofauna, Northeast Maui, Hawaii*. U.S. Geological Survey, Scientific Investigations Report 2005-5213, 93 p.

Handy, E.S. Craighill, Elizabeth Green Handy and Mary Kawena Pukui (1991) *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Revised ed. Bernice P.

Hawai'i Climate Change Mitigation and Adaptation Commission. (2017). Hawai'i Sea Level Rise Vulnerability and Adaptation Report. Prepared by Tetra Tech, Inc. and the State of Hawai'i Department of Land and Natural Resources, Office of Conservation and Coastal Lands, under the State of Hawai'i Department of Land and Natural Resources Contract No: 64064.

Hawai'i Small Business Development Center. (2015). *Maui County Data Book 2015*.

IPCC. (2013). *Summary for policymakers*. In: Stocker, T.F., Qin, D., Plattner, G.K., Tignor, M., Allen, S.K., Boschung, J., Nauels, A., Xia, Y., Bex, V., Midgley, P.M., editors. *Climate change 2013: the physical science basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge (UK)/New York (NY): Cambridge University Press; p. 1535. Available from [https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WGIAR5\\_SPM\\_brochure\\_en.pdf](https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WGIAR5_SPM_brochure_en.pdf)

Kamakau, Samuel Manaiakalani (1992) *Ruling Chiefs of Hawai'i*. Revised ed. The Kamehameha Schools Press, Honolulu, Hawai'i.

Kawelu, Kathleen L. (2015) *Kuleana and Commitment: Working Toward a Collaborative Hawaiian Archaeology*. Univeristy of Hawai'i Press, Honolulu.

Kepa Maly, (2002). *Wai O Ke Ola: He Wahi Mo'olelo No Maui Hikina*

Kirch, Patrick V. (2012) *A Shark Going Inland is My Chief: The Island Civilization of Ancient Hawai'i*. University of California Press, Berkeley, California.

Kuykendall, R.S. (1967) *The Hawaiian Kingdom 1874-1893: The Kalakaua Dynasty*. Vol. III. University of Hawaii Press, Honolulu, Hawai'i.

Liao W, Atkinson CT, LaPointe DA, Samuel MD (2017) *Mitigating Future Avian Malaria Threats to Hawaiian Forest Birds from Climate Change*. PLoS ONE 12(1): e0168880. <https://doi.org/10.1371/journal.pone.0168880>

Liao W, Elison Timm O, Zhang C, Atkinson CT, LaPointe DA, Samuel MD. (2015) *Will a warmer and wetter future cause extinction of native Hawaiian forest birds?* Glob Change Biol. 21(12): 4342–52.

Macdonald, Gordon A., Agatin T. Abbott and Frank L. Peterson. (1986) *Volcanoes in the Sea: The Geology of Hawai'i*. University of Hawai'i Press, Honolulu. Second Edition

Mason Architects, Inc. (2019). *Historical Structure Assessment East Maui Aqueduct System*.

Maui County Council. (1994). *Hāna Community Plan*.

- Maui County Council. (1995). *Pā‘ia-Ha‘ikū Community Plan*.
- Maui County Council. (1996) *Makawao-Pukalani-Kula Community Plan*.
- Maui Country Council. (2002). *Wailuku-Kahului Community Plan*.
- Maui County Department of Water Supply. (March 2019). *Draft Maui Island Water Use and Development Plan*.
- McGregor, Davianna Pomaika‘i 1996 *Nā Kua‘āina: Living Hawaiian Culture*. University of Hawai‘i Press, Honolulu.
- Munekiyo Hiraga. (2019). *Economic and Fiscal Impact Study Proposed Water Lease for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Area*.
- NOAA. (2017). *Global and Regional Sea Level Rise Scenarios For The United States*.
- Plasch Econ Pacific, LLC. (2019). *East Maui Water Lease: Agricultural and Related Economic Impacts*
- Pukui, Mary Kawena, Samuel H. Elbert and Esther K. Mookini. (1974) *Place Names of Hawaii*. Revised and Enlarged ed. University Press of Hawaii, Honolulu, Hawai‘i.
- Pukui, Mary Kawena and Samuel H. Elbert (1986). *Hawaiian Dictionary Hawaiian-English English-Hawaiian*. Revised and Enlarged ed. University of Hawai‘i Press, Honolulu, Hawai‘i.
- Sea Engineering, Inc. & Marine Research Consultants, Inc. (2019). *East Maui Irrigation Assessment of Streams and the Ocean Water Chemistry*. Job No. 25600
- SOEST (2014). *Climate Change Impacts in Hawai‘i: A Summary of climate change and its impacts to Hawai‘i ecosystems and communities*.
- State of Hawai‘i Departement of Business, Economic Development and Tourism (1989). *The Hawai‘i State Plan*.
- State of Hawai‘i Departement of Business, Economic Development and Tourism, Office of Planning (2019). *Hawaii Statewide GIS Program*. Data downloaded from <http://planning.hawaii.gov/gis/download-gis-data/>
- State of Hawai‘i Department of Defense. (2018). *State of Hawai‘i Hazard Mitigation Plan*.
- State of Hawai‘i Department of Land and Natural Resources (2017). *The Hawaii Dam and Reservoir Safety Program State Fiscal Year 2017*.
- State of Hawai‘i Department of Land and Natural Resources Commission on Water Resource Management. (2017). *Hawai‘i Drought Plan*.

- State of Hawai'i University of Hawai'i Land Study Bureau. (1963). *Detailed Land Classification, Island of Oahu*.
- Sterling, Elspeth P. (1998) *Sites of Maui*. Bishop Museum Press, Honolulu.
- Sterns, H.T. Geology of the State of Hawai'i. Second Edition 1985.
- SWCA Environmental Consultants. (2019). *Terrestrial Flora and Fauna Technical Report for the Proposed East Maui Water Lease*. SWCA Project No. 43742
- Thrum, Thomas G. (1907) *Hawaiian Folk Tales: A Collection of Native Legends*. A.C. McClurg & Co., Chicago.
- Trutta Environmental Solutions, LLC. (2019). *Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model*.
- United States Census Bureau. *Census 2010 Data for the State of Hawai'i*. Internet. Available at: <http://www.census.gov/census2010/states/hi.html>.
- United States Department of Agriculture Soil Conservation Service. (1972) *Soil Survey of Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lāna'i, State of Hawai'i*.
- U.S. Department of Agriculture, Natural Resources Conservation Service (2001) *Soil Survey Geographic (SSURGO) database for Island of Maui, Hawaii (hi980)*, U.S. Department of Agriculture, Natural Resources Conservation Service.  
<http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/>.
- U.S. Fish and Wildlife Service, National Wetlands Inventory. Internet. Available at: <http://www.wetlands.fws.gov/>.
- U.S. Geological Survey, (2007), Facing tomorrow's challenges—U.S. Geological Survey science in the decade 2007—2017: U.S. Geological Survey Circular 1309, x + '70p.
- Walker, Winslow (1931) *Archaeology of Maui*. Bernice Pauahi Bishop Museum, Honolulu, Hawai'i.
- Wilcox, Carol (1996). *Sugar Water: Hawaii's Plantation Ditches*. University of Hawai'i Press, Honolulu.
- Wilson Okamoto Corporation. (2008). *Hawai'i Water Plan, Water Resource Protection Plan*. Prepared for the State of Hawai'i Department of Land and Natural Resources, Commission on Water Resource Management.

Proposed Lease (Water Lease) for the  
Nāhiku, Keʻanae, Honomanū, and Huelo  
License Areas

## **Draft Environmental Impact Statement**



**WILSON OKAMOTO**  
C O R P O R A T I O N  
I N N O V A T O R S • P L A N N E R S • E N G I N E E R S



Proposed Lease (Water Lease) for the Nāhiku, Ke'anae,  
Honomanū, and Huelo License Areas

# **Draft Environmental Impact Statement**



**September 2019**

**Prepared For**



Alexander & Baldwin, Inc.  
East Maui Irrigation Company, Ltd.

**Prepared By**



Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826





---

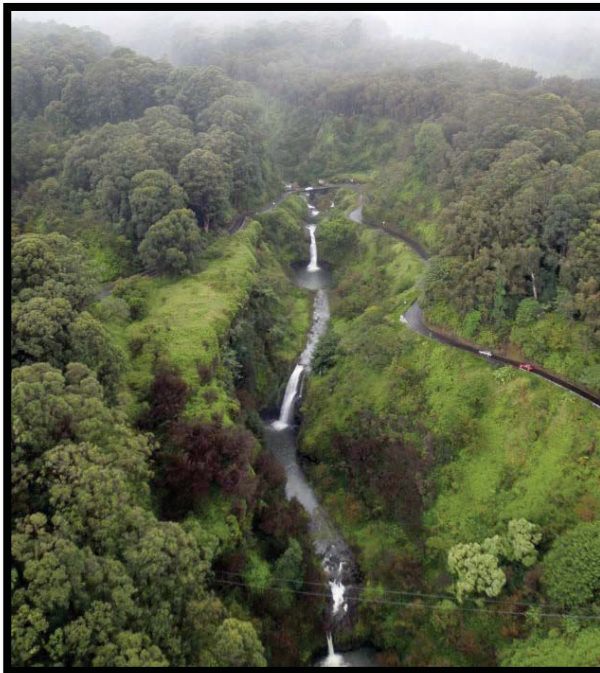
# **APPENDIX A:**

Assessment of the Environmental Impact of  
Stream Diversions on 33 East Maui  
Streams using the Hawaiian Stream Habitat  
Evaluation Procedure (HSHEP) Model

Trutta Environmental Solutions, LLC



# Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model



June 8,  
2019

Prepared for:  
Wilson Okamoto Corporation

Prepared by James Parham, Ph.D.



## TABLE OF CONTENTS

|  |           |
|--|-----------|
| <b>LIST OF FIGURES .....</b>                       | <b>4</b>  |
| <b>LIST OF TABLES .....</b>                        | <b>6</b>  |
| <b>ABSTRACT .....</b>                              | <b>7</b>  |
| <b>INTRODUCTION.....</b>                           | <b>11</b> |
| GOAL .....   | 14        |
| OBJECTIVES .....                                   | 14        |
| <b>METHODS .....</b>                               | <b>15</b> |
| FIELD METHODS .....                                | 15        |
| <i>Habitat Assessment</i> .....                    | 15        |
| <i>Diversion Assessments</i> .....                 | 19        |
| BIOTIC SURVEYS .....                               | 20        |
| MODELING .....                                     | 24        |
| <i>HSHEP Model</i> .....                           | 24        |
| <i>HSHEP Modeling Process Improvement</i> .....    | 31        |
| <i>Data Sources</i> .....                          | 31        |
| <i>General Model Concept and Assumptions</i> ..... | 32        |
| <i>Data Aggregation</i> .....                      | 33        |
| <i>Modeling Habitat and Water Production</i> ..... | 34        |
| <b>RESULTS .....</b>                               | <b>35</b> |
| GENERAL WATERSHED and BASIN DESCRIPTION .....      | 35        |
| DEFINING BASELINE CONDITIONS .....                 | 42        |
| HABITAT QUANTIFICATION .....                       | 44        |
| BASEFLOW DISCHARGE CALCULATIONS .....              | 54        |
| NODE DESCRIPTIONS .....                            | 56        |
| SCENARIO DESCRIPTIONS .....                        | 56        |
| <b>DISCUSSION .....</b>                            | <b>58</b> |
| FULL-FLOW RESTORATION .....                        | 58        |
| HABITAT-FLOW RESTORATION.....                      | 60        |
| CONNECTIVITY-FLOW RESTORATION .....                | 60        |

|   |    |
|---|----|
| NO-FLOW RESTORATION .....               | 62 |
| NON-IIFS STREAMS .....                  | 62 |
| DISCHARGE TO HABITAT .....              | 63 |
| MODELING STRENGTHS and WEAKNESSES ..... | 64 |
| <b>LITERATURE CITED</b> .....           | 66 |



## LIST OF FIGURES

|  |    |
|--|----|
| Figure 1: The 33 East Maui streams and watersheds associated with the EMI Aqueduct System. Colors correspond to the 2018 IIFS flow restoration status. ....  | 13 |
| Figure 2: The standardized HDSS project flow chart. ....   | 16 |
| Figure 3: Brett Connell using Backpack HDSS on Paakea Stream, Maui. The GPS-linked video cameras are image stabilized to dampen the bounces associated with walking in a stream. ....  | 16 |
| Figure 4: HDSS Video Coder V2.0 software used for systematic classification of video of streambank and stream bottom conditions. The software is easily customizable to allow appropriate classification systems to be used on a project. This example is from a US. Army Corps of Engineers Flood Control project on Oahu, HI. .... | 18 |
| Figure 5: An example of the HDSS video from Manoa Stream, Oahu. ....   | 19 |
| Figure 6: Underwater geo-referenced video camera with external video light used for the HDFS observations. ....  | 22 |
| Figure 7: Example of HDFS surveys in Manoa stream, Oahu. ....  | 22 |
| Figure 8: Examples of stream animals observed during HDFS projects on various Hawaiian Streams. ....   | 23 |
| Figure 9: Spatially-nested hierarchy of the DAR Aquatic Surveys Database and predictive levels within the HSHEP model. ....  | 26 |
| Figure 10: Conceptual schematic displaying the relationships among nodes, basins, and watersheds used to model the EMI Aqueduct System. ....   | 32 |
| Figure 11: Node and basin relationship for branched stream system. ....  | 33 |
| Figure 12: Watersheds within the East Maui HSHEP model. Watersheds are polygons outlined with gray line, numbers correspond to stream ID numbers in License Area stream table, blue lines are streams, red line are diversion ditches and colored refer to IIFS flow restoration status. ....  | 41 |
| Figure 13: Predicted Habitat Suitability Index (HSI) for <i>Awaous stamenius</i> . Map includes survey site depths and count of <i>Awaous stamenius</i> observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009) ....            | 46 |
| Figure 14: Predicted Habitat Suitability Index (HSI) for <i>Lentipes concolor</i> . Map includes survey site depths and count of <i>Lentipes concolor</i> observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009) ....          | 47 |
| Figure 15: Predicted Habitat Suitability Index (HSI) for <i>Sicyopterus stimpsoni</i> . Map includes survey site depths and count of <i>Sicyopterus stimpsoni</i> observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009) ....  | 48 |
| Figure 16: Predicted Habitat Suitability Index (HSI) for <i>Stenogobius hawaiiensis</i> . Map includes survey site depths and count of <i>Stenogobius hawaiiensis</i> observed at each site. Diversions,   |    |

|   |    |
|---|----|
| diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009) .....   | 49 |
| Figure 17: Predicted Habitat Suitability Index (HSI) for <i>Eleotris sandwicensis</i> . Map includes survey site depths and count of <i>Eleotris sandwicensis</i> observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009) .....        | 50 |
| Figure 18: Predicted Habitat Suitability Index (HSI) for <i>Neritina granosa</i> . Map includes survey site depths and count of <i>Neritina granosa</i> observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009) .....                  | 51 |
| Figure 19: Predicted Habitat Suitability Index (HSI) for <i>Atyoida bisulcata</i> . Map includes survey site depths and count of <i>Atyoida bisulcata</i> observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009) .....                | 52 |
| Figure 20: Predicted Habitat Suitability Index (HSI) for <i>Macrobrachium grandimanus</i> . Map includes survey site depths and count of <i>Macrobrachium grandimanus</i> observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009)..... | 53 |
| Figure 21: Map with Rainfall, elevation, and watershed outline (basin elongation ratio) with respect to the East Maui watersheds. ....  | 55 |
| Figure 22: Range of values for variables in USGS discharge regression equation. Cutoff shown in red. ....   | 55 |
| Figure 23: Comparative relationships between HSHEP modeling prediction and USGS regression values for Rainfall, Maximum Basin Elevation, Basin Elongation Ratio and Discharge. ....   | 56 |

## LIST OF TABLES

|  |    |
|--|----|
| Table 1: Native species habitat evaluated for this project. ....   | 27 |
| Table 2: Comparison of EISPN and CWRM D&O Stream Lists .....   | 36 |
| Table 3: License Area streams subject to IIFS with type, amount and locations of IIFS flow restoration. ....   | 37 |
| Table 4: Date and Location of field surveys to support the HSHEP modeling of the East Maui Streams. Full results can be found in Appendix 1. ....  | 42 |
| Table 5: Comparison of stream discharge values from the HSHEP model and the USGS report. Discharge values are for the stream mouth in the HSHEP model and the lower reach in the USGS report. .... | 63 |

## ABSTRACT

The East Maui Irrigation (EMI) Aqueduct System supplies water to some 30,000 acres of agricultural land in Central Maui and serves more than 30,000 Upcountry Maui residents and farmers. The EMI Aqueduct System was built between 1876 and 1923 to collect and deliver surface water to sugarcane fields in Central Maui (CWRM D&O 2018). The EMI Aqueduct System has diverted water in its current configuration for nearly 100 years and baseline environmental condition studies (including the distribution and habitat of native stream animals) prior to its construction do not exist. To better understand the impact of the surface water diversion on native stream animals and their habitats, Trutta Environmental Solutions, LLC. (TRUTTA) was contracted to develop a Hawaiian Stream Habitat Evaluation Procedure (HSHEP) model to assess impacts on 33 streams<sup>1</sup> associated with a Water Lease receiving the amount of streamflow diversion allowed under the 2018 Interim Instream Flow Standard (IIFS)

The HSHEP model was used to assess potential impacts from the stream diversions which included the loss of instream habitat from constriction or diversion of stream flow, creation of barriers to stream animal upstream movement and entrainment of downstream drifting larvae. Four scenarios associated with the EMI Aqueduct System in the East Maui streams were addressed, including:

1. Natural Condition: This was upper boundary comparison scenario in which all diversions were modeled as closed with no water diversion and no impact on passage or entrainment of animals. This was the maximum available habitat units predicted.
2. Full Diversion: This was the lower boundary comparison scenario where all diversions in this scenario were modeled as fully open or diverting 100% of available low flows. The low flows, roughly analogous to the stream's baseflow, are critical to protecting instream habitat for stream species. The diversions and aqueduct system were built to capture 100% of normal low flow plus some smaller amount of storm runoff. Hawaiian streams are "flashy" where discharge rises quickly in response to rainfall and then quickly falls back to low flow conditions. When low flow conditions persist and overall diversion amounts do not exceed the conveyance capacity of the aqueduct, the streams can be dewatered below the diversions resulting in negative impacts on species habitat and passage. This scenario was intended to represent the diversion conditions found during sugar cane production.

---

<sup>1</sup> The DEIS identifies 37 streams associated with the License Area. 36 streams were identified in the CWRM D&O associated with the License Area. Two of these streams, Kualani and Ohia streams were not included in the HSHEP model as they were not diverted by the EMI Aqueduct System and Palauhulu Stream is a tributary of Piinaau Stream and thus was combined with Piinaau Stream. Puakea Stream was not mentioned in the CWRM D&O and therefore was not assessed in the HSHEP model. This resulted in 33 distinct streams impacted by the EMI Aqueduct System.

3. 2018 IIFS: This scenario represented the flow conditions as described in the 2018 Interim Instream Flow Standard (IIFS) which included 24 streams and mandated restoration of flows in all but three streams. Four main types of flow restoration were mandated, including: Full-flow restoration, Habitat-flow restoration, Connectivity-flow restoration, and No-flow restoration. The diversion amount was estimated as available flow after compliance with the 2018 IIFS.
4. No action alternative or “30% remaining flow diversion”: This scenario represented the long-standing agreement that “government owned waters” from the License Area amounted to 70% of streamflow, and the remaining 30% of the streamflow emanated from private/A&B/EMI lands. Thus, the No-Action alternative is the diversion of 30% of water available at the Honopou Stream boundary after compliance with the IIFS. This No-Action description is not directly translatable into the HSHEP model as the model requires specific diversion conditions at each diversion not an aggregate amount from a group of diversions. Therefore, this scenario assumed that 30% of remaining low flow discharge was diverted at each individual diversion after complying with the IIFS.

These scenarios allowed for the comparison and quantification of the changes in suitable habitat for native stream animals as a result of the different flow modifications.

The HSHEP Model project on the East Maui streams focused on assessing and quantifying suitable habitat under different flow scenarios. TRUTTA surveyed 35 diversion locations to include a range of habitat, biota, and diversion conditions to help ground-truth the HSHEP model. This report specifically addresses the 33 License Area streams and reports all model inputs and results for these streams associated with the four water management scenarios.

The License Area streams designated as Full Flow Restoration streams in the 2018 IIFS were: Makapipi, Waiohue, West Wailuaiki, Wailuanui, Waiokamilo, Piinaau (and its tributary Palauhulu), Hanehoi (Huelo/Puolua), and Honopou Streams. The full-flow restoration streams were some of the largest streams, with the majority of the lower and stream reach habitats found in this group. The primary reason for full-flow restoration was not the improvement of instream habitat for stream animals, but rather the downstream passage of water for customary and traditional uses (mostly taro cultivation) by downstream communities. While not the primary reason, full restoration of flow does provide instream habitat benefits for the native amphidromous stream animals. After flow restoration as defined by the 2018 IIFS, approximately 96.7% of native stream animal habitat units were estimated to exist with a few percentages more (98.4%) under the 30% remaining flow diversion scenario.

The License Area streams designated as Habitat (H<sub>90</sub>) Flow Restoration streams in the 2018 IIFS were: Kopiliula, East Wailuaiki, Honomanu, Punalau/Kolea, and Waikamoi Streams. This group of streams was mandated to have approximately 64% of the baseflow restored specifically to improve instream habitat for native stream animals. Full diversion eliminated 49.9% of the habitat units naturally occurring in this group of streams. The restoration of 64% of the baseflow increased available habitat units to 77.1% of the naturally available habitat units. Under the 30%

remaining flow diversion scenario, the restored habitat was 91.1%. At these base flow restoration levels, nearly all physical instream habitat is restored, with the habitat unit losses due to entrainment of animals as they passed the diversion locations.

The lease-area streams designated as Connectivity-Flow Restoration streams in the 2018 IIFS were: Hanawi, Kapaula, Paakea, Nuaailua, Haipuaena, and Puohokamoa Streams. Within the group of stream designations for connectivity flows, two subgroups were observed. The first group contained a spring fed streams, Hanawi and Kapaula, while the second group contained the remaining streams. The spring-fed streams had consistent baseflow downstream of the diversion as a result of the spring inputs. As a result of the additional baseflow, the streams supported high numbers of native stream animals below the springs and had higher amounts of habitat units predicted from the HSHEP modeling for most native streams animals than most East Maui Streams. The second group of streams within the Connectivity-Flow Restoration group, Paakea, Nuaailua, Haipuaena, and Puohokamoa Streams, were streams without springs or obviously gaining reaches. Approximately 189,000 m<sup>2</sup> of the 301,000 m<sup>2</sup> available habitat units are found within Puohokamoa Stream. One difficult aspect with restoring habitat units through flow restoration in Puohokamoa Stream was the multiple levels of diversions on the stream. Puohokamoa Stream has 3 major (Spreckels, Wailoa, and Manuel Luis Ditches) and 5 minor diversions. While flow restoration may improve habitat in the stream, it may be more difficult to achieve given the number of diversions located on this stream.

The lease-area streams designated as No-Flow Restoration streams in the 2018 IIFS were: Waiaaka, Ohia/Waianu, and Wahinepee Streams. Ohia Stream is undiverted by the EMI Aqueduct System so natural flow conditions already exist. Waiaaka and Wahiepee Streams were considered intermittent in the DAR stream GIS data layer and thus, by definition within the HSHEP model rules, did not contain habitat units for native amphidromous stream animals that would be impacted by baseflow reduction. The standard of No-Flow Restoration appeared appropriate for these streams as instream habitat conditions are likely similar among any flow scenario.

The License Area includes streams that were not the subject of the 2018 IIFS decision but are diverted into the EMI Aqueduct System. These non-IIFS streams were located on the western side of the East Maui stream group. These streams have more extensive diversion systems than streams to the east of Piinaau. Most of the non-IIFS stream were diverted at four levels by Wailoa and New Hamakua Ditches at higher elevations and Spreckels, Center, Lowrie or Haiku Ditches at the lower elevations. Under the Full Diversion Scenario only 15% of the habitat units remain than compared to the Natural Flow Scenario in this group of streams. The loss of habitat was both from loss of instream habitat to water diversion and to passage and entrainment issues at each diversion. The 30% Diversion Scenario returned the habitat units available to 34%. Under this scenario, a wetted pathway would exist to the ocean, but there would still be substantial entrainment of larvae in the multiple diversion ditches. Increased restoration of the flow at the lower diversions may be a better practice than partial diversion of flow at all diversions. This strategy would allow diversion of water at higher elevations where less habitat



naturally exists and decrease passage and entrainment impacts at lower diversion where more native stream animals will interact with the diversions.

In general for the native damselflies, the restoration baseflow would increase habitat downstream of the diversions which may be suitable for the species. While it is not clear how important the main channel habitat is for these species, the conditions will be far more natural than the highly diverted conditions immediately below the diversion under the full-diversion scenario. The improved baseflow throughout all reaches downstream would decrease standing water habitat within the stream for the introduced mosquito species.

Overall, the combination of field surveys and habitat modeling supports the IIFS flow restoration scenario in improving instream habitat conditions for native amphidromous stream animals. While suitable habitat is fundamental for a species' persistence and is the focus of the HSHEP model, it may not be the only thing that may affect species populations. Other factors, such as pollution, disease, or competition with introduced species may also influence the observed distribution and densities of native animals yet understanding the natural distribution of animals without the presence of these additional factors is still important. From a habitat availability perspective, the 2018 IIFS does a good job at improving instream habitat over a wide range of streams.

## INTRODUCTION

The East Maui Irrigation (EMI) Aqueduct System supplies water to some 30,000 acres of agricultural land in Central Maui and serves more than 30,000 Upcountry Maui residents and farmers. The EMI Aqueduct System was built between 1876 and 1923 to collect and deliver surface water to sugarcane fields in Central Maui (CWRM D&O 2018). Currently, the EMI Aqueduct System operates under one-year revocable permits from the State. In an effort to allow the State to issue long-term water leases for the streams within the License Area via an auction process, Alexander and Baldwin, Inc (A&B), contracted the consulting firm Wilson Okamoto Corporation to develop the required Environmental Impact Statement of the surface water diversions. The EMI Aqueduct System has diverted water in its current configuration for nearly 100 years and baseline environmental condition studies (including the distribution and habitat of native stream animals) prior to its construction do not exist. To better understand the impact of the surface water diversion on native stream animals and their habitats, Trutta Environmental Solutions, LLC. (TRUTTA) was contracted to develop a Hawaiian Stream Habitat Evaluation Procedure (HSHEP) model to assess impacts on 33 streams<sup>2</sup> associated with a Water Lease receiving the amount of streamflow diversion allowed under the 2018 Interim Instream Flow Standard (IIFS) (Figure 1).

Changes to the naturally occurring habitat brought about by man's modification of the environment may have a positive or negative effect on the quantity or distribution of a species' suitable habitat. The HSHEP model was designed to quantify how various man-made changes affect native Hawaiian amphidromous stream animals and is based on statewide observations of these animals' distribution and habitat. The HSHEP model considers the primary impacts of surface water diversion, which include loss of instream habitat from constriction or diversion of stream flow, creation of barriers to stream animal upstream movement and entrainment of downstream drifting larvae. While suitable habitat is fundamental for a species' persistence and is the focus of the HSHEP model, it is not the only thing that may affect species populations. TRUTTA fully realize that other factors, such as pollution, disease, or competition with introduced species may also influence the observed distribution and densities of native animals yet understanding the natural distribution of animals without the presence of these additional factors is important. Providing managers with the ability to assess change to native species habitat with respect to flow modifications, watershed development, or in-channel structures is important in quantifying the positive or negative implications of various actions. The HSHEP model was intended to capture the major aspects of native stream animal ecology, the typical geomorphology of Hawaiian streams, and common modifications to the environment within a single model.

---

<sup>2</sup> The DEIS identifies 37 streams associated with the License Area. 36 streams were identified in the CWRM D&O associated with the License Area. Two of these streams, Kualani and Ohia streams were not included in the HSHEP model as they were not diverted by the EMI Aqueduct System and Palauhulu Stream is a tributary of Piinaau Stream and thus was combined with Piinaau Stream. Puakea Stream was not mentioned in the CWRM D&O and therefore was not assessed in the HSHEP model. This resulted in 33 distinct streams impacted by the EMI Aqueduct System.

The HSHEP model for the East Maui streams addressed multiple scenarios associated with the diversion systems. The first scenario was the natural-flow scenario. In this scenario, the modeled diversion impact was removed to create an estimate of the naturally available habitat for the stream species. The second scenario was the full-diversion scenario. Under this scenario, stream diversions were modeled at maximum diversion capability as was the case during the sugar cane cultivation period. The third scenario modeled the flow conditions described by the 2018 Interim Instream Flow Standards (IIFS) as determined by the State of Hawaii. The final scenario was the No Action Alternative. This scenario represented the long-standing agreement that “government owned waters” from the License Area amounted to 70% of streamflow, and the remaining 30% of the streamflow emanated from private/A&B/EMI lands. Thus, the No-Action alternative was the diversion of 30% of water available at the Honopou Stream boundary after compliance with the IIFS. This No-Action description was not directly translatable into the HSHEP model as the model requires specific diversion conditions at each diversion not an aggregate amount from a group of diversions. Therefore, this modeled scenario assumed that 30% of remaining discharge was diverted at each individual diversion after complying with the IIFS.

The HSHEP modeling approach applied on this project was developed for, applied on, and critically reviewed for use in Hawaiian streams. The HSHEP model approach has been used extensively in Hawaii, including for instream flow determinations on East and West Maui streams (Parham et al. 2009, Parham 2013a), and Waimea River, Kauai (Higashi and Parham 2016), for hydropower impact assessment on Wailua River, Kauai (Parham 2014), for flood mitigation impact assessment on the Ala Wai Streams, Oahu (Parham 2015b, c) and for other stream assessments across the state. In addition, the integrated field surveys and HSHEP approach underwent and passed formal professional review by the US Army Corps of Engineers (USACE) for its application on the Ala Wai Streams Flood Mitigation Project (Parham 2015a).

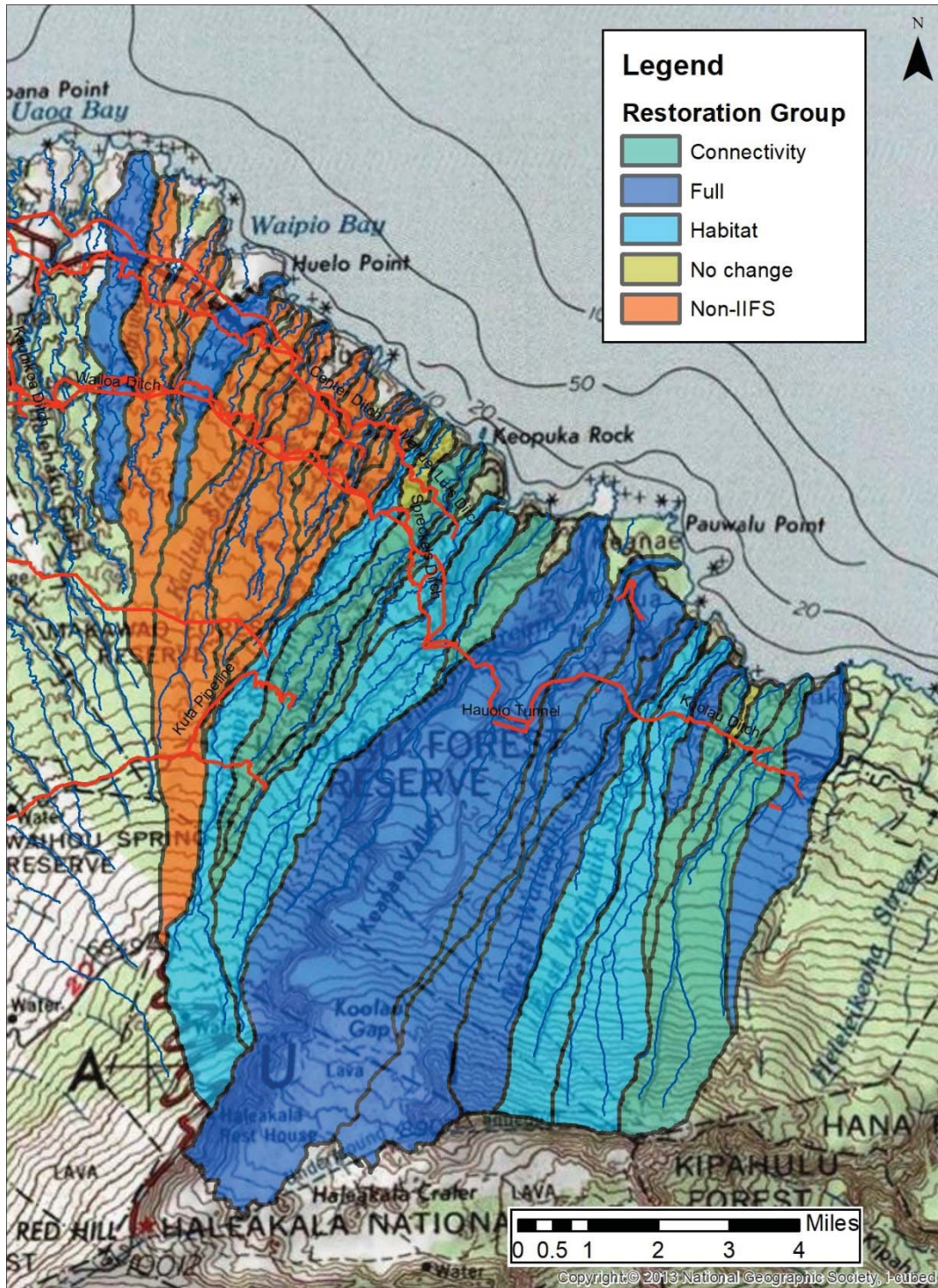


Figure 1: The 33 East Maui streams and watersheds associated with the EMI Aqueduct System. Colors correspond to the 2018 IIFS flow restoration status.



## GOAL

The primary goal of this project was to quantify the impact of the stream diversions on suitable habitat for native stream animals in 33 East Maui streams under various diversion scenarios using the HSHEP model integrated with site-specific habitat, biota and diversion conditions.

## OBJECTIVES

To achieve the goal, the HSHEP Model project on the East Maui streams focused on assessing and quantifying suitable habitat under different flow scenarios.

To complete these objectives, the following steps were taken:

1. *Conduct Field Surveys to improve understanding of current field conditions: (results in Appendix 1)*
  - a. *Habitat Assessment:* Gathered field data on instream flow conditions and stream habitats near diversions using the High Definition Stream Survey (HDSS) method.
  - b. *Diversion Assessment:* Conducted barrier assessments of each diversion to determine type and likely impact on native species.
  - c. *Biotic Assessment:* Gathered data on the populations of native stream animals using the High Definition Fish Surveys (HDFS) to document biota in survey segments above and below diversions.
  - d. *Field Survey Data Classification:* Organized and classified field survey data into categories for use in HSHEP model.
2. *HSHEP Model Assessment:* This report addresses all 33 streams within the License Area, including the streams that were the subject of the CWRM 2018 IIFS Decision and Order and streams that were not, but are within the License Area and diverted by the EMI System, and reports all model inputs and results for these streams associated with the four water management scenarios. To complete this task, TRUTTA:
  - a. Updated to the HSHEP modeling process into R programming language.
  - b. Created the source data and processing steps for all watersheds, streams, stream segments, and diversions in the system.
  - c. Developed new water flow calculations with respect to the published USGS flow regression relationships for East Maui.

- d. Ran the full HSHEP model.
- e. Quantified suitable habitat units for native stream animals associated with the following scenarios:
  - i. No Diversion,
  - ii. Full Diversion,
  - iii. 2018 IIFS
  - iv. 30% Remaining Flow diversion
- f. Documented HSHEP model results for the 33 streams with the License Area.

## METHODS

### FIELD METHODS

#### ***Habitat Assessment***

The focus of the habitat assessment to support the HSHEP model was to document instream conditions both above and below stream diversions. We collected water depth, habitat type, substrate, and stream width measures as these can be converted into suitability criteria and estimates of overall habitat area. In addition to the habitat measures described below, stream discharge was measured upstream and/or downstream of the diversion to help document the proportion of the flow diverted.

To assess habitat availability, the High Definition Stream Survey™ (HDSS) method was used to collect, classify, and analyze the data required for this project. In general, the HDSS approach followed a standardized series of steps that promotes rapid, systematic collection and processing of large amounts of stream conditions information (Figure 2). Following the general HDSS process ensured a successful project.



Figure 2: The standardized HDSS project flow chart.

Due to the narrow and shallow streams being surveyed, our backpack-mounted HDSS system was the primary data collection platform used during the surveys to collect habitat data. (Figure 3). Data collection is contingent on water flow, so field work timing was adjusted to avoid rain and high stream flows as much as possible.



Figure 3: Brett Connell using Backpack HDSS on Paakea Stream, Maui. The GPS-linked video cameras are image stabilized to dampen the bounces associated with walking in a stream.

The backpack-mounted HDSS system has the following capabilities:

- 4-channel video recording (4 utilized for this project)
- four separate 64 GB SDXC cards in an array of four video streams in four separate files
- 4 above-water cameras
  - forward facing
  - streambank left
  - streambank right
  - down-looking for substrate classification
- Garmin GPS receiver with GLONASS capabilities and WAAS differential correction
- 1- to 3-meter ultimate accuracy
- optimized for speeds less than 1 mph

After the data was collected in the field, it was post-processed using HDSS Video Coder Software (Figure 4), Microsoft Access, Microsoft Excel, and ArcGIS. Data was classified for approximately each meter of the stream longitudinally. Given the primary goal of quantifying habitat, the following variables were classified:

- Water Depth
- Habitat Type (riffle, run, pool, side pool, plunge pool, cascade, falls, etc.)
- Primary Substrate Size Class (using Modified Wentworth Substrate Classification System compatible with the DAR's animal habitat surveys – fine, sand, gravel, cobble, boulder, and bedrock)
- Percent wetted stream width
- Presence of stream channel modifications

### ***Water Depth***

The Water Depth category captured the thalweg depth for the main flow of the stream channel. The thalweg can be considered the center of the main flow and is usually the deepest depth across the stream channel. The wading poles (which can be seen in the down-looking video) are set at 1 ft. at the first black joint and 2 ft. at the second joint for reference for the classifier (Figure 5). In deeper sections, verbal documentation of depths by the surveyors was noted for reference. The water depth was classified according to the following categories: Dry, < 1 inch, 1-3 inches, 3-6 inches, 6-12 inches, 12-24 inches, 24-36 inches (2-3 ft. deep), 36+ inches (>3 ft. deep), and Unknown.

### ***Habitat Type***

Habitat type is one of the primary measures in describing instream habitat and was classified as (riffle, run, pool, side pool, plunge pool, cascade, pocket water, or falls) from the assembled HDSS video primarily concentrated on the forward view. For example, Figure 5 shows an example of a run. Habitat types change depending on amount of water in a river.

In general, the habitat types classified from the HDSS videos were compatible with those habitat types used by DAR in their habitat and fish surveys.

### **Substrate**

Substrate is a typical classification variable in habitat suitability studies and is mostly determined by high flow events. The high flow events have enough power to move boulders and scour out pools. For example, Figure 5 shows cobble substrate. Other substrate types included were fine sediment, sand, gravel, boulders and bedrock.

### **Stream Width**

The stream width was determined by visual classification using the HDSS video. The width was measured to better determine the area of the habitat units observed from the imagery.

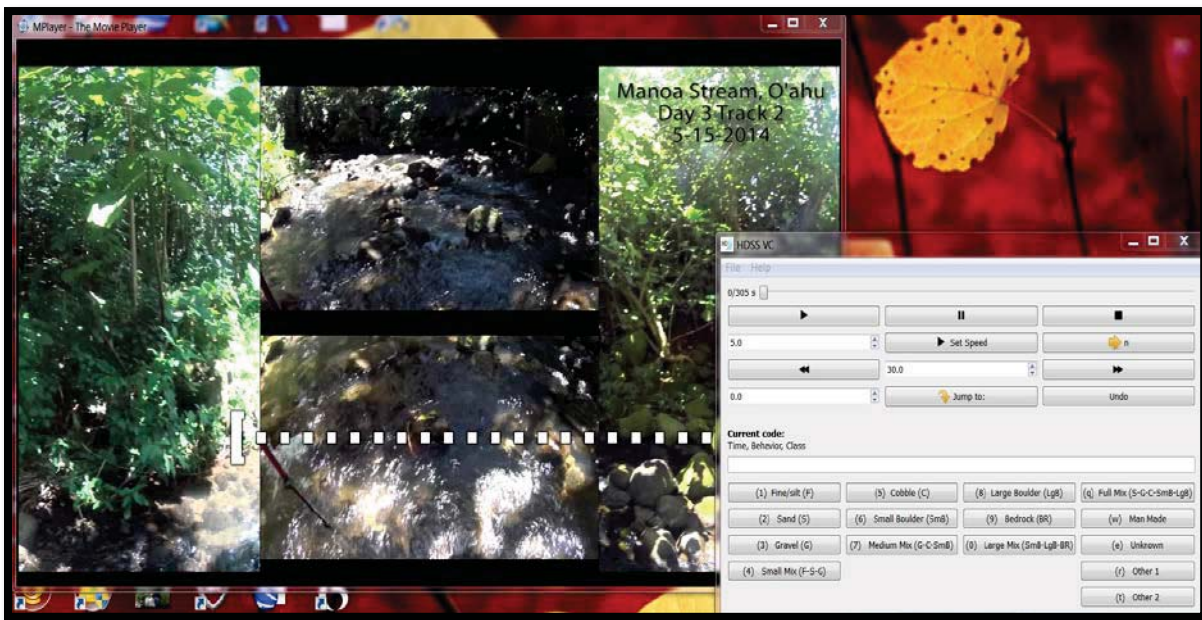


Figure 4: HDSS Video Coder V2.0 software used for systematic classification of video of streambank and stream bottom conditions. The software is easily customizable to allow appropriate classification systems to be used on a project. This example is from a US. Army Corps of Engineers Flood Control project on Oahu, HI.





Figure 5: An example of the HDSS video from Manoa Stream, Oahu.

### ***Diversion Assessments***

To document the site-specific conditions at stream diversions, the DAR barrier assessment methodology was followed. The barrier assessment method has a standardized approach that allows the type, size, potential for modification and other factors to be systematically documented for each diversion. To convert the field information into data usable for the HSHEP model, the impacts of barriers and entrainment in stream diversion were determined by classifying the diversion into a type and then estimating the effects based on the type. For example, the main barrier types are:

Stream mouth barriers – These barriers are the result of no water flow in the terminal stream segment. These barriers have two possible conditions, either open or closed. If baseflows are zero in the terminal segment, then a barrier is considered closed. If any flow is calculated to be present in the terminal segment, then the barrier is considered open.

Side Diversion – This type of diversion removes water from the stream through a side intake structure. The water in a natural stream channel flows downstream past the diversion and a portion is removed by the intake. These side diversions typically have a small dam to help increase the amount of water diverted. Both ditch and auwai diversion can fall into this group. Downstream and upstream entrainment is modeled with respect to the amount of water diverted. Upstream entrainment may be lower because animals moving upstream are moving against the current and this may lead them upstream as

opposed to downstream into the diversion. With that said, at high diversion rates, some animals will get entrained.

Bottom Grate Diversion – This diversion type removes water from a grate covered channel that usually spans the stream channel bottom. Bottom grate diversions are typically found on larger stream diversions and are sized to remove 100% of baseflow. Downstream and upstream entrainment rates are modeled with respect to the portion of base flow diverted. Upstream entrainment is higher than with side diversion as upstream moving animals are easily trapped in the diversion as they try to pass over the bottom grate.

Entrainment rate calculation for diversions - The primary barrier issue modeled with diversions is entrainment of migrating animals. Entrainment is directly related to the proportion of water removed by the diversion. When 100% of baseflow is diverted, the entrainment is modeled at 80%. This would represent the entrainment of all animals drifting downstream in the baseflow and leaves a portion of the animals at higher flows that overtop the diversion without entrainment. At diversion rates lower than total baseflow removal, the entrainment value is a portion of baseflow ( $Q_{70}$ ) remaining after the diversion compared to natural baseflow ( $Q_{70}$ ) multiplied by the maximum entrainment rate.

## BIOTIC SURVEYS

### *High-Definition Fish Surveys (HDFS)*

The High Definition Fish Survey (HDFS) approach was used to document biota in the survey segments. HDFS utilizes pole-mounted, high-definition, underwater video cameras to capture images of fish or other aquatic animals at a specific location (Figure 6). The underwater cameras are geo-referenced so that specific time and place information is recorded in conjunction with all video observations.

In general, the HDFS sample was considered a point or timed sample. The cameras were moved into position, slowly lowered to the bottom, and then left in position for approximately 30 seconds to capture a sample of animals at that location (Figure 7). In some locations, the camera was moved slowly to the next position without removing it from the water. This process was repeated at sites distributed evenly throughout the available habitat. In locations where it was too deep and wide to wade a stream, TRUTTA snorkeled the stream with a hand-held video camera on a 3 ft pole. This allowed us to gather a visual record of the habitat and species present that could be processed in a similar method to the other HDFS approach.

To document the animals observed in the videos, the HDSS Video Coder software with a list of potential animal species was used. Additional species, if observed, were listed as Other1, -2, or -3 and then identified after the classification process. This allowed a single standard classification approach to be used for all survey video. The potential Hawaiian Stream species list included (Figure 8):

**Native Fishes:** ‘O‘opu nākea (*Awaous stamenius*), ‘O‘opu naniha (*Stenogobius hawaiiensis*), ‘O‘opu nōpili (*Sicyopterus stimpsoni*), ‘O‘opu alamo‘o (*Lentipes concolor*) ‘O‘opu akupa (*Eleotris sandvicensis*), Aholehole (*Kuhlia xenura*), Mullet (*Mugil cephalus*).

**Native Crustaceans and Mollusks:** ‘Ōpae ‘oeha‘a (*Macrobrachium grandimanus*), ‘Ōpae kala‘ole (*Atyoida bisulcata*), Hīhīwai (*Neritina granosa*), Hapawai (*Neritina vespertina*), Newcomb’s snail (*Erinna newcombi*).

**Introduced Fishes:** Armored Catfish (*Hypostomus c.f. watawata*), Bristlenose Catfish (*Ancistrus c.f. temmincki*), Bronze Corydoras (*Corydoras aeneus*), Liberty Molly (*Poecilia sp. hybrid complex*), Green Swordtail (*Xiphophorus hellerii*), Guppy (*Poecilia reticulata*), Mosquitofish (*Gambusia affinis*), Blackchin Tilapia (*Sarotherodon melanotheron*), Convict Cichlid (*Amatitlania nigrofasciata*), Smallmouth Bass (*Micropterus dolomieu*), Carp (*Cyprinus carpio*), Goldfish (*Carassius auratus*), Dojo (*Misgurnus anguillicaudatus*), White Cloud Mountain Minnow (*Tanichthys albonubes*), Rainbow Trout (*Oncorhynchus mykiss*).

**Introduced Crustaceans, Mollusks, and Amphibians:** Tahitian prawn (*Macrobrachium lar*), Grass Shrimp (*Neocaridina denticulata sinensis*), Crayfish (*Procambarus clarkii*), Cane Toad (*Bufo marinus*), Bull Frog (*Rana catesbeiana*), Wrinkled Frog (*Rana rugosa*).

**Insects:** TRUTTA captured pictures of damselfly and dragonfly adults and larvae for identification whenever they were observed. Although, small or cryptic insect populations typically are not surveyed with this technique, damselfly and dragonfly adults and larvae were large enough to observe using video capture techniques.

During the video classification, a start code was inserted when the camera was in position. Next, all individuals of all species were recorded, and then a stop code was inserted. For each sample, the habitat type was recorded. This process allowed underwater video samples to be linked with the appropriate GPS data for that location.

When density estimates for stream animals were needed, an estimate of the area observed was determined by recording average depth and width of field captured in the sample area. These two measures were multiplied together to get sample site area. The total number of each species observed within each habitat type for the different areas surveyed was divided by the area of that habitat type to get the species density within each habitat type.





Figure 6: Underwater geo-referenced video camera with external video light used for the HDFS observations.



Figure 7: Example of HDFS surveys in Manoa stream, Oahu.





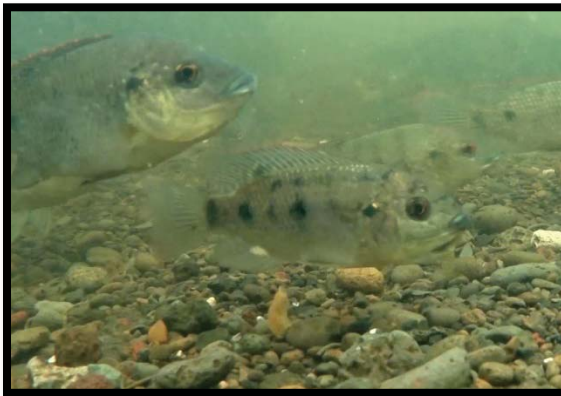

|   |  |
|---|--|
|                              |      |
| Native fish, <i>Awaous staminius</i> , in a stream pool in I'ao Stream, Maui.                                 | Native fish, <i>Sicyopterus stimpsoni</i> , on boulder substrate in I'ao Stream, Maui. |
|                              |      |
| Native species, <i>Kuhlia xenura</i> , in the lower reach of I'ao Stream, Maui.                               | Introduced swordtails, <i>Xiphophorus hellerii</i> , in I'ao Stream, Maui.             |
|                            |    |
| Introduced Blackchin tilapia, <i>Sarotherodon melanotheon</i> , over gravel substrate in Palolo Stream, Oahu. | Introduced armored catfish, <i>Hypostomus c.f. watawata</i> in Waiawa Stream, Oahu.    |

Figure 8: Examples of stream animals observed during HDFS projects on various Hawaiian Streams.

## MODELING

### ***HSHEP Model***

The HSHEP model was an outgrowth of a history of collaboration among biologists at Hawaii Division of Aquatic Resources (DAR) and researchers at various universities, agencies, museums, and private companies. The collaborative effort focused on understanding the different aspects of the ecology and management of amphidromous stream animals (Fitzsimons and Nishimoto 2007). The HSHEP model was an attempt to quantify how various man-made changes affect native Hawaiian stream animals. The HSHEP model was intended to capture the major aspects of native stream animal ecology, the typical geomorphology of Hawaiian streams, and common modifications to the environment within a single model. Additional factors outside of habitat can be modeled with the HSHEP approach but need additional modeling steps that are currently best addressed on a case-by-case basis. The HSHEP model provides water managers the ability to assess change to native species habitat with respect to flow modifications, watershed development, or in-channel structures and is important in understanding the positive or negative implications of various actions.

The HSHEP model followed the overall Habitat Evaluation Procedure (HEP) model concepts developed by the U.S. Fish and Wildlife Service (USFWS) to evaluate the quantity and quality of habitat available for a species of concern (USFWS 1980 a,b, USFWS 1981). In general, a Habitat Evaluation Procedure (HEP) model has several characteristics:

1. It is a habitat-based assessment method.
2. It assumes that habitat quality and quantity are related to the number of animals using a habitat over the long term.
3. It uses measurable attributes of habitat quality and quantity to create relationships between habitat suitability and animal occurrence and density.
4. It converts suitability relationships into standardized Habitat Suitability Indices (HSI) that encompass the range of observed habitat conditions.
5. The HSI values range from 0 (unsuitable habitat) to 1 (most suitable habitat).
6. It multiplies the habitat quality (value from the HSI) with the habitat quantity (area) to determine overall Habitat Units (HU) within the area of concern.

As a result of the model design, HEP impact analyses were intended to allow the user to:

1. Provide defined suitability-based estimates of HU within a study area,
2. Provide impact assessments of the changes of HU within the study area under different management scenarios,
3. Provide objective comparable unit measures for multi-site comparisons,
4. Quantify changes in HU to be annualized and comparable with other cost/benefit analyses,



5. Create plots of the distribution of HU in map-based formats (GIS analyses) to address issues of habitat fragmentation or connectivity.

The HEP user manual describes a HEP model like this: “HEP is a convenient means of documenting and displaying, in standard units, the predicted effects of proposed actions.” USFWS designed HEP to be a legally defensible, standardized format for impact assessment in natural resource settings (USFWS 1980 a). While HEP models have been developed and used for impact assessment nationally for hundreds of species of birds, mammals, and fish, this is the first HEP model to assess changes in stream animal habitat in Hawaii.

Traditional HEP procedures were joined with multi-spatial modeling efforts for Hawaiian streams (Parham 2002, Kuamo’o et al. 2006, Parham 2008). The multi-spatial models address issues of scale in understanding differences in habitat availability and species distributions. For example, the presence or density of amphidromous animals is influenced by the location of the sample site within a stream. Similar habitats found near the ocean may have different species assemblages than habitats found further inland. Additionally, characteristics of different watersheds and their streams influence the observed species assemblages. For example, streams with terminal waterfalls have different species assemblages than streams without terminal waterfalls. By assessing suitability at multiple spatial scales, different aspects of amphidromous animal ecology were more appropriately modeled (Figure 9). As a result of the combination of the HEP method with multi-scale analysis, management issues were addressed on a site, stream segment, whole stream, or regional level. The HSHEP model is intended to be useful to assess the impacts of stream channel modification, flow alteration, land use change, climate change, stream restoration, and barrier modifications.

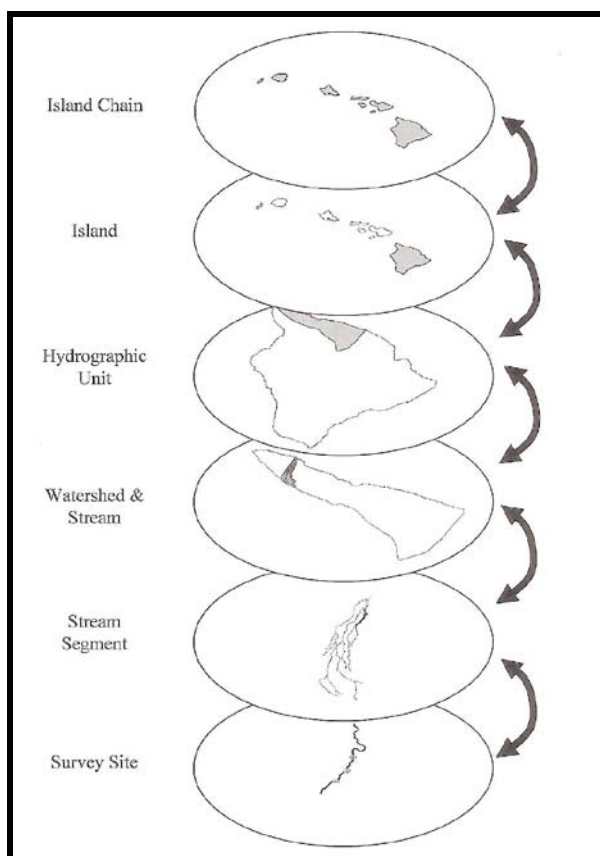


Figure 9: Spatially-nested hierarchy of the DAR Aquatic Surveys Database and predictive levels within the HSHEP model.

The latest description of the HSHEP model can be found in:

**Parham, J.E.** 2015. The Hawaiian Stream Habitat Evaluation Procedure (HSHEP) model: Intent, Design, and Methods for Project Impact Assessment to Native Amphidromous Stream Animal Habitat. Submitted to Civil and Public Works Branch, U.S. Army Corps of Engineers, Honolulu District, HI. 178 pages.

The HSHEP Model uses published information for species distributions at the watershed and reach scale and combines it with local data from the habitat and biotic surveys. Stream animals' distribution and habitat use are documented using information stored in the DLNR-DAR Aquatic Surveys Database (2009). This represents over 13,000 survey locations and over 90,000 species observations. The database includes results from state surveys as well as those from federal, university, and private researchers. More than 370 different literature sources support the data contained within the DAR Aquatic Surveys Database. The HSHEP model leverages the data within the DAR Aquatic Surveys Database to develop quantitative measures of habitat use for native stream animals. For this project, the HSHEP model was created for the typical group of native freshwater fish and macroinvertebrates found in Hawaiian streams (Table 1).

Table 1: Native species habitat evaluated for this project.

| Organism Type and Family                               | Scientific name                    | Hawaiian name  |
|--|------------------------------------|----------------|
| Freshwater fish<br>(family Gobiidae)                   | <i>Awaous stamenius</i> *          | ‘O‘opu nākea   |
|  | <i>Lentipes concolor</i> *         | ‘O‘opu alamo‘o |
|  | <i>Stenogobius hawaiiensis</i> *   | ‘O‘opu naniha  |
|  | <i>Sicyopterus stimpsoni</i> *     | ‘O‘opu nōpili  |
| Freshwater fish<br>(family Eleotridae)                 | <i>Eleotris sandwicensis</i> *     | ‘O‘opu akupa   |
| Freshwater shrimp (Crustacean)<br>(family Atyidae)     | <i>Atyoida bisulcata</i> *         | ‘Ōpae kala‘ole |
| Freshwater prawn (Crustacean)<br>(family Palaemonidae) | <i>Macrobrachium grandimanus</i> * | ‘Ōpae ‘oeha‘a  |
| Freshwater snail (Mollusk)<br>(family Neritidae)       | <i>Neritina granosa</i> *          | Hīhīwai        |

\*Identified as “Species of Greatest Conservation Need” in the Hawaii Statewide Aquatic Wildlife Conservation Strategy (Meadows et al. 2005).

The selection of the highlighted set of amphidromous stream animals is appropriate in this case for several reasons:

- These species have been observed within the East Maui Watersheds.
- All of these species have a diadromous life history, meaning that they migrate from the freshwater stream to the ocean and back again (McDowall 2007). This potentially exposes the migrating animals to barriers in the stream pathway, entrainment into water diversion systems, and elimination of suitable habitat resulting from structures associated with the ditch system and its diversion.
- The DAR Aquatic Surveys Database has distribution and habitat use information for each of these species.
- The HSHEP model has habitat suitability indices developed for each of these species.

In addition to the species list above, three native damselflies (*Megalagrion xanthomelas*, *Megalagrion pacificum*, and *Megalagrion nesiotes*) and an introduced mosquito (*Culex quinquefasciatus*) habitats were also modeled to see how the water diversions may impact their population sizes. For these species, SWCA Inc. scientists provided the habitat descriptions to be used in the models. A summary of the descriptions along with generalized suitability model are as follows:



Megalagrion xanthomelas

- Elevation Range: 0-1000 m (0-3280 ft.) above sea level.
- Water Depth Range: Shallow (3-6 in deep) and sidepools.
- Main Threat: Alien species and habitat loss due to stream de-watering for agriculture, invasive California grass (*Brachiaria mutica*), which forms dense stands that can eliminate open water. This species is also threatened by introduced species, particularly poeciliid fish, crayfish, and backswimmer bugs (Notonectidae). It may also be threatened by predation from introduced odonates, as introduced *Enallagma civile* and *Ischnura ramburii* have been observed preying on teneral adults at the Ninole Springs, Hawaii population site.
- Known Locations: Maui - Ukumehame Stream, and near anchialine pools at La Perouse Bay.
- Additional Notes: Lowland species, found in slow or standing water habitats, breeds primarily in coastal wetlands and lower or terminal stillwater reaches of perennial streams; In the absence of predators, especially introduced fish species, it can breed successfully in standing pools of intermittent mid-elevation streams, freshwater marshes, reservoirs, garden pools, and ornamental ponds. Adults do not disperse far from the nymphal habitat and lay their eggs in the tissues of aquatic plants found in slow reaches of streams and in stream pools.
- Habitat Suitability: Adults Less than 1000 m elevation. Breed low reaches of perennial and intermittent streams. 10% of habitat in undiverted conditions (shallow (3-6 in deep) and side pools). Use opae habitat curve as suitable habitat will be rapidly restored as baseflow is returned to a stream.

Megalagrion pacificum:

- Elevation Range: 0-800 ft. elevation above sea level.
- Water Depth Range: Shallow water, temporary pools. Breeds in stagnant ponds. It prefers quiet pools away from the main channels
- Main Threat: *Megalagrion pacificum* is threatened by habitat loss, predation by non-native fish, and the presence of the highly invasive California grass (*Brachiaria mutica*) which forms dense stands that can eliminate open water. Predatory fish and introduced backswimmers (Hemiptera: Notonectidae) as well as resource competition from introduced caddisflies.

- Known Locations: Maui - Haipuaena, Hanawi, Keanae, Palikea and Kuhiwa Streams.
- Additional Notes: Freshwater, seepage fed side pools along mid and terminal reach overflow channels of rocky upland streams. It is thought to prefer side pools on slow-moving streams that contain abundant native grasses and sedges. Unlike some congeners, it is entirely aquatic.
- Habitat Suitability: Adults less than 250 m elevation. Breed in low reaches of perennial and intermittent streams. 5% of habitat is in undiverted conditions (slow-moving side pools). Use opae habitat curve as suitable habitat will be rapidly restored as baseflow is returned to a stream.

Megalagrion nesiotes:

- Water Depth Range: The only known population occurs along a steep, moist, talus slope, densely covered with *Dicranopteris linearis* (uluhe) and *Rubus* sp. (blackberry). Adults are not associated with standing or flowing water, but prefer upland ridges, wet forests, and steep, moist, fern-covered banks. The habits of the nymphs are unknown, but based on adult behaviors, they are believed to be semi-terrestrial or terrestrial, inhabiting pockets of water at the bases of leaves of tropical plants or wet leaf litter.
- Main Threat: This species is at high risk of extinction. *M. nesiotes* is threatened by the effects of invasive species, particularly habitat damage due to feral pigs and possibly from human tourism (hiking) activities in this area. If nymphs of this species are in fact semi-terrestrial, predation from introduced ant species such as the big-headed ant (*Pheidole megacephala*), the long-legged ant (*Anoplolepis longipes*), and the fire ants *Solenopsis geminata* and *Solenopsis papuana* may also be a threat. Natural disasters such as drought or hurricane could threaten the survival of *M. nesiotes*. Such a small population could also suffer loss of genetic variability due to inbreeding, resulting in reduced evolutionary fitness.
- Known Locations: Maui - Only a single remaining population (of less than 1,000 individuals) of this species is known, found along East Wailuaiki Stream (stream is in license area), upslope of a busy highway (considered sub-optimal habitat for the species.) Additional colonies of this species may be scattered throughout the intermediate elevations of windward Maui, but have escaped detection due to the difficult topography, and the tendency of adults to fly low amid tangled undergrowth, in areas not typically searched for damselflies
- Habitat Suitability: While this species is known from the area around East Wailuaiki Stream,

the habitat description is not linked to the stream channel. Additionally, this area is above the diversion and thus will not change in any scenario. No habitat suitability model was created as it is unlikely to be impacted by water flow modifications.

**Additional Notes:** Little known about the biology of this species, but it is not associated with standing or flowing water. The only known population occurs along a steep, moist, talus slope, densely covered with *Dicranopteris linearis* (uluhe) and *Rubus* sp. (blackberry). Adults are usually seen perched on vegetation and fly slowly and only short distances. When disturbed, the adults actually fly into the tangled vegetation rather than up and away as in the aquatic Hawaiian damselflies. Although immature stages have not been found, based on the habitat and the behavior of the adults, it is believed that the naiads are terrestrial or semiterrestrial, occurring among the damp leaf litter.

*Culex quinquefasciatus:*

**Elevation Range:** 0-1500 m. elevation above sea level.

**Water depth range:** Moist, windward side of all main islands; *Culex quinquefasciatus* is a domestic to peridomestic mosquito associated with human residence and activity throughout most of its range (Subra 1981). In some remote insular environments, it has become established in natural areas. Larval habitats are, primarily, artificial containers and man-made impoundments such as ditches, ground pools, and stock ponds. In more natural areas larvae can be found in tree holes, rock holes, ground pools, stream margins, coconut husks and spadix sheaths. The larvae prefer eutrophic waters with a high organic content. Exceptionally high densities of larvae may be found in the septic water associated with oxidation ponds, sewage drains, cesspools, and septic tanks. Not found in flowing water. Breeds in ditches, pools, marshes, tin cans, buckets, barrels, soda cans, tires and any trash; Data indicate that agricultural lands and forest fragmentation significantly increase the probability of mosquito capture.

**Known Locations:** Maui - all streams.

**Habitat Suitability:** Less than 1500 m elevation. Not found in flowing water. 5% of habitat in undiverted conditions (slow-moving side pools). Created a relationship where habitat increases with decreasing baseflow: suitable habitat =  $0.5 * (1 - (\text{baseflow in stream})) + 0.5$

### **HSHEP Modeling Process Improvement**

The implementation of the HSHEP model in prior assessments of Hawaiian streams had generally been accomplished as single watershed models. When multiple watersheds were studied, a group of single watershed models were analyzed to determine the overall impacts. For the analysis of the EMI Aqueduct System, TRUTTA needed to change the modeling language to more effectively deal with the more complex multiple ditch and watershed system. To accomplish this, TRUTTA ported the entire model workflow to the statistical computing language R to improve on several aspects of the modeling process without any alteration to the model concept or calculation.

The conversion of the HSHEP model from a spreadsheet to the statistical computing language R provided several benefits:

- Improved Error Checking - Reducing the numerous spreadsheets required to implement calculations with the spreadsheet model to individual R scripts made determining the source of errors in the model more efficient.
- Increased Equation Readability - By explicitly stating the relationships among nodes and basins for each basin, interpretation of the model's calculations were greatly improved.
- Allowed for Real-time Testing - Since changes in inputs are easily read in to the established R-based model without needing additional manual editing, as is the case of the spreadsheet model, real-time testing and manipulation of inputs to the model and generation of outputs are much faster and there is a reduction in the 'hands-on' time which may introduce novel errors to the computations.
- Improved Documentation of Multiple Scenarios - The process to test multiple management scenarios is more efficient in R than in a spreadsheet. TRUTTA also created an output in spreadsheet format to further document the results.

Future applications of the HSHEP model for research into the optimal balance of water withdrawal, fish habitat, and other considerations in East Maui or in any Hawaiian stream will be greatly improved as a result of the benefits listed above and therefore, justified the transfer of the model and its calculations from a spreadsheet to the R programming language.

### **Data Sources**

TRUTTA calculated stream discharge data for each basin by applying the USGS flow to basin characteristic equations (Gingrich 2005) and assigned the appropriate values to each basin (dash-dot delineated areas in Figure 10). We assigned values of habitat units available each species of conservation concern from past modeled data for the species (Parham et al. 2009). The values used for each 'node' – locations of the natural barriers and artificial diversions impacting stream flow that contributed to the irrigation system of East Maui – were a vector of the amount of water passed, entrainment potential, passage barrier potential, and a general value for additional impacts for both upstream and downstream effects. These values were determined for each node during field surveys and from historical records about the installation and purpose of the diversions.

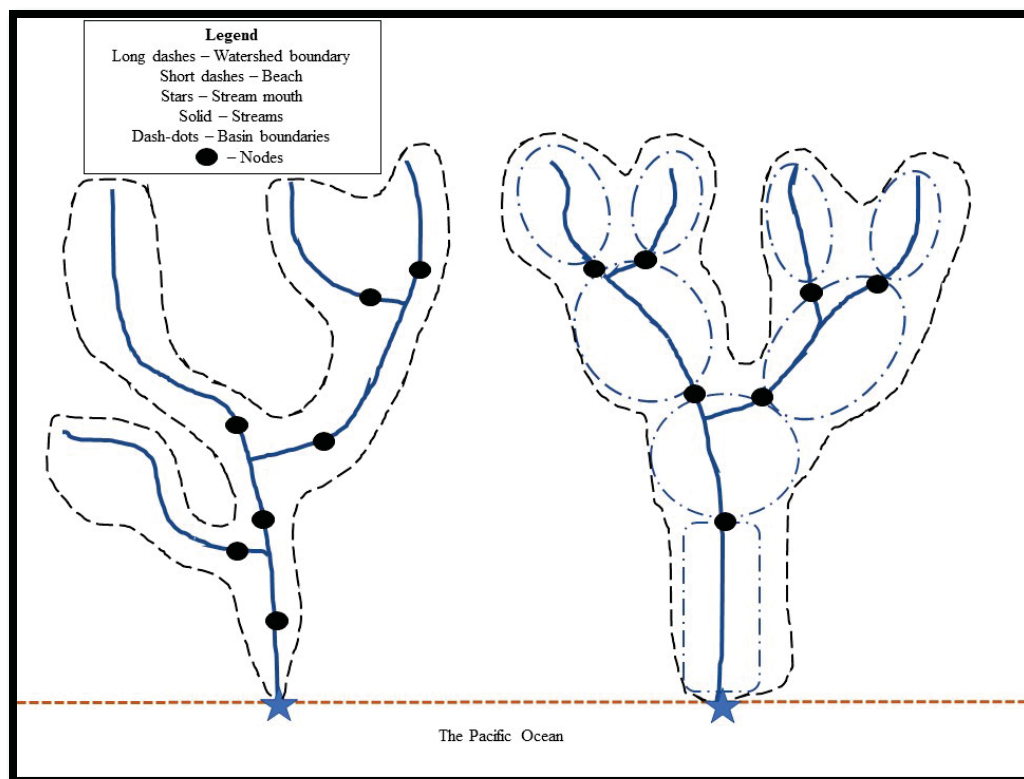


Figure 10: Conceptual schematic displaying the relationships among nodes, basins, and watersheds used to model the EMI Aqueduct System.

### General Model Concept and Assumptions

We performed modeling of the water and habitat availability within the EMI Aqueduct System using several assumptions. The calculations for water availability assumed that the amount of water available in any basin was a measure of the water in that basin augmented by the amount of water passed from the basin immediately upstream. For example, the amount of water present in basin II in Figure 11 was modeled as the amount of streamflow measured in that basin, plus the amount of stream flow from basin III minus the percentage of stream flow from basin III that was filtered by node 3. If 100 units of water are present in basins II and III, and node 3 diverts 50% of flow, then the modeled amount of water present in basin II was 150 units (100 units + (100 units \* 50% diversion)). This model assumption accounts for the facts that water passes downstream, and that East Maui streams are generally gaining streams, so that complete de-watering by an upstream diversion will not affect downstream basins beyond those immediately downstream. The model calculations to estimate habitat in each basin operated on the assumption that the production of a species in a basin was a function of the habitat in that basin, filtered by the upstream restrictions of any basins downstream and augmented by any habitat available for production from the upstream basins as filtered by the intervening node. As an example, using Figure 11, the amount of habitat available for production of a species in basin II is the amount of

habitat in that unit multiplied by the upstream filtering effects and habitat present in basin I and nodes 1 and 2, plus the habitat available in basin III as filtered by the downstream passage/entrainment effects of node 3. These assumptions allow us to model the production of species of conservation concern from any basin while accounting for potential upstream and/or downstream effects due to diversions or other barriers, up to and including functionally preventing production in a basin due to complete de-watering or barrier passage (i.e. an undercut waterfall). For example, if node 2 represented an undercut waterfall in Figure 11, and thus prevented upstream migration of any species, the remaining habitat available in the upstream basins of the watershed (basins II-VI) would be modeled as 0 for non-insect species.

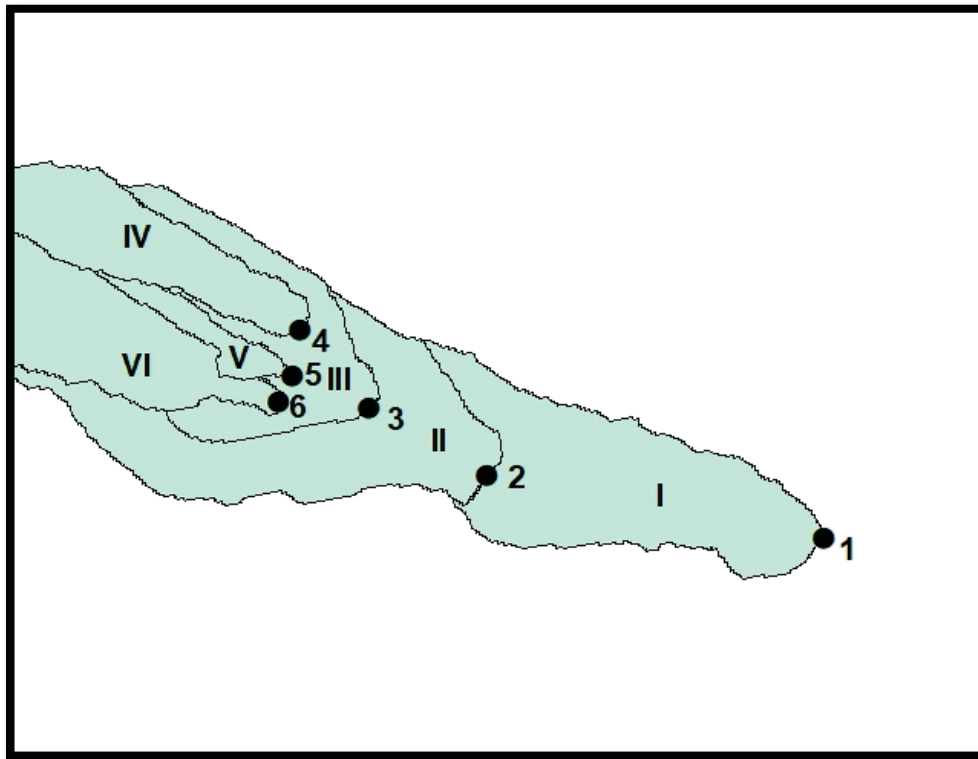


Figure 11: Node and basin relationship for branched stream system.

### Data Aggregation

After we completed necessary ground-truthing and collection of new data from the field to validate instream habitat availability and diversion characteristics for all streams, we combined several variables for each basin defined in the EMI Aqueduct System to complete the dataset for modeling in a GIS. The underlying data in the GIS database can be updated with new information as it becomes available to provide new estimates as needed. This overall approach allows for current or modeled scenario conditions to be applied consistently to better understand the impact of water diversion or return at each individual diversion location across East Maui (*see also the information on grouping basins for model evaluation in the next section*).



Following the data aggregation process, we manually extracted the appropriate relationships among basins, watersheds, and nodes. We recorded the upstream and downstream basins and their associated nodes for every basin in East Maui from the GIS. Once we had compiled this dataset from the GIS, we next wrote two equations for every basin: one to calculate the habitat available in each basin, and one to calculate the amount of water found in each basin, both of which incorporated relationships from adjoining basins. We used these equations to model the effects of differing diversion rates on the habitat, biomass production, and water output of the EMI Aqueduct System.

### Modeling Habitat and Water Production

We calculated the amount of available habitat in a basin for a specific species as:

$$\text{Habitat}_{E(i)} = (\text{Habitat}_{SP(i)} * \text{Node}_{DS(i)}) * (\text{Habitat}_{SP(i-1)} * \text{Node}_{US(i-1)}) * (\text{Habitat}_{SP(i-2)} * \text{Node}_{US(i-2)}) \dots + (\text{Habitat}_{SP(i+1)} * \text{Node}_{US(i)}) + (\text{Habitat}_{SP(i+2)} * \text{Node}_{DS(i+1)}) \dots + (\text{Habitat}_{SP(i-N)} * \text{Node}_{US(i-N)})$$

Where:

- $i$  = the current basin
- $i - 1$  = the basin downstream of the current basin
- $i + 1$  = the basin immediately upstream of the current basin
- $\text{Habitat}_{SP(i)}$  = the measured habitat for a species in the current basin
- $\text{Habitat}_{E(i)}$  = the total affected habitat of the current node, accounting for upstream and downstream influences
- $\text{Node}_{DS(i)}$  = the filtering value for the node at the downstream end of the current basin
- $\text{Node}_{US(i)}$  = the filtering value for the node at the upstream end of the current basin
- $N$  = number of basins upstream or downstream of the current basin

In this model, the same node was the downstream node for the basin  $i+1$ , and therefore its downstream entrainment, diversion, etc., values were applied, or the upstream node for basin  $i$ , and so the values for the upstream direction were used.

To model the impacts of the node system on the water available in each node, and to account for the amount of water captured from the system under different management regimes, we also wrote equations for each basin. The equations to calculate the amount of water present in each basin (and its inverse, the amount of water captured from each basin) followed the form:

$$\text{Water}_{E(i)} = \text{Water}_i + (\text{Water}_{(i+1)} * \text{Node}_{US(i)}).$$

Where:

- $\text{Water}_i$  = amount of water present in the current basin
- $\text{Water}_{E(i)}$  = amount of water effected by upstream node

In this application, the Node<sub>US</sub> value is an atomic vector modeling for the percent of water passed from the adjacent upstream basin to the current basin through the diversion separating them.

The inputs required to model the habitat and affiliated production of freshwater species of interest of the East Maui system were the estimates of available habitat for each basin, a matrix of up- and downstream effects of each node, and any additional grouping variables for the outputs. To similarly model the water produced/retained in the system, the only inputs required are measures of the amount of water available in each basin (e.g., mean annual rainfall or mean annual flow, etc.) and the percentage of downstream water diversion of each node. The model results in both cases are aggregated by a grouping variable, so the outputs can be tailored to demonstrate impacts of management actions on an unlimited variety of arrangements of the basins in East Maui. For example, the results of the modeling on changes in habitat availability among the cases of full diversion, no diversion, and any intermediate case can be reported variously by watershed, species of interest, irrigation grouping, lease grouping, or other categorizations as assigned to the basins and watersheds by stakeholders.

## RESULTS

### GENERAL WATERSHED and BASIN DESCRIPTION

For consistency with other EIS reports and the CWRM IIFS D&O, TRUTTA was provided the following information regarding the stream names, License Area, and inclusion in the 2018 IIFS by the Wilson Okamoto Corporation.

The

Table 2 below lists streams considered to be within the License Area as presented in Table 1-2 in the EIS Preparation Notice (EISPN) dated February 2017. This table was prepared prior to the CWRM IIFS Decision and Order (D&O) issued on June 20, 2018. The table lists a total of 40 items, 39 of which are considered streams and one (1) of which is a waterfall (Waikani). In contrast, the CWRM IIFS D&O specified 36 streams in the License Area.

For purposes of the report, the IIFS D&O listing of streams and nomenclature will be used. The table below is a reconciliation of the EISPN table with the CWRM D&O listing. The items in bold are those that differ in some way from the CWRM IIFS D&O. The bolded items are explained in the Notes column.

Table 2: Comparison of EISPN and CWRM D&O Stream Lists

| Table 1-2: License Area Streams (in ESPN February 2017) |     |                                |  |               |
|---|-----|--------------------------------|--|---------------|
| License Area  | No. | Stream Name                    | Notes: Reconciliation with CWRM East Maui IIFS D&O                                     | Revised Count |
| Nāhiku  | 1   | Makapipi                       |  | 1             |
| Nāhiku  | 2   | Hanawī                         |  | 2             |
| Nāhiku  | 3   | Kapā‘ula                       |  | 3             |
| Ke‘anae   | 4   | Wai‘aka                        | Referenced “Waia‘aka” per D&O  | 4             |
| Ke‘anae   | 5   | Pa‘akea                        |  | 5             |
| Ke‘anae   | 6   | <b>Puakea</b>                  | The CWRM D&O did not mention this stream   |               |
| Ke‘anae   | 7   | Waiohue                        |  | 6             |
| Ke‘anae   | 8   | <b>Puaka‘a</b>                 | Referenced as “Kopili‘ula (Pua‘aka‘a tributary) per D&O                                |               |
| Ke‘anae   | 9   | Kopili‘ula                     |  | 7             |
| Ke‘anae   | 10  | East Wailuā-iki                |  | 8             |
| Ke‘anae   | 11  | West Wailuā-iki                |  | 9             |
| Ke‘anae   | 12  | <b>East and West Wailuānui</b> | Referenced “Wailuānui” per D&O   | 10            |
| Ke‘anae   | 13  | <b>Waikani</b>                 | Waikani is a waterfall, not a stream; combined with Wailuānui above                    |               |
| Ke‘anae   | 14  | Kualani                        | Referenced as “Kualani (or Hāmau)” per D&O   | 11            |
| Ke‘anae   | 15  | Waiokamilo                     |  | 12            |
| Ke‘anae   | 16  | <b>Palauhulu</b>               | Transposed sequence with Ohia (or Wainu) below   | 14            |
| Ke‘anae   | 17  | <b>Waianu/‘Ōhi‘a</b>           | Referenced as “Ohia (or Waianu)” per D&O and, transposed sequence with Palauhulu above | 13            |
| <b>Honomanū</b>   | 18  | Pi‘ina‘au                      | EISPN noted Pi‘ina‘au in the Honomanu License Area; D&O has it in Ke‘anae License Area | 15            |
| Honomanū  | 19  | Nua‘ailua                      |  | 16            |
| Honomanū  | 20  | Honomanū                       |  | 17            |
| Honomanū  | 21  | Kōlea/Punala‘u                 |  | 18            |
| Honomanū  | 22  | Ha‘ipua‘ena                    |  | 19            |
| Huelo   | 23  | Puohokamoa                     |  | 20            |
| Huelo   | 24  | Wahinepe‘e                     |  | 21            |

|       |    |                                     |   |    |
|-------|----|-------------------------------------|---|----|
| Huelo | 25 | <b>Alo</b>                          | Combined with Waikamoi below as a tributary                                   |    |
| Huelo | 26 | Waikamoi                            | Referenced as “Waikamoi (Alo tributary)” per D&O                              | 22 |
| Huelo | 27 | Kōlea                               |   | 23 |
| Huelo | 28 | Punalu‘u                            |   | 24 |
| Huelo | 29 | Ka‘aiea                             |   | 25 |
| Huelo | 30 | ‘O‘opuola                           | Referenced as “‘O‘opuola (Makanali tributary)” per D&O                        | 26 |
| Huelo | 31 | Puehu                               |   | 27 |
| Huelo | 32 | Nailiilihaele                       | Nā‘ili‘ilihaele (diacritical markings added)                                  | 28 |
| Huelo | 33 | Kailua/Ohanui                       |   | 29 |
| Huelo | 34 | <b>Hanauana</b>                     | Referenced as “Hanahana (Ohanui tributary)” per D&O.                          | 30 |
| Huelo | 35 | Hoalua                              |   | 31 |
| Huelo | 36 | <b>Pualoa/Hanehoi</b>               | Referenced as “Hanehoi (Huelo (also known as Puolua) tributary)” per D&O      | 32 |
| Huelo | 37 | Waipi‘o                             |   | 33 |
| Huelo | 38 | Mokupapa                            |   | 34 |
| Huelo | 39 | <b>Ho‘olawa-Li‘ili/Ho‘olawa-Nui</b> | Referenced as “Ho‘olawa (Ho‘olawa ‘ili and Ho‘olawa nui tributaries)” per D&O | 35 |
| Huelo | 40 | Honopou                             | Referenced as “Honopou (Puniawa tributary)” per D&O                           | 36 |

### **IIFS D&O Table**

Table 1-2 in the EISPN also indicated which of the listed streams were subject to the IIFS. The Table 3 below indicates which of the 36 streams are subject to the IIFS and also shows what the D&O requires relative to its Restoration, Median Base Flow and the Location for the IIFS (combination of what is listed in the Findings of Fact, item 58 (page 17) and D&O item h (page 268)).

Table 3: License Area streams subject to IIFS with type, amount and locations of IIFS flow restoration.

| Streams in the License Area |               |             |                 |                    |                                |                              |
|-----------------------------|---------------|-------------|-----------------|--------------------|--------------------------------|------------------------------|
| License Area                | Stream Number | Stream Name | Subject to IIFS | Restoration Status | Median Base Flow at IIFS (cfs) | IIFS Location                |
| <b>Nāhiku License Area</b>  | 1             | Makapipi    | Yes             | Full               | 1.3                            | Above Hana Highway           |
|                             | 2             | Hanawī      | Yes             | Connectivity       | 4.6                            | Below Hana Highway           |
|                             | 3             | Kapā‘ula    | Yes             | Connectivity       | 2.8                            | On Diversion at Koolau Ditch |
| <b>Ke‘anae License Area</b> | 4             | Waiaaka     | Yes             | None               | 0.77                           | Above Hana Highway           |
|                             | 5             | Pa‘akea     | Yes             | Connectivity       | 0.9                            | At Hana Highway              |

|                              |    |  |     |                      |   |                                 |
|------------------------------|----|--|-----|----------------------|---|---------------------------------|
|                              | 6  | Puakea   | No  | None                 | N/A   | N/A                             |
|                              | 7  | Waiohue  | Yes | Full                 | 5   | At Hana Highway                 |
|                              | 8  | Kopili‘ula                                     | Yes | Limited              | H90 (64% of the Median Base Flow) (For Habitat Restoration) | Below Hana Highway              |
|                              | 8A | Puaaka‘a Tributary                             | Yes | Connectivity         | 1.1   | Above Hana Highway              |
|                              | 9  | East Wailuāiki                                 | Yes | Limited              | H90 (64% of the Median Base Flow) (For Habitat Restoration) | At Hana Highway                 |
|                              | 10 | West Wailuāiki                                 | Yes | Full                 | 6   | Above Hana Highway              |
|                              | 11 | Wailuānui (Waikani Waterfall)                  | Yes | Full                 | 6.1   | At Hana Highway                 |
|                              | 12 | Kualani (or Hāmau) (Below Ditch System)        | Yes | N/A (Never Diverted) | N/A   | N/A                             |
|                              | 13 | Waiokamilo                                     | Yes | Full                 | 3.9   | Below Diversion at Koolau Ditch |
|                              | 14 | ‘Ōhi‘a (or Waianu) (Below Ditch System)        | Yes | N/A (Never Diverted) | 4.7   | N/A                             |
|                              | 15 | Palauhulu (Hauoli Wahine and Kano Tributaries) | Yes | Full                 | 11  | Above Hana Highway              |
|                              | 16 | Pi‘inaau                                       | Yes | Full                 | 14  | Above Hana Highway              |
| <b>Honomanū License Area</b> | 17 | Nua‘ailua                                      | Yes | Connectivity         | 0.28  | TBD                             |
|                              | 18 | Honomanū                                       | Yes | Limited              | H90 (64% of the Median Base Flow) (For Habitat Restoration) | Above Hana Highway              |
|                              | 19 | Punala‘u (Kōlea and Ulunui Tributaries)        | Yes | Limited              | H90 (64% of the Median Base Flow) (For Habitat Restoration) | Above Hana Highway              |
|                              | 20 | Ha‘ipua‘ena                                    | Yes | Connectivity         | 4.9   | Below Hana Highway              |
| <b>Huelo License Area</b>    | 21 | Puohokamoa                                     | Yes | Connectivity         | 8.4   | Below Hana Highway              |
|                              | 22 | Wahinepe‘e                                     | Yes | None                 | 0.9   | Above Hana                      |

|     |  |     |         |   | Highway                              |
|-----|--|-----|---------|---|--------------------------------------|
| 23  | Waikamoi (Alo Tributary)   | Yes | Limited | H90 (64% of the Median Base Flow) (For Habitat Restoration) | Above Hana Highway                   |
| 24  | Kōlea  | No  | None    | N/A   | N/A                                  |
| 25  | Punalu'u   | No  | None    | N/A   | N/A                                  |
| 26  | Ka'aiea  | No  | None    | N/A   | N/A                                  |
| 27  | ‘O‘opuola (Makanali Tributary)                                   | No  | None    | N/A   | N/A                                  |
| 28  | Puehu  | No  | None    | N/A   | N/A                                  |
| 29  | Nā‘ili‘ilihaele  | No  | None    | N/A   | N/A                                  |
| 30  | Kailua   | No  | None    | N/A   | N/A                                  |
| 31  | Hanahana (Ohanui Tributary – also known as Hanawana and Hanauna) | No  | None    | N/A   | N/A                                  |
| 32  | Hoalua   | No  | None    | N/A   | N/A                                  |
| 33  | Hanehoi  | Yes | Full    | 2.54  | Upstream of Lowrie Ditch             |
| 33A | Huelo (also known as Puolua) Tributary                           | Yes | Full    | 1.47  | (Downstream of Haiku Ditch at Huelo) |
| 34  | Waipi‘o  | No  | None    | N/A   | N/A                                  |
| 35  | Mokupapa   | No  | None    | N/A   | N/A                                  |
| 36  | Ho‘olawa (Ho‘olawa ili and Ho‘olawa nui Tributaries)             | No  | None    | N/A   | N/A                                  |
| 37  | Honopou (Puniawa Tributary)                                      | Yes | Full    | 6.5   | Below Hana Highway                   |

\*Some of these streams may be identified by other names. The listed names are based on the June 20, 2018 CWRM D&O identified by CWRM and the State Office of Planning's GIS data

\*H<sub>90</sub> is 64% of the median base flow at that stream. These streams are for habitat restoration

\*cfs – Cubic Feet per Second, the IIFS numeric flow rate at the IIFS location.

\* Diacritical marks (shown in table) will not be used in report due to difficult with inclusion in modeling and analysis software and electronic distribution of the report.



While the HSHEP model follows the naming and numbering conventions, several additional changes were made to the stream list. The changes were as follows:

Watershed 11: Kualani Stream and Watershed 13: Ohia Stream have Habitat Units set to 0 as these streams were not diverted by the EMI Aqueduct System. In reality, they may have some habitat units, but the habitat units will not vary under any scenario as they are not diverted, so they were excluded from analysis. The use of 0 allows them to be included in the tables but not influence total habitat units associated with the diversion scenarios. Habitat Units could be calculated for these streams, but since these streams were unrelated to stream diversions it was uninformative to do so.

Watershed 14: Palauhulu is included within Watershed 15: Piinaau Stream. Palauhulu is a tributary of Piinaau Stream. The HSHEP model defines a stream and its watershed to have a single outlet to the ocean. While internal stream system calculations can be determined for any tributary within the model, both Piinaau Stream and Palauhulu tributary were classified as Full flow Restoration streams so combining or splitting the results would not change any of the total values in the different scenarios. Thus, only Watershed 15: Piinaau Stream was included in the results.

For the East Maui HSHEP model, we delineated all watersheds (full-stream watershed) (Figure 12) and basins (sub-watershed upstream of a model node) in the East Maui region from Makapipi Stream to Honopou Stream. This resulted in 33 watersheds (coded 1 to 36 without Kualani and Ohia streams and with Palauhulu combined with Piinaau Stream) and each watershed and basin were given a unique Identification Number and its position within each stream network defined. Network position defines which other basins are upstream and downstream of each individual basin. The network position allows the accumulation of basin attributes (water, habitat, etc.) in an upstream or downstream direction. The model nodes were major or minor stream diversions associated with EMI Aqueduct System, sinks or springs, and stream mouths.

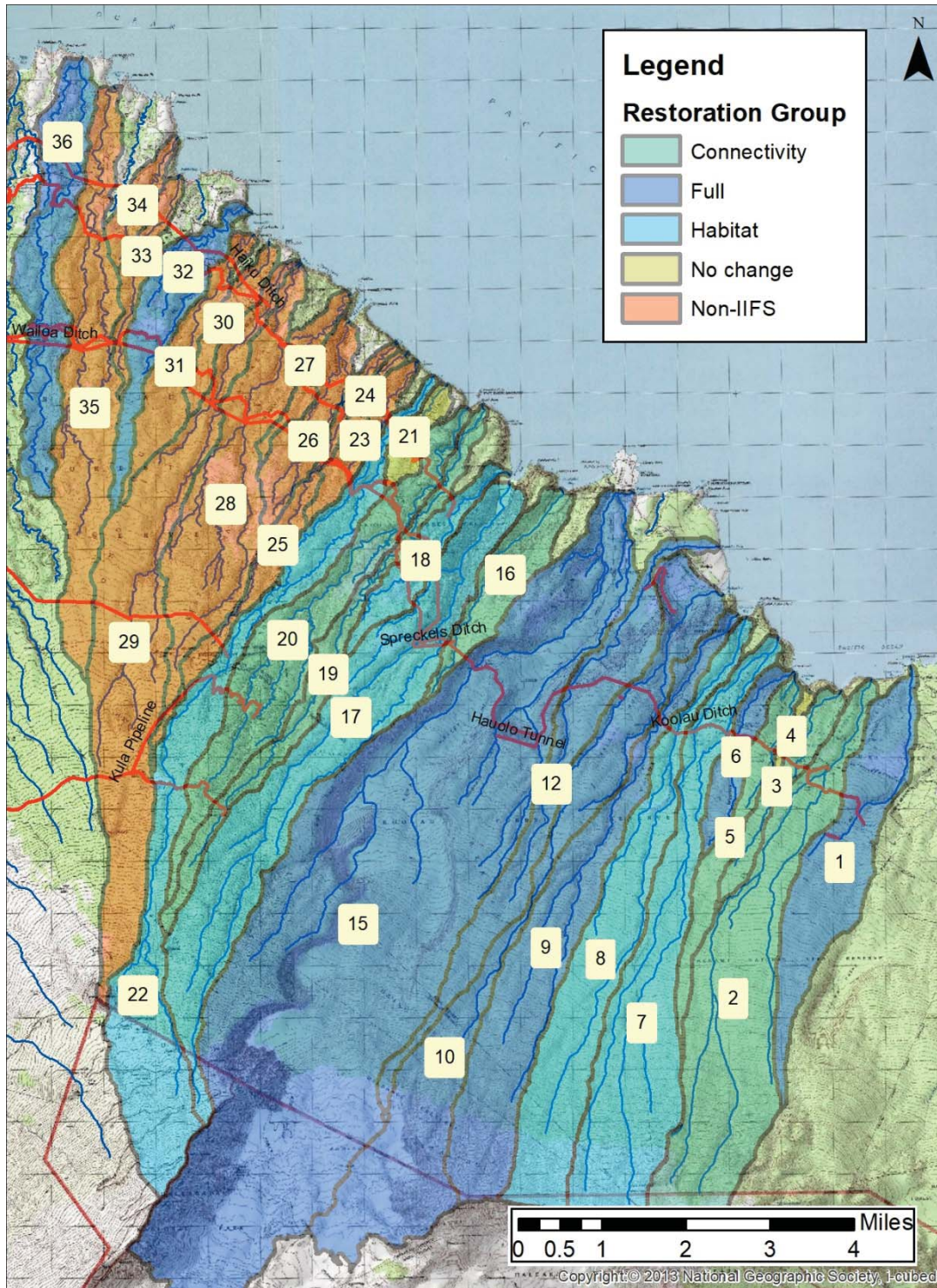


Figure 12: Watersheds within the East Maui HSHEP model. Watersheds are polygons outlined with gray line, numbers correspond to stream ID numbers in License Area stream table, blue lines are streams, red line are diversion ditches and colored refer to IIFS flow restoration status.

## DEFINING BASELINE CONDITIONS

A fundamental consideration for developing the HSHEP model for East Maui was the quantification of outer boundary conditions. In the broadest sense, the upper boundary for the model was considered natural undiverted flow throughout the system. This was not necessarily a management scenario, but rather a maximum habitat bounding condition in which management options cannot improve instream habitat for stream species. The lower boundary was full diversion as existed under sugar cultivation which was the prevailing conditions for over 100 years. Two areas of information were needed to estimate the amount of stream habitat present under the boundary conditions: (1) the distribution of suitable habitat and (2) the amount of water in each stream segment. The distribution of suitable habitat came from the HSHEP model which considers watershed and reach characteristics that define the extent of habitat within a stream. The amount of water in each stream segment helps define the size of the stream which influences the amount of habitat.

While habitat and water quantity are all that was needed to determine upper and lower boundary conditions, to effectively model management scenarios additional information associated with the diversion locations was required. Table 4 shows survey dates and streams and Appendix 1 contains the specific results of field surveys completed in proximity of 35 diversions in the East Maui ditch system. We combined the survey information, diversion pictures, and diversion registration information, to create an assessment of all the diversions in the East Maui system with respect to their impact to habitat, entrainment and passage for the amphidromous stream animals. The diversions, springs, sinks, and stream mouths were represented by the nodes in the HSHEP model. Each node was linked to a table determining the condition and its effects at that location. For the baseline condition, all diversion nodes were set to no impact (no water diversion and no habitat, entrainment, or passage effect). The following sections more fully describe the habitat, water quantity and diversion results.

Table 4: Date and Location of field surveys to support the HSHEP modeling of the East Maui Streams. Full results can be found in Appendix 1.

| Date     | Location | Description |
|----------|----------|-------------|
| 10/10/17 | Kailua   | Site Survey |
| 10/10/17 | Kailua   | Site Survey |
| 10/11/17 | Waikamoi | Site Survey |
| 10/11/17 | Kolea    | Site Survey |
| 10/12/17 | Makapipi | Site Survey |
| 10/12/17 | Hanawi   | Site Survey |
| 10/12/17 | Hanawi   | Site Survey |

|          |                        |             |
|----------|------------------------|-------------|
| 10/14/17 | W. Kopiliula           | Site Survey |
| 10/18/17 | Waiohue                | Site Survey |
| 10/18/17 | E.Kopiliula            | Site Survey |
| 10/19/17 | Banana Intake          | Site Survey |
| 10/19/17 | E. Honomanu            | Site Survey |
| 10/19/17 | Honomanu               | Site Survey |
| 10/19/17 | W. Honomanu            | Site Survey |
| 10/19/17 | Ulinui                 | Site Survey |
| 10/19/17 | Kolea                  | Site Survey |
| 10/20/17 | Alo                    | Site Survey |
| 10/20/17 | Waikamoi               | Site Survey |
| 10/20/17 | Alo                    | Site Survey |
| 10/22/17 | Kaaie                  | Site Survey |
| 10/22/17 | Makanali               | Site Survey |
| 10/22/17 | Oopuola                | Site Survey |
| 10/22/17 | Hoolawa                | Site Survey |
| 10/22/17 | Nailiilihaele          | Site Survey |
| 10/22/17 | Nailiilihaele          | Site Survey |
| 10/23/17 | Puohokamoa @ Koolau    | Site Survey |
| 10/23/17 | E. Puohokamoa          | Site Survey |
| 10/23/17 | W. Puohokamoa          | Site Survey |
| 10/23/17 | Puohokamoa @ Spreckles | Site Survey |
| 10/23/17 | Waikamoi               | Site Survey |
| 10/27/17 | Paakea                 | Site Survey |
| 10/27/17 | Puakea                 | Site Survey |
| 10/27/17 | Piinaau                | Site Survey |
| 10/30/17 | Kapaula                | Site Survey |



10/30/17

Kapaula

Site Survey

## HABITAT QUANTIFICATION

The multi-spatial assessment of instream habitat for native amphidromous species used base data, modeling processes, and suitability criteria as close as possible to the information reported in:

Parham, J.E., G.R. Higashi, R.T. Nishimoto, S. Hau, D.G.K. Kuamo'o, L.K. Nishiura, T.S. Sakihara, T.E. Shimoda and T.T. Shindo. 2009. The Use of Hawaiian Stream Habitat Evaluation Procedure to Provide Biological Resource Assessment in Support of Instream Flow Standards for East Maui Streams. Division of Aquatic Resources and Bishop Museum. Honolulu, HI. 104 p.

The majority of the habitat quantification in this report was the same as the habitat quantification for the prior HSHEP model created in conjunction with the Division of Aquatic Resources biologists. Differences between this 2018 East Maui HSHEP model and the past 2009 East Maui HSHEP model primarily were:

1. Greater Area of Coverage: The 2018 East Maui HSHEP model reported here covered a wider area with a larger number of streams,
2. Larger Number of Diversions: The 2018 East Maui HSHEP model included many more diversions including minor diversions which were not in the 2009 HSHEP model,
3. Larger Number of Basins: The 2018 East Maui HSHEP model included more basins as each diversion requires its own upstream basin.
4. Better Inclusion of Natural Springs and Sinks: The 2018 East Maui HSHEP model included specific locations of springs and sinks with positive or negative impact directly accounted for in the model. The 2009 model did not address springs or sinks except by noting their presence and potential impact on the results.
5. Different estimate of stream discharge: This is likely the largest difference between the two models. The 2009 East Maui HSHEP model addressed major diversion on the main channel only and USGS had published estimates for these locations. The 2018 East Maui HSHEP model used modified regression equations to account for discharge at the many ungaged sites (see next section). These discharge estimates are likely proportionally consistent across the study area, but they may not be as accurate due to the use of the regression equations for basins smaller than developed on and due to use over a wider geographic area.
6. Habitat Units more proportional to stream size: The 2009 East Maui HSHEP model calculated habitat units as a linear measurement and reported it in total meters of habitat units. The 2018 East Maui HSHEP model used the estimates of discharge for each stream segment to provide an area estimate of stream habitat and reported habitat units in square meters. This results in a much more accurate depiction of habitat units within the streams

as large streams are wider and likely hold more habitat than small streams but makes direct comparison of the results incorrect.

As a result, there were differences in the quantification of habitat availability between these two modeling efforts, but it was not primarily the result of different base data or modeling processes but an improvement in estimating habitat units as the modeling is improved over time. The discussed conversion of the HSHEP model from a spreadsheet model to an R programming-based model did not change internal calculations, it only improved the speed and repeatability of the modeling work. Thus, the underlying maps presented in the 2009 East Maui HSHEP report and reproduced here are still valid as a graphic representation of the data (Figure 13 to Figure 20). Appendix 2 shows the breakdown the specific habitat unit quantified for each watershed and all sub-basins for the native amphidromous species.



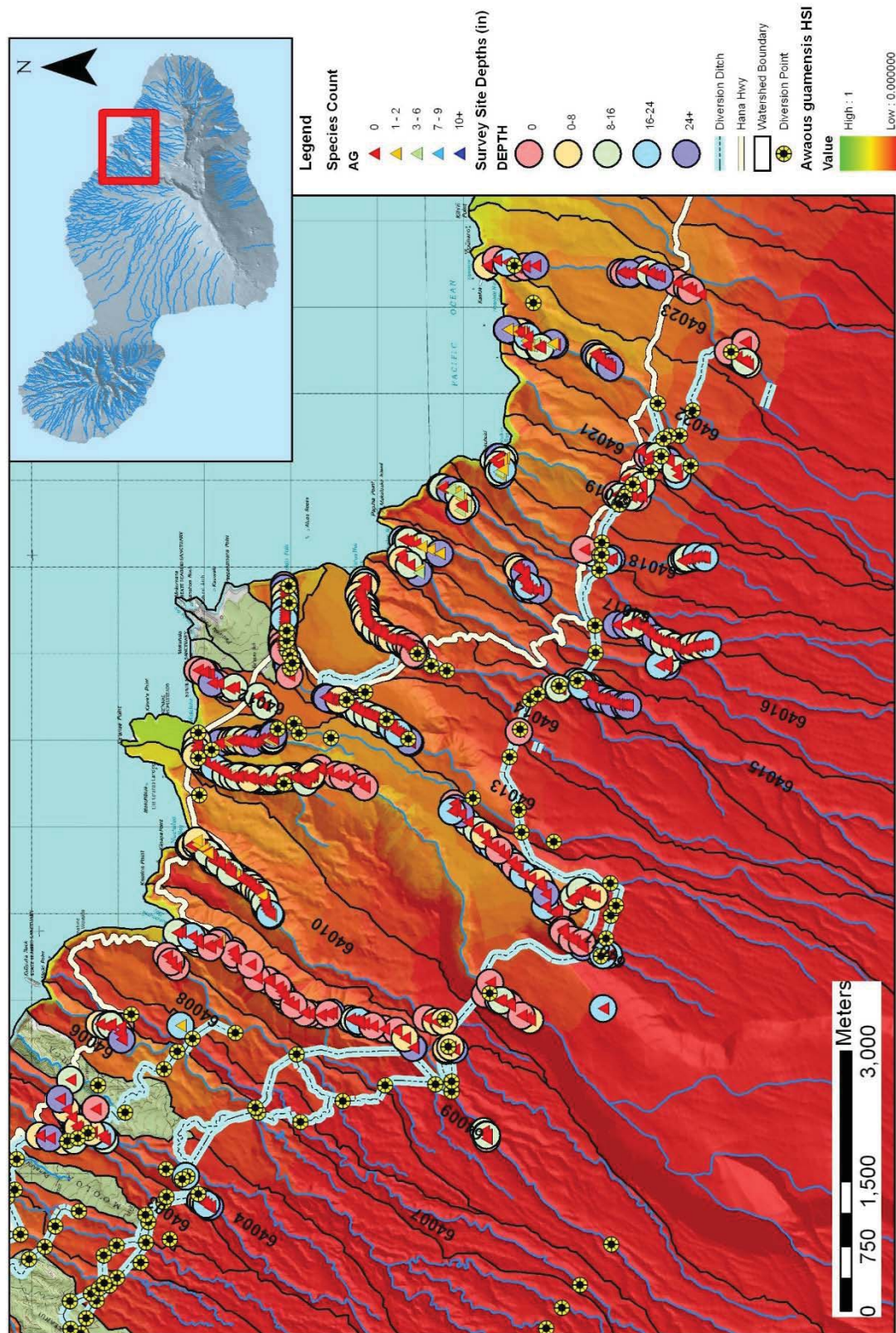


Figure 13: Predicted Habitat Suitability Index (HSI) for Awaous stamenius. Map includes survey site depths and count of Awaous stamenius observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009)



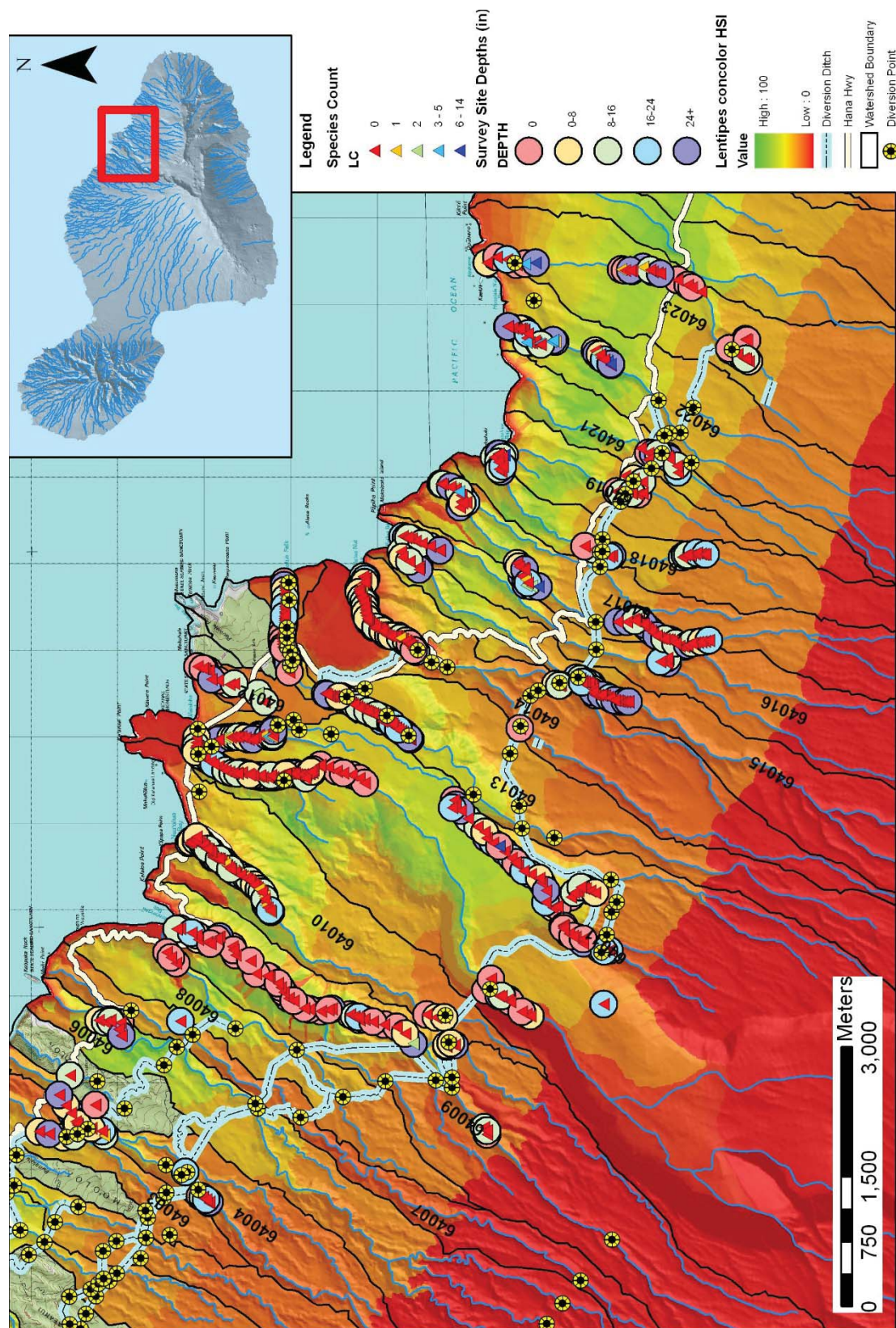


Figure 14: Predicted Habitat Suitability Index (HSI) for *Lentipes concolor*. Map includes survey site depths and count of *Lentipes concolor* observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009)



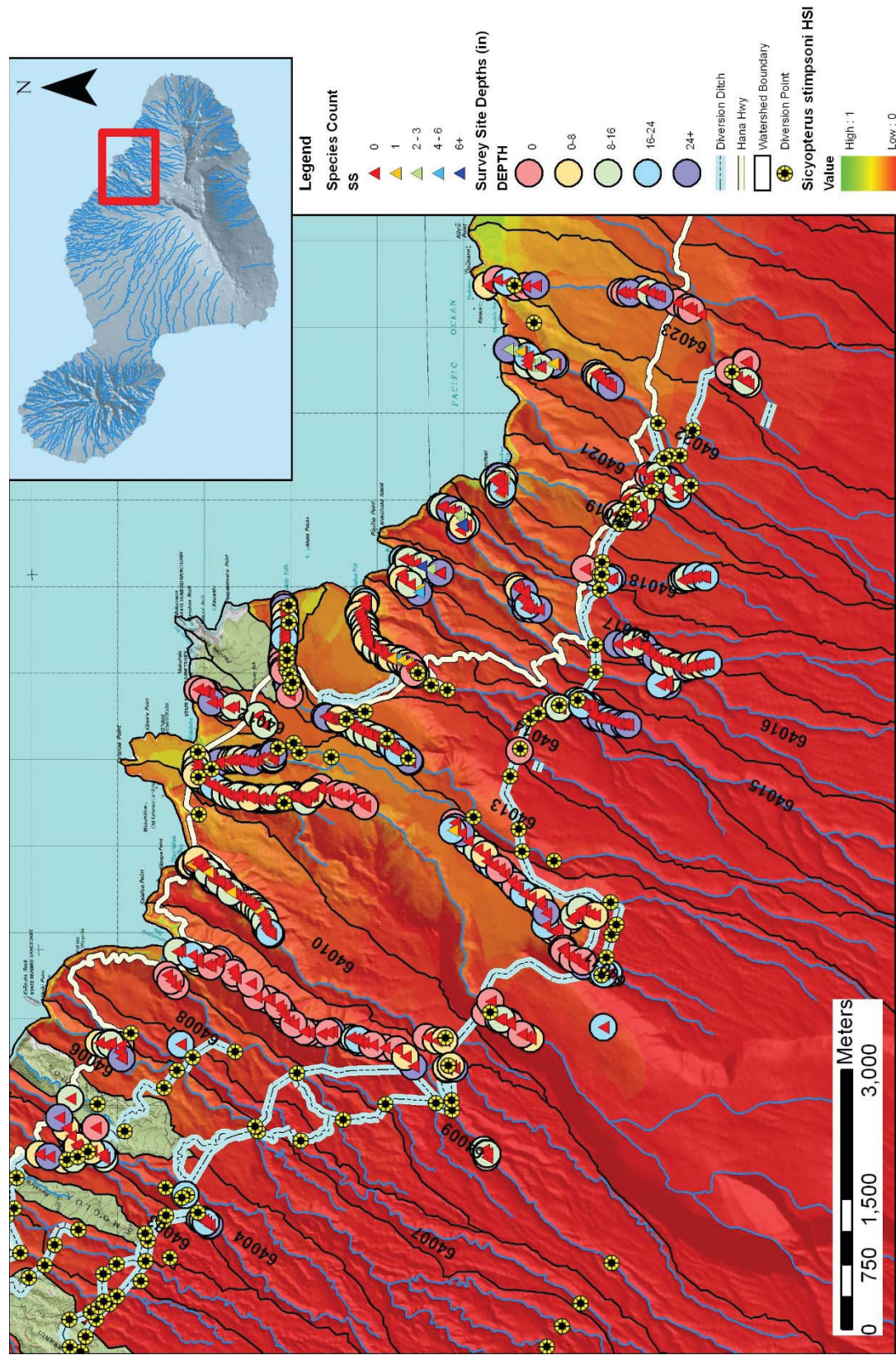


Figure 15: Predicted Habitat Suitability Index (HSI) for *Sicyopterus stimpsoni*. Map includes survey site depths and count of *Sicyopterus stimpsoni* observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009)



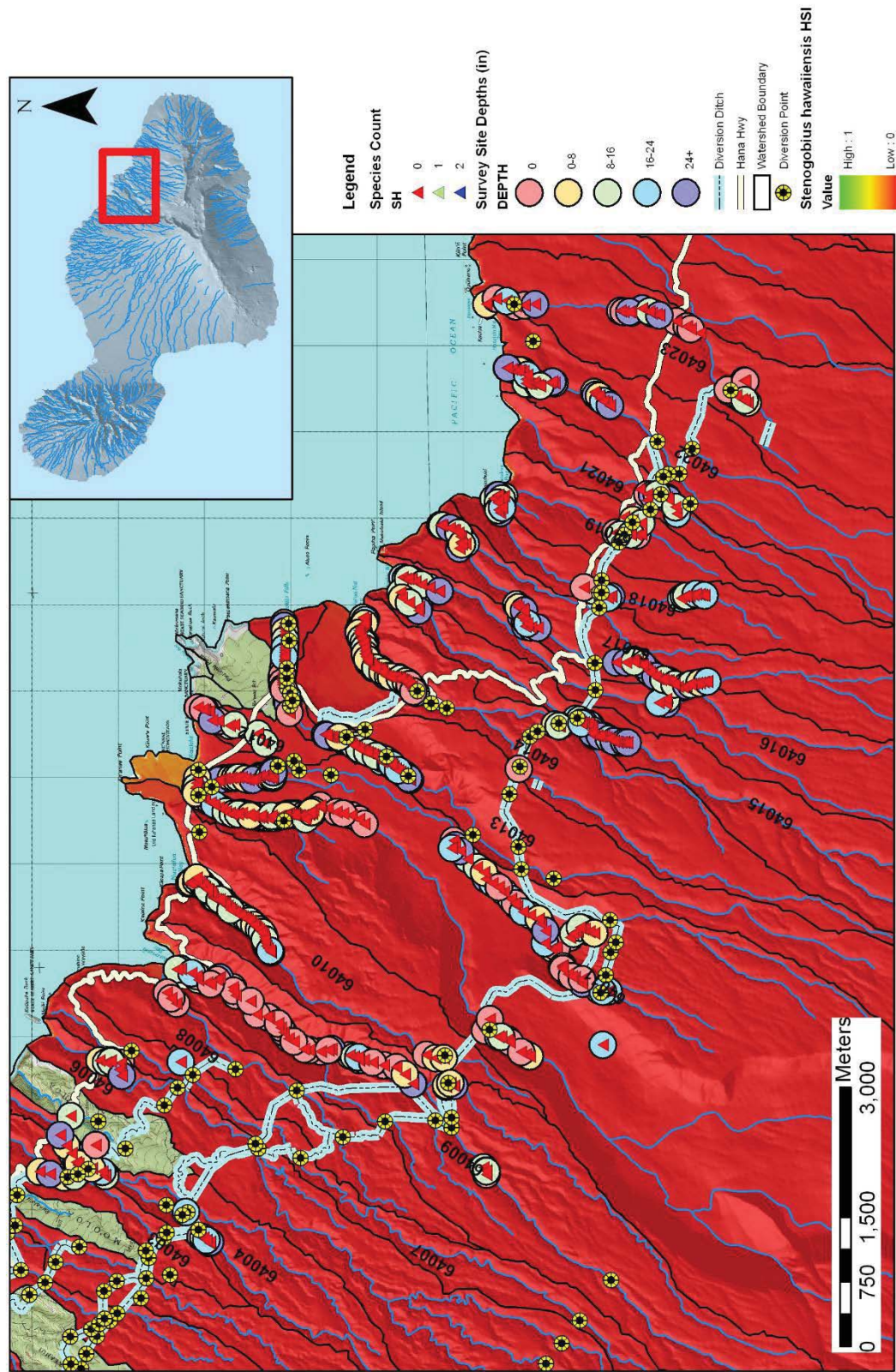


Figure 16: Predicted Habitat Suitability Index (HSI) for *Stenogobius hawaiiensis*. Map includes survey site depths and count of *Stenogobius hawaiiensis* observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009)



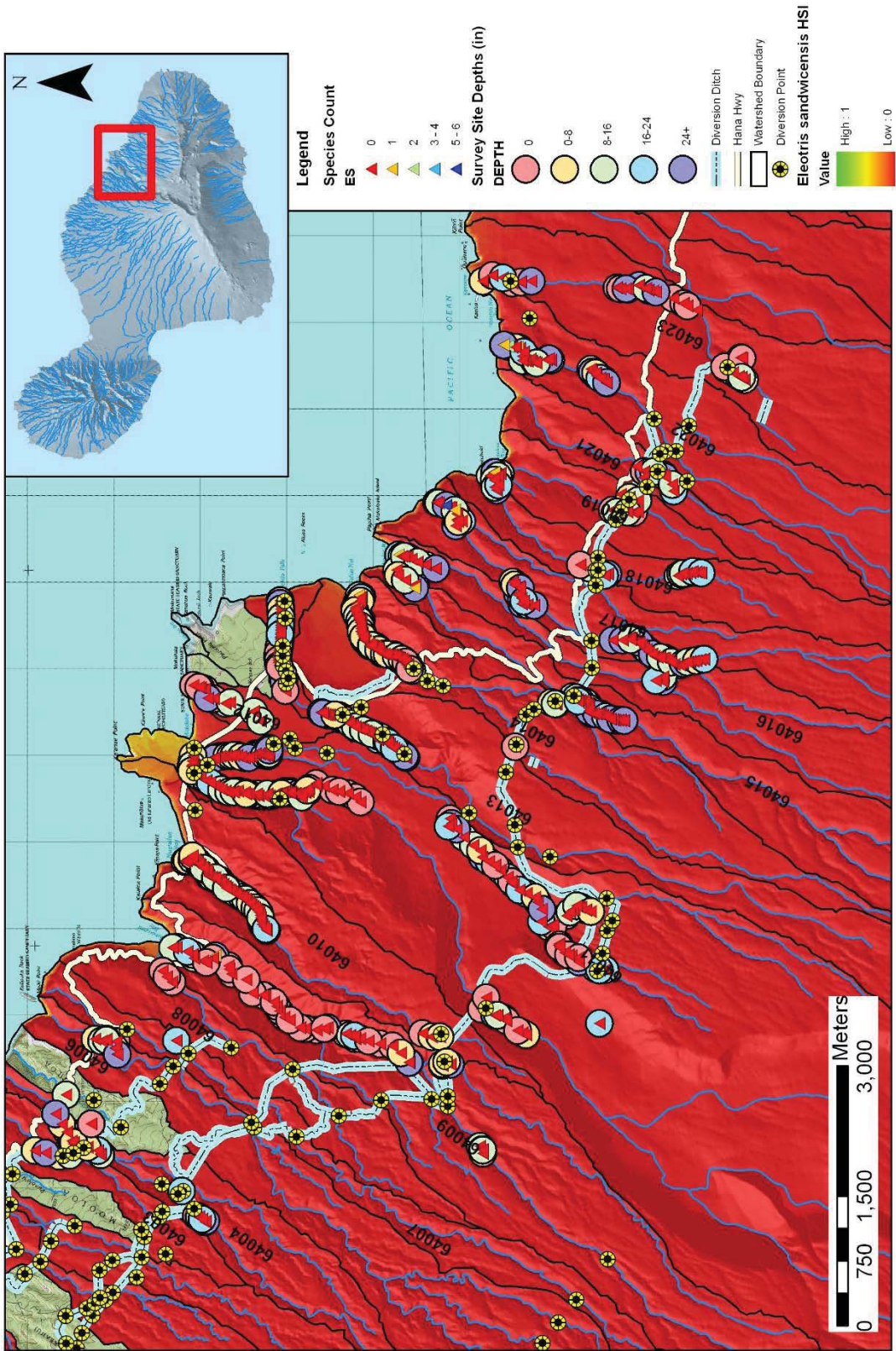


Figure 17: Predicted Habitat Suitability Index (HSI) for *Eleotris sandwicensis*. Map includes survey site depths and count of *Eleotris sandwicensis* observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009)



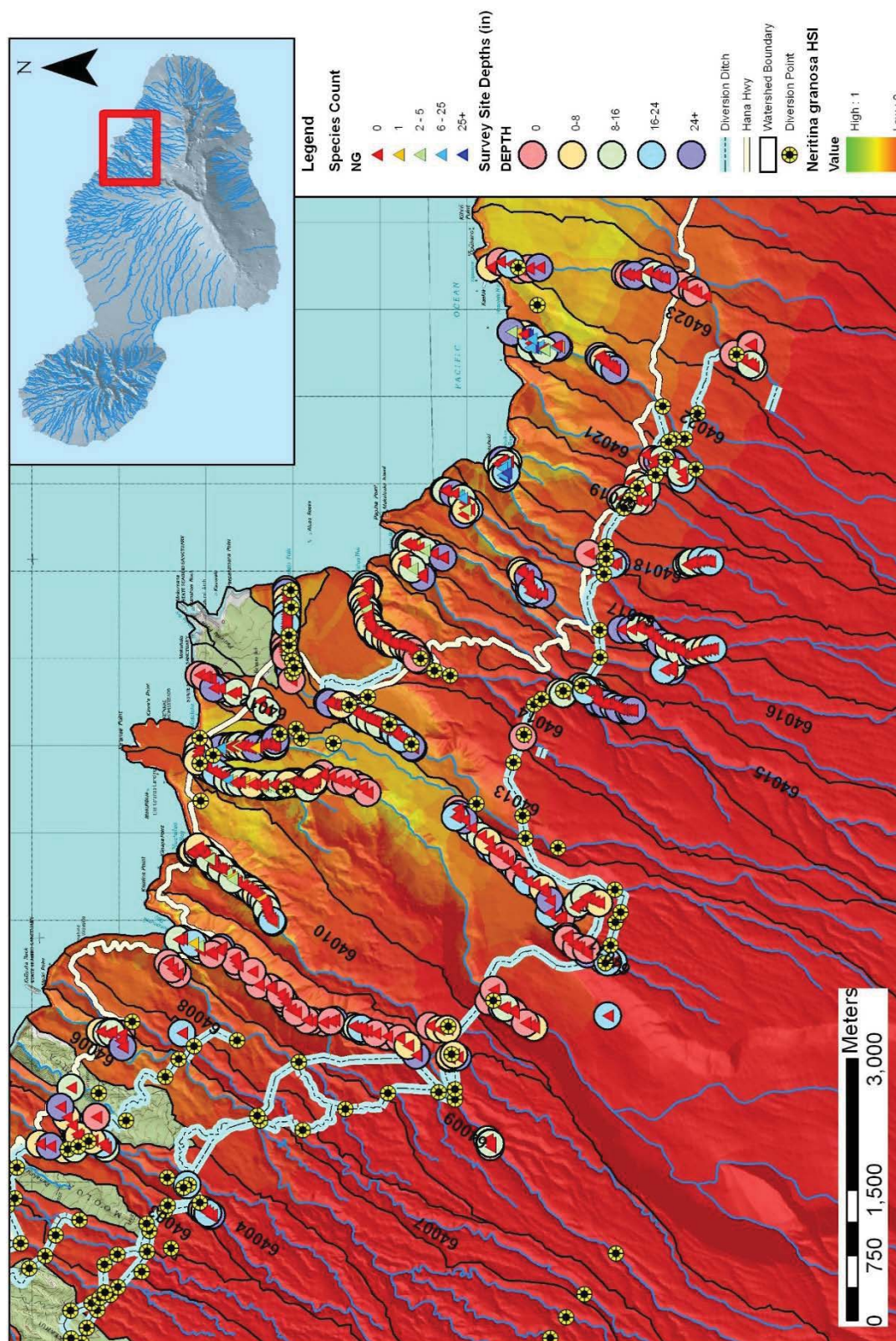


Figure 18: Predicted Habitat Suitability Index (HSI) for *Neritina granosa*. Map includes survey site depths and count of *Neritina granosa* observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009)



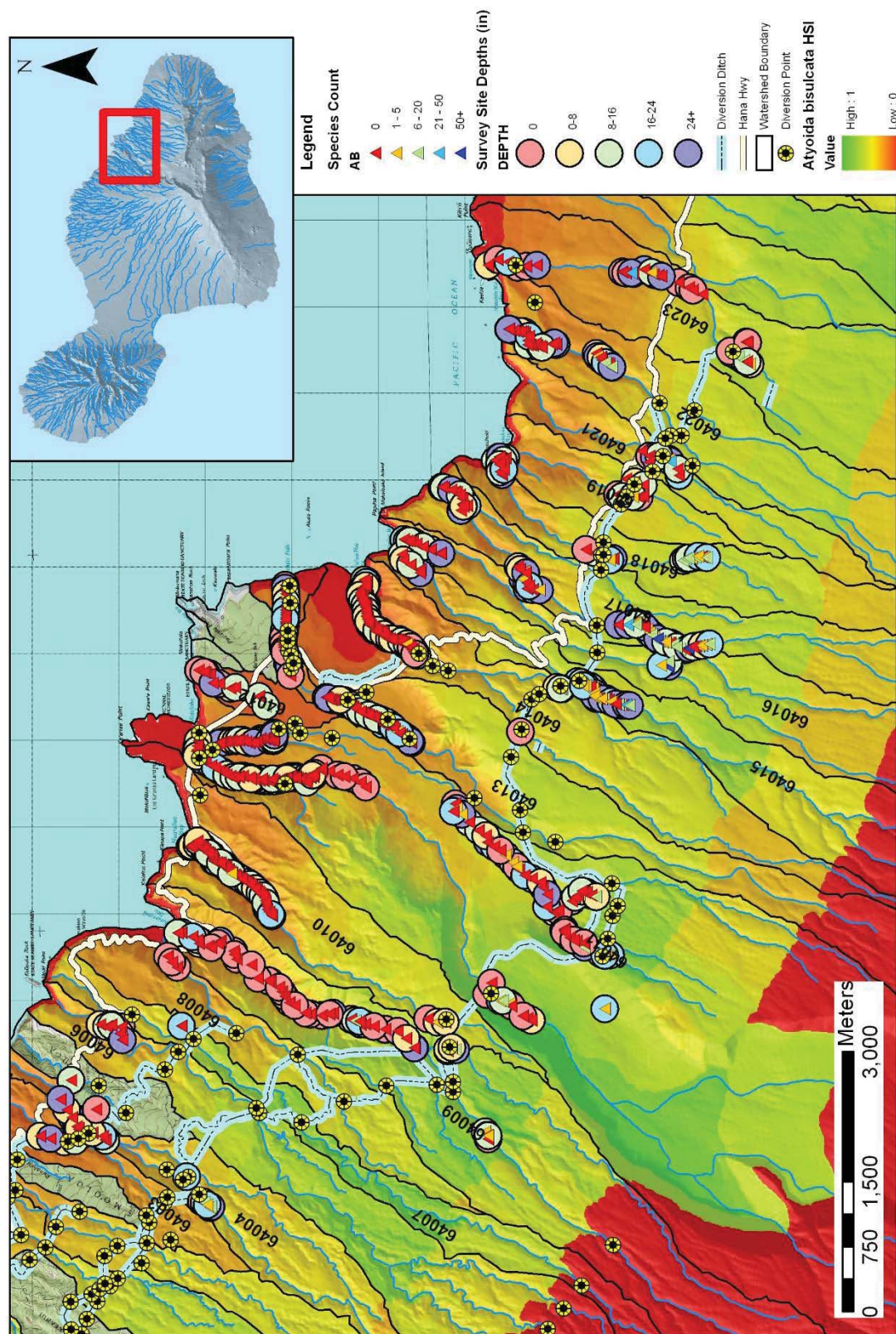


Figure 19: Predicted Habitat Suitability Index (HSI) for *Atyoida bisulcata*. Map includes survey site depths and count of *Atyoida bisulcata* observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009)



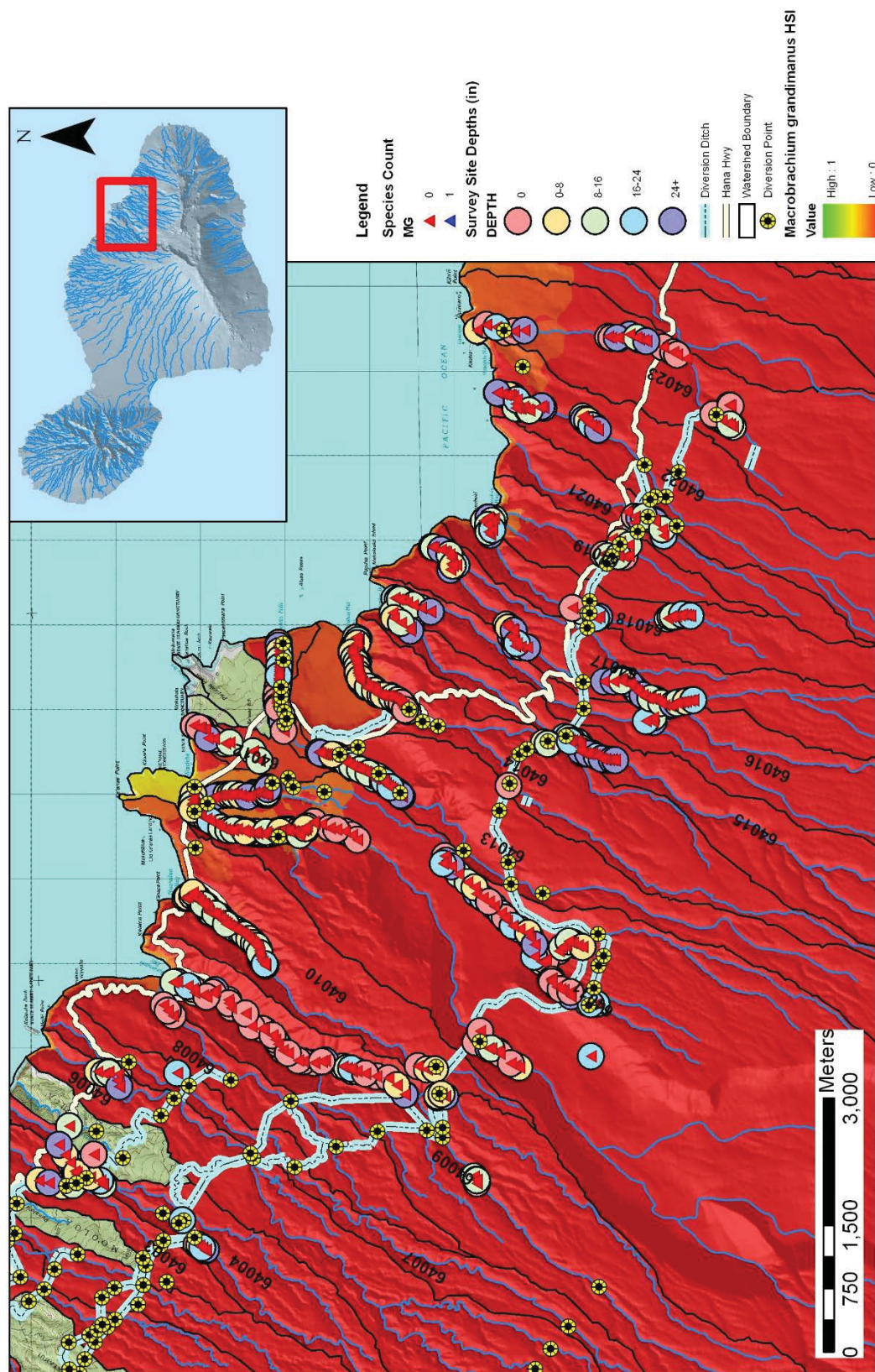


Figure 20: Predicted Habitat Suitability Index (HSI) for *Macrobrachium grandimanus*. Map includes survey site depths and count of *Macrobrachium grandimanus* observed at each site. Diversions, diversion ditches, Hana Highway, and watershed boundaries and codes are included for reference. (from Parham et al. 2009)

## BASEFLOW DISCHARGE CALCULATIONS

As part of the overall effort to determine the amount of habitat for different species within a stream segment, we needed a method to estimate baseflow in ungaged locations. The USGS had reported regression equations created from East Maui streams for the specific purpose of estimating discharge at ungaged locations. Unfortunately, the USGS methods and results could not be re-created exactly due to changes in software and differences in the primary data. The software USGS used is no longer compatible with current GIS software and therefore, could not be used to exactly replicate the calculations. Additionally, the stream segments and upstream basins used in this analysis are not the same as those used for the USGS calculations. The USGS segments and upstream basins were focused on USGS gage locations in the East Maui, while this effort focused on diversion locations. To overcome this problem, TRUTTA recalculated the data inputs and results at shared locations and compared it with the reported results. It is important to remember that this calculation was not done to create a new way to determine the amount of water at any location, but merely as a way to proportionally determine the amount of water coming from ungaged or unreported areas so that the amount of habitat was linked with an estimate of stream discharge at each location.

Twenty-nine sites where the HSHEP and the USGS measurement locations closely matched. At these locations, the rainfall, maximum basin elevation, and basin elongation ratio were recorded from the USGS report and the values were calculated using GIS software (ArcMap 10.2) from the new data set (Figure 21: Map with Rainfall, elevation, and watershed outline (basin elongation ratio) with respect to the East Maui watersheds.). From this new comparative data, TRUTTA recalculated the expected discharge statistic based on the reported regression equations for each location using both the USGS data and our data. This first comparison appeared reasonable, but when these relationships were applied to all the basins in the new East Maui HSHEP model, many of the results for very small basins appeared inaccurate. The original USGS equations were replotted against a range of possible values and highly variable results were observed at the low end of maximum basin elevation and basin elongation ratio equations (Figure 22). This is likely because the USGS data had no small values in their data set and thus the equation was valid only over the range of observed values.

Range cutoffs were placed to eliminate these excessively large values in the extreme conditions and recalculated the discharge relationships between the two data sets. The results appeared consistent for the internal measurements of rainfall, maximum basin elevation and basin elongation ratio as well as the discharge predictions at similar locations (Figure 23). This approach allowed discharge for all of the basins within the HSHEP model to be predicted and have the results scaled appropriately with prior USGS predictions. It also allowed estimates of percent diversion to proportionally impact the overall remaining discharge at all locations downstream as additional stream segments converged and added flow to the stream.



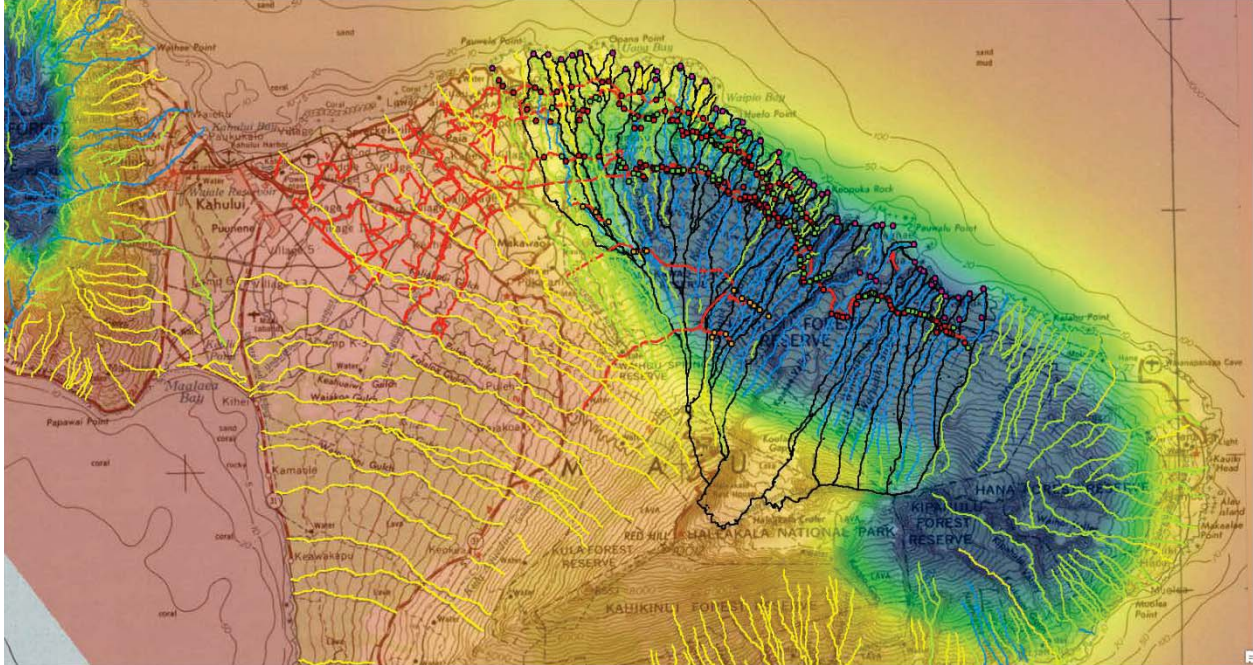


Figure 21: Map with Rainfall, elevation, and watershed outline (basin elongation ratio) with respect to the East Maui watersheds.

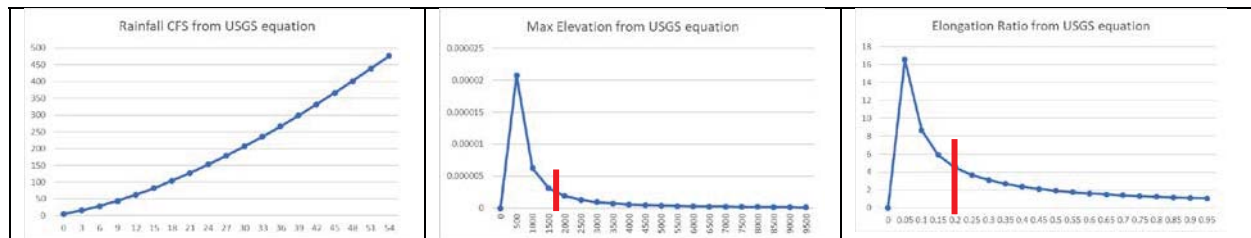
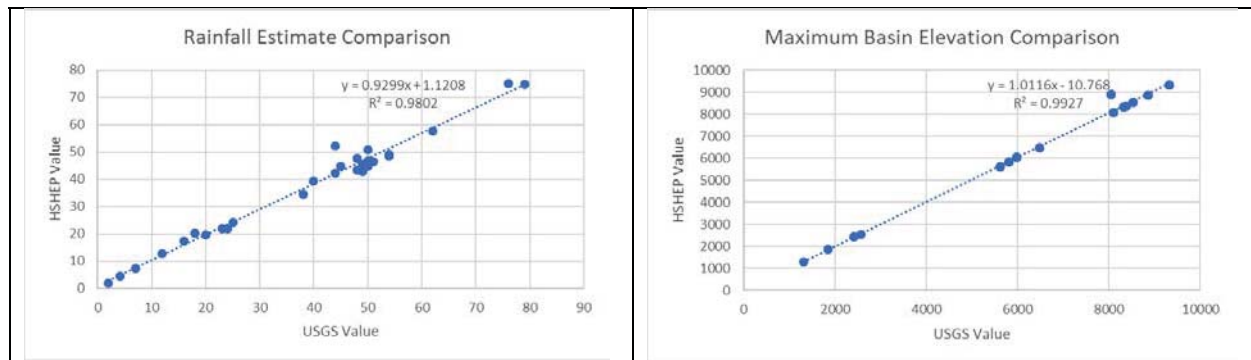


Figure 22: Range of values for variables in USGS discharge regression equation. Cutoff shown in red.



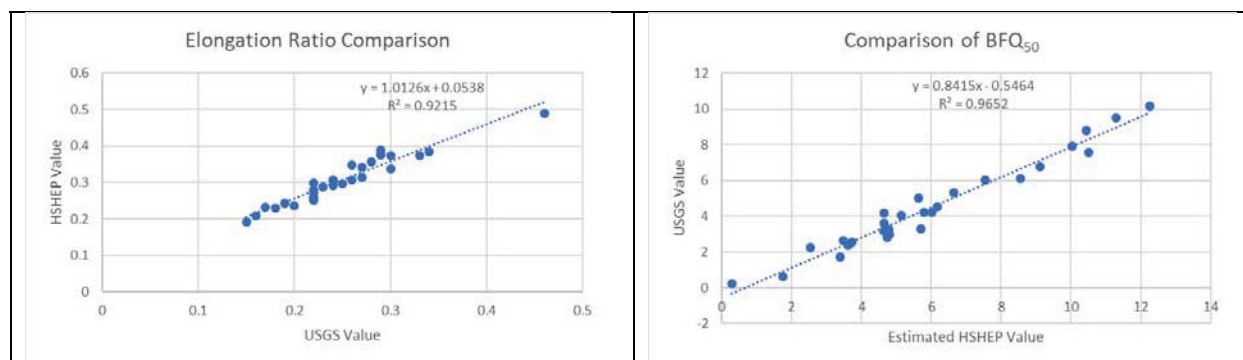


Figure 23: Comparative relationships between HSHEP modeling prediction and USGS regression values for Rainfall, Maximum Basin Elevation, Basin Elongation Ratio and Discharge.

## NODE DESCRIPTIONS

The nodes in the HSHEP model represent points of interest to help better answer the modeling question. For the East Maui HSHEP model most of the nodes are the major or minor diversions associated with the EMI Aqueduct System. There are also nodes at the stream mouth of each stream, major splits between mainstem and tributary streams, or at springs or sinks. Each node has a similar set of attributes associated with it and these include an ID, Name, Type, ditch associated with it, proportion water diverted, proportion water passing, upstream and downstream entrainment, up and downstream barrier, up and downstream habitat impact, and a change in discharge (for springs or sinks). Not all attributes are relevant to all node types and where there is no interaction the node value was set to zero effect. Appendix 2 contains the node and basin values for each of the scenario descriptions below.

## SCENARIO DESCRIPTIONS

1. **Natural Condition:** This was the baseline comparison scenario in which all diversions were modeled as closed with no water diversion and no impact on passage or entrainment of animals. This was the maximum available habitat units predicted.
2. **Full Diversion:** All diversions in this scenario were modeled as fully open or diverting 100% of available low flows. The low flows, roughly analogous to the stream's baseflow, are critical to protecting instream habitat for stream species. The diversions and aqueduct system were built to capture 100% of normal low flow plus some smaller amount of storm runoff. Hawaiian streams are "flashy" where discharge rises quickly in response to rainfall and then quickly falls back to low flow conditions. When low flow conditions persist and overall diversion amounts do not exceed the conveyance capacity of the aqueduct, the streams can be dewatered below the diversions resulting in negative impacts on species habitat and passage. This

scenario was intended to represent the diversion conditions found during sugar cane production.

3. 2018 IIFS: This scenario represented the flow conditions as described in the 2018 Interim Instream Flow Standard (IIFS) which included 24 streams and mandated restoration of flows in all but three streams. Four main types of flow restoration were mandated, including: Full-flow restoration, Habitat-flow restoration, Connectivity-flow restoration, and No-flow restoration. The diversion amount was estimated as available flow after compliance with the 2018 IIFS.
4. No action alternative or 30% remaining flow diversion: This scenario represented the long-standing agreement that “government owned waters” from the License Area amounted to 70% of streamflow, and the remaining 30% of the streamflow emanated from private/A&B/EMI lands. Thus, the No-Action alternative is the diversion of 30% of water available at the Honopou Stream boundary after compliance with the IIFS. This No-Action description is not directly translatable into the HSHEP model as the model requires specific diversion conditions at each diversion not an aggregate amount from a group of diversions. Therefore, this scenario assumed that 30% of remaining low flow discharge was diverted at each individual diversion after complying with the IIFS.

Under all of these scenarios, several specifics within the 2018 IIFS are applied to the HSHEP modeling rules. These included:

*III-g: The IIFS are the estimated 64% of median base flows (BFQ<sub>50</sub>), also known as (H<sub>90</sub>) flows, for stream restoration, and the numbers are only estimates, to eventually be confirmed by actual flows from which the H<sub>90</sub> can be established.*

*III-i: It is intended that diversion structures only need to be modified to the degree necessary to accomplish the amended IIFS and to allow for passage of stream biota, if needed.*

*III-j: This Order does not require that every diversion on every tributary be removed or modified, the Commission is only looking at modifications to main stem and major diversions to accomplish the amended IIFS set forth above. The Commission also recognizes that it is not the purpose of this proceeding to determine how the diversions will be modified. That issue will be before the Commission in a subsequent process.*

Therefore, only major diversion conditions were modified in the HSHEP model and no specific passage or entrainment modifications were applied except of the effects provided by the increased water passing downstream at the major diversions. Any action or modification of the diversion to decrease entrainment would increase the total restored habitat units without any additional water released to the stream.



## DISCUSSION

The HSHEP model provided the ability to look at and modify characteristics of each diversion and quantify instream habitat for the native amphidromous stream animals, native damselflies and introduced mosquitoes upstream and downstream of the diversions. Appendix 3 documents the results for the four scenarios analyzed in this report: natural flow, full diversion, 2018 IIFS diversion, and the 30% remaining flow diversion. All four of the scenarios were created for the IIFS streams and only the three scenarios (natural flow, full diversion, and the 30% remaining flow diversion) were created for the non-IIFS streams in the License Area as there was no IIFS mandated for these streams. The approach allows each stream, ditch system, lease area or other groupings to be analyzed systematically. After studying the results of various potential groupings, we found the most appropriate group to be those created by the 2018 IIFS decision. These groups were Full-Flow Restoration, Habitat-Flow Restoration, Connectivity-Flow Restoration, No-Flow Restoration and Non-IIFS Streams. A discussion of each group follows.

### FULL-FLOW RESTORATION

The lease-area streams designated as Full-Flow Restoration streams in the 2018 IIFS were: Makapipi, Waiohue, West Wailuaiki, Wailuanui, Waiokamilo, Piinaau (and its tributary Palauhulu), Hanahoi (Huelo/Puolua), and Honopou Streams.

The full-flow restoration streams are some of the largest streams, with the majority of the lower and stream reaches found in this area. The primary reason for full-flow restoration was not the improvement of instream habitat for stream animals, but rather the downstream passage of water for customary and traditional uses (mostly taro cultivation) by Hawaiian communities. While not the primary reason, full restoration of flow does provide instream habitat benefits for the native amphidromous stream animals. The results from the HSHEP model calculated 706,507 m<sup>2</sup> of habitat units for all native amphidromous species within these eight streams. Remaining habitat units for all species were 74.8% of the total even during full diversion within the streams and 96.7% was estimated to exist under the 2018 IIFS with a few percentages more (98.4%) under the 30% remaining flow diversion scenario.

This group included Piinaau Stream and estimates for this stream were the most difficult to create. Determining flow in the segments of this very large stream was likely inaccurate as the rainfall runoff to discharge equations used (based on prior East Maui studies by USGS) were known to be poor fits for the stream. It is very likely discharge was overestimated and therefore habitat was overestimated as well. In one sense this does not matter, as full-flow restoration is planned for the stream, and thus whatever habitat units are available will likely be restored. It may however skew the results as over 356,000 m<sup>2</sup> were predicted in this stream alone. When we excluded Piinaau Stream from the results, the full-diversion flows removed 44.6% of the habitat units from the streams and the 2018 IIFS scenario increased the habitat units restored to 93.5% of. Again, a small increase in habitat units to 96.9% was observed under the 30% remaining flow

diversion scenario and this was due to 70% base flow restoration at all minor diversions throughout these watersheds.

A consistent pattern observed throughout East Maui streams held true regarding individual native amphidromous species within the streams. In descending order, *Atyoida bisulcata*, *Lentipes concolor*, *Awaous stamenius*, *Neritina granosa*, and *Sicyotperus stimpsoni* had the greatest amount of habitat units. These species make up the “climbing” native stream species that can be found upstream of waterfalls. Waterfalls are a common feature in East Maui streams.

For the native damselflies and invasive mosquito, a return to natural flow conditions should improve damselfly habitat and decrease mosquito habitat where these species use instream habitats. The potential beneficiaries were the endangered damselfly, *Megalagrion xanthomelas* and *Megalagrion pacificum*. Small gains in potential suitable habitat units occurred in these streams and restoration of flow to a more natural condition should directly benefit the species. The restoration of baseflow however will likely also improve habitat conditions for a number of introduced predator and competitor species of the native damselflies and thus may not in itself increase damselfly populations.

Makapipi Stream is an example of a full restoration East Maui streams. Makapipi Stream is a steep, narrow perennial stream with extensive upper (33.8%) and headwater (54.4%) reaches and limited lower (0.9%) or estuarine (0.0%) reach habitats (Parham et al. 2008). There was a sink below the Hana Highway that removed an unknown large amount of base flow from the stream (D&O 2018). For the HSHEP model, the sink was modeled to remove 100% of BFG<sub>50</sub> and decrease 30% of the passage and entrain 30% of the animals passing the sink location. We could not access the sink location as the terrain was very steep and thus the amount of water, passage and entrainment effects were estimated.

Makapipi Stream was expected to contain substantial amounts of habitat units for the climbing amphidromous stream animals under natural flow conditions with the most habitat for *Atyoida bisulcata* (8,801 m<sup>2</sup>) and *Lentipes concolor* (6,441 m<sup>2</sup>) in the main diversion (K-1) area (Appendix 3). *Atyoida bisulcata* (68%) and *Lentipes concolor* (45%), showed the largest amounts of lost habitat units under full diversion resulting from the direct loss of habitat from dewatering and passage and entrainment at the diversion site. Closure of the main diversion as mandated in the 2018 IIFS and the elimination of streamflow diversion at the main diversion site was expected to improve habitat units for all species from 56% under full diversion to 89% under the IIFS conditions. Restoration of habitat units did not return to 100% due to a minor diversion decreasing a portion baseflow below the Koolau Ditch. Little gain in habitat units was realized under the 30% flow scenario (90%) when compared to the IIFS scenario (89%) as the minor diversions flow changed but only a small amount with respect to the main channel diversion. While Makapipi and Piinaau Streams were the only streams with the modeled sinks, the general pattern observed in Makapipi Stream still applied to the other streams.

## HABITAT-FLOW RESTORATION

The License Area streams designated as Habitat (H<sub>90</sub>) Flow Restoration streams in the 2018 IIFS were: Kopiliula, East Wailuaiki, Honomanu, Punalau/Kolea, and Waikamoi Streams. This group of streams was mandated to have approximately 64% of the baseflow restored specifically to improve instream habitat for native stream animals. The selection of the streams was appropriate, as all were predicted to have substantial instream habitat by the HSHEP model. A total of 224,192 m<sup>2</sup> of habitat units were expected to be found within this group of five streams.

The general response pattern within the four scenarios was similar to that observed in the full-flow restoration streams. Full diversion eliminated 49.9% of the habitat units naturally occurring in this group of streams. The restoration of 64% of the baseflow increased available habitat units to 77.1% of the naturally available habitat units. Under the 30% remaining flow diversion scenario, the restored habitat was 91.1%. This was to be expected as restoring 70% of the remaining 36% of flow available for diversion results in approximately 90% of the baseflow restored to the streams. At the No Action (30% diversion of available flow) restoration, nearly all instream habitat was restored below major diversions and remaining losses were due to entrainment of animals as they passed the diversion locations.

As with all East Maui streams, the greatest number of habitat units were for *Atyoida bisulcata* and *Lentipes concolor*; the two most upstream native stream species. Additional habitat units may be gained for the native stream species by decreasing entrainment at the diversion locations. The restoration of baseflow (64% of BFQ<sub>50</sub>) to meet 90% of the available habitat was likely appropriate, yet this still leaves approximately 36% entrainment at each diversion. Any action or modification of the diversion to decrease entrainment would increase the total restored habitat units without any additional water released to the stream.

For the native damselflies, *Megalagrion nesiotes* has been reported upstream of the diversion on East Wailuaiki Stream. The restoration of 64% of baseflow would increase habitat downstream of the diversion which may be suitable for the species. While it is not clear how important the main channel habitat is for the species, the conditions will be far more natural than the highly diverted conditions immediately below the diversion under the full-diversion scenario. The improved baseflow throughout all reaches downstream of the diversions may also improve habitats for the other endangered damselfly species and would decrease standing water habitat within the stream for the mosquito species. The restoration of 64% of baseflow was predicted to decrease the introduced mosquito, *Culex quinquefasciatus*, by 28% of full diversion conditions.

## CONNECTIVITY-FLOW RESTORATION

The License Area streams designated as Connectivity-Flow Restoration streams in the 2018 IIFS were: Hanawi, Kapaula, Paakea, Nuaailua, Haipuaena, and Puohokamoa Streams. Within the

group of stream designations for connectivity flows, two subgroups were observed. The first group contained spring fed streams, Hanawi and Kapaula, while the second group contained the remaining streams.

The spring-fed streams have had consistent baseflow downstream of the diversion as a result of the spring inputs. Hanawi Stream is noted for its large springs (Big Spring and Hanawi Spring) and Kapaula Stream has Pali Spring adding consistent baseflow to the stream below the Koolau Ditch Diversions. Hanawi has 4 diversions (3 major and 1 minor) on two primary tributaries upstream of the Hana Highway while Kapaula Stream has 4 major diversion with 2 on the main channel. As with many East Maui streams, these streams are very steep and narrow in their upper reaches and with the most habitat units predicted for *Atyoida bisulcata* (Hanawi 39,556 m<sup>2</sup> and Kapaula 8,005 m<sup>2</sup>) and *Lentipes concolor* (Hanawi 34,601 m<sup>2</sup> and Kapaula 10,429 m<sup>2</sup>). These streams differ from most East Maui streams with its large spring inputs into the lower mile of the stream channel. As a result of the additional baseflow, the streams supported high numbers of native stream animals below the springs (DAR 2009) and had higher amounts of habitat units predicted from the HSHEP modeling for most native streams animals than most East Maui Streams (Appendix 3).

Given the natural spring flows and the extensive habitat created by them downstream of the diversions, Hanawi was expected to have a large amount of total native stream animal habitat units (126,408 m<sup>2</sup>) as well as a large percent of the habitat units (69.0%) remaining even during the full-diversion scenario. Kapaula spring inputs were not as large as Hanawi and thus had fewer overall habitat units (25,418 m<sup>2</sup>) as well as a similar percentage of the habitat units (67.0%) remaining under the full-diversion scenario. The small amount of water returned under the 2018 IIFS scenario for improving stream connectivity slightly increases the percent of total habitat units (Hanawi 69% and Kapaula 68%) as entrainment and loss of habitat below the diversions would still be high in this scenario. Under the 30% scenario, decreases in entrainment and increases in habitat resulting from the 70% baseflow restoration lead to a greater percent of natural habitat units being available to native species (Hanawi 81% and Kapaula 85%). The HSHEP model did not consider potential design improvements to stream diversions to minimize entrainment as these are not mandated under the 2018 IIFS. These stream diversions would benefit from modifications to decreased entrainment as much of the streams have high baseflow and a connectivity flow would have been established below the diversions.

The endangered damselfly populations may benefit slightly from the connectivity flow as it would keep the stream channel wet immediately below the diversions and other stream segments (above the diversions and below the springs) already contain water under most flow conditions. Mosquito populations may decrease slightly as more flowing water and less stagnant water would exist between the diversions and the springs, but the change was small in all scenarios.

The second group of streams within the Connectivity-Flow Restoration group, Paakea, Nuaailua, Haipuaena, and Puohokamoa Streams, were streams without springs or obviously gaining reaches. Paakea, Nuaailua, Haipuaena Streams were relatively small streams in terms of their available instream habitat units for the native amphidromous stream animals. Puohokamoa

Stream, in contrast, was predicted to have large amounts of suitable habitat units for the stream species. Overall within this group of four streams, the HSHEP model results predicted 301,005 m<sup>2</sup> of habitat units in this stream group of which Full-flow diversion left 30.0% of the habitat remaining. The connectivity flow increased this to 32.0% of available habitat. Approximately 189,000 m<sup>2</sup> of the 301,005 m<sup>2</sup> available habitat units are found within Puohokamoa Stream. One difficult aspect with restoring habitat units through flow restoration in Puohokamoa Stream was the multiple levels of diversions on the stream. Puohokamoa Stream has 3 major (Spreckels, Wailoa, and Manuel Luis Ditches) and 5 minor diversions. While flow restoration may improve habitat in the stream, it may be more difficult to achieve given the number of diversions located on this stream.

## NO-FLOW RESTORATION

The License Area streams designated as No-Flow Restoration streams in the 2018 IIFS were: Waiaaka, Ohia/Waianu, and Wahinepee Streams. Ohia Stream is undiverted by the EMI Aqueduct System so natural flow conditions already exist. Waiaaka and Wahinepee Streams were considered intermittent in the DAR stream GIS data layer and thus, by definition within the HSHEP model rules, did not contain habitat units for native amphidromous stream animals that would be impacted by baseflow reduction. The habitat for native damselflies or mosquitos would be minimally impacted by diversion on these streams as it is expected that the streams dry up intermittently and the diversions would mainly capture storm flows. The standard of No-Flow Restoration appears appropriate for these streams as instream habitat conditions are likely similar among any flow scenario.

## NON-IIFS STREAMS

The non-IIFS streams were located on the western side of the East Maui stream group. This area receives less rain than the streams further east. These streams also have more extensive diversion systems than streams to the east of Piinaau. Most of the non-IIFS stream were diverted at four levels by Wailoa and New Hamakua Ditches at higher elevations and Spreckels, Center, Lowrie or Haiku Ditches at the lower elevations. The more extensive diversion systems were reflected in more low or no flow conditions observed in the field (see Appendix 1) and in the loss of habitat units in the HSHEP model results. Under the Natural Flow Scenario, over 588,000 m<sup>2</sup> of habitat units were predicted for the native amphidromous species, while under the Full Diversion Scenario 88,386 habitat units were predicted to occur. Thus, under the Full Diversion Scenario only 15% of the habitat units remain in this group of streams. The loss of habitat was both from loss of instream habitat to water diversion and to passage and entrainment issues at each diversion. The 30% Diversion Scenario returns the habitat units available to almost 200,000 m<sup>2</sup>. Under this scenario, a wetted pathway would exist to the ocean, but there would still be substantial entrainment of larvae in the multiple diversion ditches. Increased restoration of the flow at the lower diversions may be a better practice than partial diversion of flow at all diversions. This strategy would allow diversion of water at higher elevations where less habitat naturally exists and decrease passage and entrainment impacts at lower diversion where more native stream animals will interact with the diversions.

## DISCHARGE TO HABITAT

One major addition to the HSHEP model that was created specifically for this application in the East Maui streams was the ability to predict baseflow discharge for any upstream basin within the study area. The modeled predictions were based on the USGS East Maui discharge regression equations. Due to differences in source data and computational processes, the discharge estimates created for the HSHEP model did not yield the exact same answer as those determined by the USGS. Table 1 shows a comparison between the HSHEP discharge value and the nearest USGS discharge value. In total, the HSHEP predicted less total stream discharge (129.5 cfs) than did the USGS predictions (137.5 cfs) for the same set of streams. As noted in the methods section, the HSHEP was used to create discharge predictions at many more locations, for much smaller upstream basins, and for locations much nearer the coast than was used in the creation of the USGS discharge regression equations and thus was likely an overextension of their equations and less accurate as a result. With that said, the intent was to provide a way to proportionally compare stream size, discharge, and instream habitat under different diversion scenarios at many locations where no stream gage data existed and for this application the results appeared highly useful.

Table 5: Comparison of stream discharge values from the HSHEP model and the USGS report. Discharge values are for the stream mouth in the HSHEP model and the lower reach in the USGS report.

| Stream          | HSHEP (cfs) | USGS (cfs) | % Diff |
|-----------------|-------------|------------|--------|
| Hanawi          | 26.6        | 26         | -2.3   |
| Kapaula         | 7.1         | 5.7        | -24.6  |
| Waiaaka         | 0.8         | 1.1        | 27.3   |
| Paakea          | 3           | 5.5        | 45.5   |
| Waiohue         | 3.8         | 7.5        | 49.3   |
| Kopiliula       | 8.2         | 9.5        | 13.7   |
| East Wailuaiki  | 6.3         | 7.2        | 12.5   |
| West Wailuaiki  | 4.9         | 7.2        | 31.9   |
| Wailuanui       | 7           | 6.1        | -14.8  |
| Waiokamilo      | 5.9         | 8.7        | 32.2   |
| Nuaailua        | 8.9         | 7.4        | -20.3  |
| Honomanu        | 10.2        | 9          | -13.3  |
| Punalau         | 3.8         | 4.5        | 15.6   |
| Haipuena        | 6.3         | 5.5        | -14.5  |
| Puohokamoa      | 10.8        | 11         | 1.8    |
| Wahinepee       | 3.1         | 1.8        | -72.2  |
| Waikamoi        | 6.2         | 7          | 11.4   |
| Hanehoi         | 6.6         | 6.8        | 2.9    |
| Total Discharge | 129.5       | 137.5      |        |



One goal in stream management is to provide enough water to support instream habitat while also maximizing water for other human uses off stream. Both stream discharge and instream habitat were outputs from the results of the HSHEP model, therefore we can look at the relationship between habitat and diversion amount for all of the IIFS East Maui streams. When compared to natural stream discharge at the stream mouths, full diversion removed approximately 46.5% (53.5% remained) of baseflow from the East Maui streams and under the 2018 IIFS scenario 75.5% of the baseflow was restored to East Maui streams. Baseflow restoration increased under the 30% remaining flow diversion scenario 87.4%. The restoration of an additional approximately 12% of the baseflow predicted between the 2018 IIFS scenario and the 30% remaining flow diversion scenario does result in additional habitat units. The results of the scenario tests within HSHEP model suggests that the 2018 IIFS provided a good balance between habitat restoration and water availability.

## MODELING STRENGTHS and WEAKNESSES

The strength of the HSHEP model for the East Maui streams primarily centers around its ability to scenario test different water management strategies and assess its impact on native amphidromous stream animal habitat. The HSHEP model was originally designed on East Maui streams and has been improved on various other streams throughout Hawaii. The HSHEP model has passed review by the US Army Corps of Engineers for use as an impact assessment model in Hawaiian streams. Improvements in the specific HSHEP model presented here include the conversion to the R programming language and a tighter integration with streamflow discharge estimates. We also added impact assessment results associated with three native damselflies and the introduced mosquito which further broadens the applicability of the results.

The weaknesses of the HSHEP model are associated with the difficulty of validating system as complex as the EMI Aqueduct System and its impact on migratory stream animals. While the theoretical constructs of the model are well supported, quantifying specific values of entrainment, barriers to passage and loss of habitat are all difficult to specifically determine. As a result, the output of the model is best considered as a proportional depiction of the real-world habitat units available to the species within the stream. It is unlikely the specific quantification of a given habitat unit area would be close to that measured directly in a stream. This weakness needs to be placed in context of habitat suitability measurements as it is very difficult and time-consuming to document all the habitat within a complete stream system, much less over 33 extremely steep streams across East Maui. So, while the model may not result in an exact measurement of habitat units, it is likely proportionally consistent across the system as a whole and this makes it very useful for impact assessment.

An additional problem is the lack of specific discharge information, habitat surveys, or biotic surveys over much of the study area. TUTTA surveyed an additional 35 diversion locations to help ground-truth the model inputs, but many other diversions were unsurveyed. While this and other studies have been completed in the East Maui area, much of the area is unsurveyed and

thus these predictions may not be accurate at these locations. While this is a weakness, the modeling approach does apply the available information in a consistent and repeatable methodology, thus the results are based on the best available information.

Overall, the combination of field surveys and habitat modeling supports the IIFS flow restoration scenario in improving instream habitat conditions for native amphidromous stream animals. While suitable habitat is fundamental for a species' persistence and is the focus of the HSHEP model, it is not the only thing that may affect species populations. Other factors, such as pollution, disease, or competition with introduced species may also influence the observed distribution and densities of native animals, yet understanding the natural distribution of animals without the presence of these additional factors is still important. From a habitat availability perspective, the 2018 IIFS does a good job at improving instream habitat over a wide range of streams.

## LITERATURE CITED

- Commission on Water Resource Management. 2018. Findings of Fact, Conclusions of Law, & Decision and Order. Case No. CCH-MA13-01. 296 pages.
- Division of Aquatic Resources. 2009. Aquatic Surveys Database:  
[http://www.hawaii.gov/dlnr/dar/streams/stream\\_data.htm](http://www.hawaii.gov/dlnr/dar/streams/stream_data.htm)
- Fitzsimons, J. M. and R. T. Nishimoto. 2007. Introduction. In: Biology of Hawaiian Streams and Estuaries, N. L. Evenhuis and J. M. Fitzsimons, eds. Bishop Museum Bulletin in Cultural and Environmental Studies 3:1-10.
- Gingerich, S.B. 2005. Median and Low Flow Characteristics for Stream under Natural and Diverted Conditions, Northeast Maui, Hawaii: Honolulu, HI. U.S. Geological Survey Scientific Investigations Report 2004-5262, 72 p.
- Kuamo'o, D. G. K., G. R. Higashi & J. E. Parham. 2007. Structure of the Division of Aquatic Resources Survey Database and use with a Geographic Information System. In: Biology of Hawaiian Streams and Estuaries, N. L. Evenhuis & J. M. Fitzsimons, eds. Bishop Museum Bulletin in Cultural and Environmental Studies 3: 315-322.
- Higashi, G. R., J.E. Parham, S. Hau and E.K. Lapp. 2014. Monitoring Changes in Habitat, Biota, and Connectivity Resulting from Water Returns in the East Maui Streams of East Wailua Iki, West Wailua Iki, and Waiohue Streams.
- Higashi, G.R. and J.E. Parham. 2016. Impacts of Water Releases on Stream Habitat and Stream Biota of Waimea River, Kauai using the High Definition Stream Survey (HDSS) and High Definition Fish Survey (HDFS) Techniques: Project Report. Submitted to Commission on Water Resources Management. Honolulu, HI. 50 p
- McDowall, R. M. 2007. Hawaiian stream fishes: the role of amphidromy in history, ecology, and conservation biology. In: Biology of Hawaiian Streams and Estuaries, N. L. Evenhuis and J. M. Fitzsimons, eds. Bishop Museum Bulletin in Cultural and Environmental Studies 3:3-10.

- Meadows, D., A. L. Kane, C. Mitchell, and C. Ogura. 2005. Technical Report X. Hawai‘i Statewide Aquatic Wildlife Conservation Strategy. Pacific Cooperative Studies Unit. University of Hawai‘i at Mānoa. Honolulu.
- Parham, J.E. 2002. Spatial models of Hawaiian streams and stream fish habitats. Ph.D. Dissertation, Louisiana State University, Museum of Natural Science, Baton Rouge, LA. 155 p.
- Parham, J.E. 2008. Development of a Database Modeling Tool to Predict Aquatic Species Distributions within Hawaiian Streams. Division of Aquatic Resources, DLNR, State of Hawaii. 56 p.
- Parham, J.E. 2013. Quantification of the impacts of water diversions in the Nā Wai ‘Ehā streams, Maui on native stream animal habitat using the Hawaiian Stream Habitat Evaluation Procedure. A technical report submitted to Commission on Water Resource Management, State of Hawaii, Honolulu, HI. 113 p.
- Parham, J.E. 2014. Assessment of the environmental impact of the Upper and Lower Waiahi Hydroelectric Plants on the native stream animals with respect to habitat changes, barriers to migration, and entrainment using the GIS model-based Hawaiian Stream Habitat Evaluation Procedure. Kaua‘i Island Utility Cooperative. 327 p.
- Parham, J.E. 2015. Ala Wai Flood Control Project Impact to Native Stream Animal Habitat and Possible Habitat Mitigation Options. Submitted to CH2MHill. Honolulu, HI. 58 pages.
- Parham, J.E. 2015. The Hawaiian Stream Habitat Evaluation Procedure (HSHEP) model: Intent, Design, and Methods for Project Impact Assessment to Native Amphidromous Stream Animal Habitat. Submitted to Civil and Public Works Branch, U.S. Army Corps of Engineers, Honolulu District, HI. 178 pages.
- U.S. Fish and Wildlife Service (USFWS). 1980a. Habitat as the Basis for Environmental Assessment (101 ESM). U.S. Fish and Wildlife Service, Washington, DC.
- U.S. Fish and Wildlife Service (USFWS). 1980b. Habitat evaluation procedure (HEP) Manual (102 ESM). U.S. Fish and Wildlife Service, Washington, DC.

U.S. Fish and Wildlife Service (USFWS). 1981. Standards for the development of habitat suitability index models (103 ESM). U.S. Fish and Wildlife Service, Washington, DC.

---

## **APPENDIX B:**

East Maui Irrigation Assessment of Streams  
and the Ocean

Sea Engineering, Inc.  
Marine Research Consultants, Inc.





**East Maui Irrigation  
Assessment of Streams and the Ocean  
Water Chemistry**

*May 2019*



**Prepared for:**

Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

**Prepared by:**

Sea Engineering, Inc.  
Makai Research Pier  
Waimanalo, Hawaii 96795  
*Job No. 25600*

Marine Research Consultants, Inc.  
1039 Waakaua Place  
Honolulu, Hawaii 96822

## TABLE OF CONTENTS

|   |           |
|---|-----------|
| <b>1. INTRODUCTION .....</b>                    | <b>4</b>  |
| 1.1 SURVEY AREAS .....                          | 4         |
| <b>2. OCEANOGRAPHIC SETTING .....</b>           | <b>6</b>  |
| 2.1 TIDES .....                                 | 6         |
| 2.2 CURRENTS .....                              | 7         |
| 2.3 SEA LEVEL RISE .....                        | 8         |
| 2.4 DEEPWATER WAVE CLIMATE .....                | 15        |
| 2.4.1 Deep Water Wave Generation Regions .....  | 20        |
| <b>3. COASTAL GEOLOGY .....</b>                 | <b>21</b> |
| <b>4. EAST MAUI STREAM FIELD SAMPLING .....</b> | <b>33</b> |
| 4.1 WATER CHEMISTRY ANALYTICAL METHODS .....    | 33        |
| 4.2 WATER CHEMISTRY RESULTS .....               | 34        |
| <b>5. SUMMARY AND CONCLUSIONS .....</b>         | <b>60</b> |
| <b>6. REFERENCES .....</b>                      | <b>61</b> |

## LIST OF FIGURES

|   |    |
|---|----|
| FIGURE 1-1. LOCATIONS OF SURVEY STREAMS ON EAST MAUI. ....  | 4  |
| FIGURE 1-2. GOOGLE EARTH IMAGE OF EAST MAUI SHOWING LOCATIONS OF STREAMS THAT WERE<br>SURVEYED IN 2018 DURING WINTER (JANUARY) AND SUMMER (JULY). YELLOW CIRCLES<br>INDICATE STREAMS THAT WERE CONSIDERED BY THE SURVEY TEAM FROM A HELICOPTER, BUT<br>WERE NOT INCLUDED IN THE SURVEY OWING TO LACK OF ACCESS OR ABSENCE OF FLOWING<br>WATER. .... | 5  |
| FIGURE 2-1. REGIONAL OCEAN CURRENTS IN THE HAWAIIAN ISLANDS (WREN, 2016). ....  | 7  |
| FIGURE 2-2. LOCAL OCEAN CURRENTS FOR THE ISLAND OF MAUI (PacIOOS). ....   | 8  |
| FIGURE 2-3. MEAN SEA LEVEL TREND, KAHULUI HARBOR, 1905 TO PRESENT (NOAA, 2017). ....  | 8  |
| FIGURE 2-4. HAWAII SEA LEVEL RISE PROJECTIONS (ADAPTED FROM NOAA, 2017). ....   | 9  |
| FIGURE 2-5. PacIOOS +3.2 FT SEA LEVEL RISE PASSIVE FLOODING PROJECTION OOPUOLA<br>STREAM .....  | 11 |
| FIGURE 2-5. PacIOOS +3.2 FT SEA LEVEL RISE PASSIVE FLOODING PROJECTION HONOMANU<br>STREAM .....   | 12 |
| FIGURE 2-5. PacIOOS +3.2 FT SEA LEVEL RISE PASSIVE FLOODING PROJECTION EAST AND WEST<br>WAILUA IKI STREAMS .....  | 12 |
| FIGURE 2-5. PacIOOS +3.2 FT SEA LEVEL RISE PASSIVE FLOODING PROJECTION KOPILIULA<br>STREAM .....  | 13 |
| FIGURE 2-5. PacIOOS +3.2 FT SEA LEVEL RISE PASSIVE FLOODING PROJECTION WAIATAKA STREAM<br>.....   | 13 |
| FIGURE 2-5. PacIOOS +3.2 FT SEA LEVEL RISE PASSIVE FLOODING PROJECTION HANAWI STREAM<br>.....   | 14 |
| FIGURE 2-6. HAWAII DOMINANT SWELL REGIMES. ....   | 16 |

|  |    |
|--|----|
| FIGURE 2-7 PROJECT SITE AND VIRTUAL BUOY LOCATIONS.....  | 17 |
| FIGURE 2-8. STATION 82517 VIRTUAL BUOY WAVE HEIGHT ROSE FROM JAN 1979 – JAN 2010. ....   | 18 |
| FIGURE 2-9. STATION 82517 VIRTUAL BUOY WAVE PERIOD ROSE FROM JAN 1979 – JAN 2010. ....   | 19 |
| FIGURE 2-10. NORTH MAUI MEAN EFFECTIVE WAVE ENERGY FLUX ESTELA MODEL OUTPUT.....   | 20 |
| FIGURE 3-1. AERIAL VIEW OF WAILUA IKI EAST AND WAILUA IKI WEST STREAMS SHOWING<br>VALLEYS CUT INTO THE BASALT SLOPE OF EAST MAUI.....  | 21 |
| FIGURE 3-2. STREAM VALLEY EXITING THE COASTLINE AT A SEACLIFF. ....  | 22 |
| FIGURE 3-3. BASALT SEDIMENT FROM THE STREAM BED MIXING WITH THE BASALT BEACH AT<br>WAILUA IKI EAST STREAM. ....  | 23 |
| FIGURE 3-4. STREAM BED BASALT SEDIMENT MIXING WITH THE BASALT SEDIMENT BEACH AT<br>HONOMANU STREAM. ....   | 24 |
| FIGURE 3-5. ROCKY SEACLIFF HEADLANDS ALONGSIDE BASALT COBBLE AND SHINGLE BEACHES AT<br>KOPILIULA STREAM.....   | 25 |
| FIGURE 3-6. STEEP, COLUMNAR BASALT HEADLAND NEXT TO BASALT BOULDER BEACH ON THE<br>WEST SIDE OF WAIAAKA STREAM.....  | 26 |
| FIGURE 3-7. BASALT BEACHES WITH SEDIMENT SIZES RANGING FROM COARSE SAND TO BOULDER<br>AT WAILUA IKI WEST STREAM.....   | 27 |
| FIGURE 3-8. ATLAS OF NATURAL HAZARDS IN THE HAWAIIAN COASTAL ZONE – OPANA POINT<br>REGION.....   | 28 |
| FIGURE 3-9. ATLAS OF NATURAL HAZARDS IN THE HAWAIIAN COASTAL ZONE – KEANAE REGION.<br>.....  | 29 |
| FIGURE 3-10. ATLAS OF NATURAL HAZARDS IN THE HAWAIIAN COASTAL ZONE –NAHIKU REGION.<br>.....  | 30 |
| FIGURE 3-11. AERIAL VIEW OF WAVES WASHING ACROSS THE LOW-LYING BASALT COBBLE AND<br>BOULDER BEACHES, AT THE BASE OF BASALT SEACLIFFS AT HANAWI STREAM.....                                 | 31 |
| FIGURE 3-12. EXAMPLE - SEA LEVEL RISE EXPOSURE AREA AT SHORELINE FOR HONOMANU<br>STREAM, 3.2 FT RISE, PACIOOS VIEWER FOR HAWAII SEA LEVEL RISE VULNERABILITY AND<br>ADAPTATION REPORT..... | 32 |
| FIGURE 4-1. HONOMANU SALINITY WINTER SAMPLE. ....  | 36 |
| FIGURE 4-2. HONOMANU SALINITY SUMMER SAMPLE.....   | 36 |
| FIGURE 4-3. HANAWI SALINITY WINTER SAMPLE. ....  | 37 |
| FIGURE 4-4. HANAWI SALINITY SUMMER SAMPLE. ....  | 37 |
| FIGURE 4-5. KOPILIULA SALINITY WINTER SAMPLE.....  | 38 |
| FIGURE 4-6. KOPILIULA SALINITY SUMMER SAMPLE.....  | 38 |
| FIGURE 4-7. OOPUOLA SALINITY WINTER SAMPLE. ....   | 39 |
| FIGURE 4-8. OOPUOLA SALINITY SUMMER SAMPLE. ....   | 39 |
| FIGURE 4-9. WAIAAKA SALINITY WINTER SAMPLE. ....   | 40 |
| FIGURE 4-10. WAIAAKA SALINITY SUMMER SAMPLE. ....  | 40 |
| FIGURE 4-11. WAILUA SALINITY WINTER SAMPLE.....  | 41 |
| FIGURE 4-12. WAILUA SALINITY SUMMER SAMPLE.....  | 41 |
| FIGURE 4-13. HONOMANU TEMPERATURE WINTER SAMPLE.....   | 42 |
| FIGURE 4-14. HONOMANU TEMPERATURE SUMMER SAMPLE. ....  | 42 |
| FIGURE 4-15. HANAWI TEMPERATURE WINTER SAMPLE. ....  | 43 |
| FIGURE 4-16. HANAWI TEMPERATURE SUMMER SAMPLE. ....  | 43 |
| FIGURE 4-17. KOPILIULA TEMPERATURE WINTER SAMPLE. ....   | 44 |
| FIGURE 4-18. KOPILIULA TEMPERATURE SUMMER SAMPLE. ....   | 44 |
| FIGURE 4-19. OOPUOLA TEMPERATURE WINTER SAMPLE. ....   | 45 |

|  |    |
|--|----|
| FIGURE 4-20. OOPUOLA TEMPERATURE SUMMER SAMPLE. .... | 45 |
| FIGURE 4-21. WAIAAKA TEMPERATURE WINTER SAMPLE. .... | 46 |
| FIGURE 4-22. WAIAAKA TEMPERATURE SUMMER SAMPLE. .... | 46 |
| FIGURE 4-23. WAILUA TEMPERATURE WINTER SAMPLE. ....  | 47 |
| FIGURE 4-24. WAILUA TEMPERATURE SUMMER SAMPLE. ....  | 47 |
| FIGURE 4-25. HONOMANU PHOSPHATE WINTER SAMPLE. ....  | 48 |
| FIGURE 4-26. HONOMANU PHOSPHATE SUMMER SAMPLE. ....  | 48 |
| FIGURE 4-27. HANAWI PHOSPHATE WINTER SAMPLE. ....    | 49 |
| FIGURE 4-28. HANAWI PHOSPHATE SUMMER SAMPLE. ....    | 49 |
| FIGURE 4-29. KOPILIULA PHOSPHATE WINTER SAMPLE. .... | 50 |
| FIGURE 4-30. KOPILIULA PHOSPHATE SUMMER SAMPLE. .... | 50 |
| FIGURE 4-31. OOPUOLA PHOSPHATE WINTER SAMPLE. ....   | 51 |
| FIGURE 4-32. OOPUOLA PHOSPHATE SUMMER SAMPLE. ....   | 51 |
| FIGURE 4-33. WAIAAKA PHOSPHATE WINTER SAMPLE. ....   | 52 |
| FIGURE 4-34. WAIAAKA PHOSPHATE SUMMER SAMPLE. ....   | 52 |
| FIGURE 4-35. WAILUA PHOSPHATE WINTER SAMPLE. ....    | 53 |
| FIGURE 4-36. WAILUA PHOSPHATE SUMMER SAMPLE. ....    | 53 |
| FIGURE 4-37. HONOMANU NITRATE WINTER SAMPLE. ....    | 54 |
| FIGURE 4-38. HONOMANU NITRATE SUMMER SAMPLE. ....    | 54 |
| FIGURE 4-39. HANAWI NITRATE WINTER SAMPLE. ....      | 55 |
| FIGURE 4-40. HANAWI NITRATE SUMMER SAMPLE. ....      | 55 |
| FIGURE 4-41. KOPILIULA NITRATE WINTER SAMPLE. ....   | 56 |
| FIGURE 4-42. KOPILIULA NITRATE SUMMER SAMPLE. ....   | 56 |
| FIGURE 4-43. OOPUOLA NITRATE WINTER SAMPLE. ....     | 57 |
| FIGURE 4-44. OOPUOLA NITRATE SUMMER SAMPLE. ....     | 57 |
| FIGURE 4-45. WAIAAKA NITRATE WINTER SAMPLE. ....     | 58 |
| FIGURE 4-46. WAIAAKA NITRATE SUMMER SAMPLE. ....     | 58 |
| FIGURE 4-47. WAILUA NITRATE WINTER SAMPLE. ....      | 59 |
| FIGURE 4-48. WAILUA NITRATE SUMMER SAMPLE. ....      | 59 |

## LIST OF TABLES

|  |    |
|--|----|
| TABLE 2-1. WATER LEVEL DATA FOR KAHULUI HARBOR, STATION 1615680 (NOAA). ....                   | 7  |
| TABLE 2-2 HAWAII LOCAL MEAN SEA LEVEL RISE SCENARIOS (FEET) ....                               | 10 |
| TABLE 2-3. STATION 82517 WAVE HEIGHT AND DIRECTION HISTOGRAM FROM JAN 1979 – JAN<br>2010. .... | 18 |
| TABLE 2-4. STATION 82517 WAVE PERIOD AND DIRECTION HISTOGRAM FROM JAN 1979 – JAN<br>2010. .... | 19 |

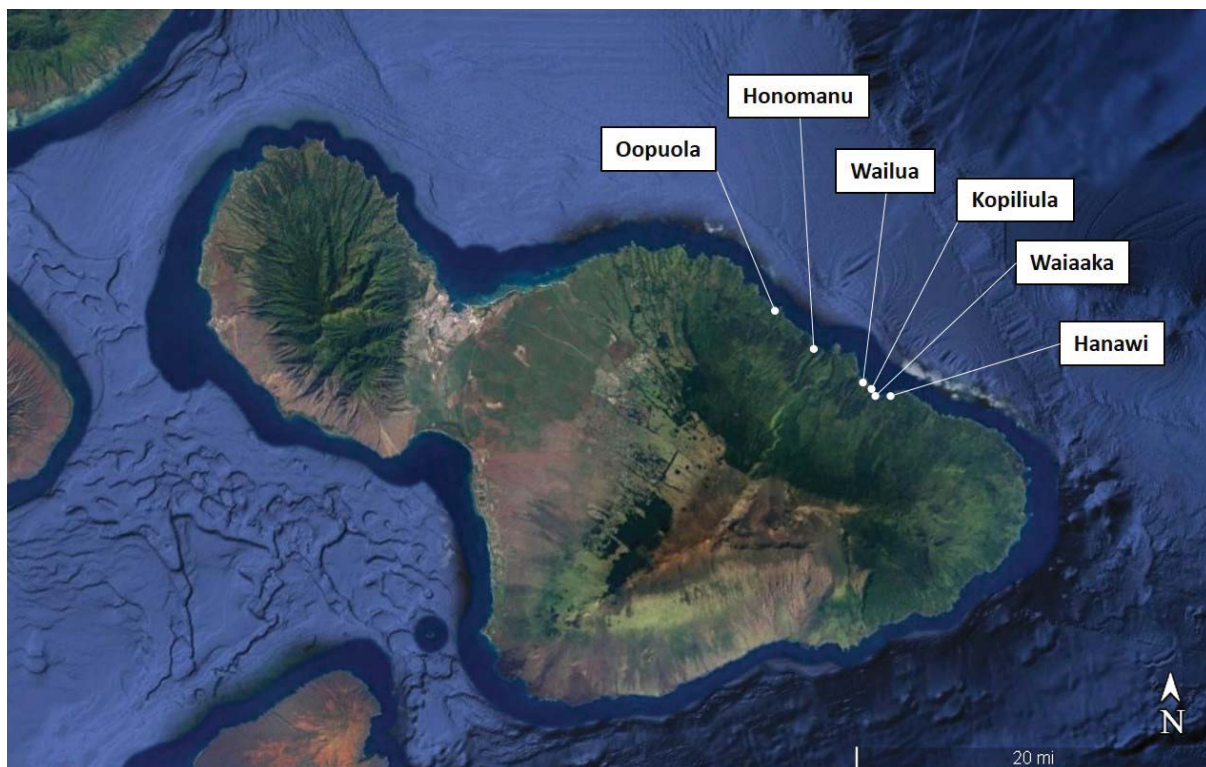


# 1. INTRODUCTION

Sea Engineering, Inc., working with Marine Research Consultants, Inc., conducted field and data investigation of the stream and marine environments in the designated East Maui Irrigation (EMI) License Area of East Maui. The project is focused on providing a comprehensive depiction of the existing conditions offshore of stream discharges in terms of two major components: 1) physical/chemical composition of marine waters, including the forcing factors that affect the composition, and 2) characterization of physical marine habitats and biotic communities that occur within the survey area. The purpose of obtaining these data is to provide the information to depict the effects of discharge of East Maui streams on the nearshore ocean. The linkages between streams and the adjacent ocean will provide insights into possible changes to marine ecosystem structure in response to changes in rates and volumes of stream discharge. This report provides a comprehensive background on the oceanographic and geological setting for the stream diverted by the EMI Aqueduct System. The report also provides the results and conclusions of the effects of stream waters on the marine environment from field surveys conducted in East Maui.

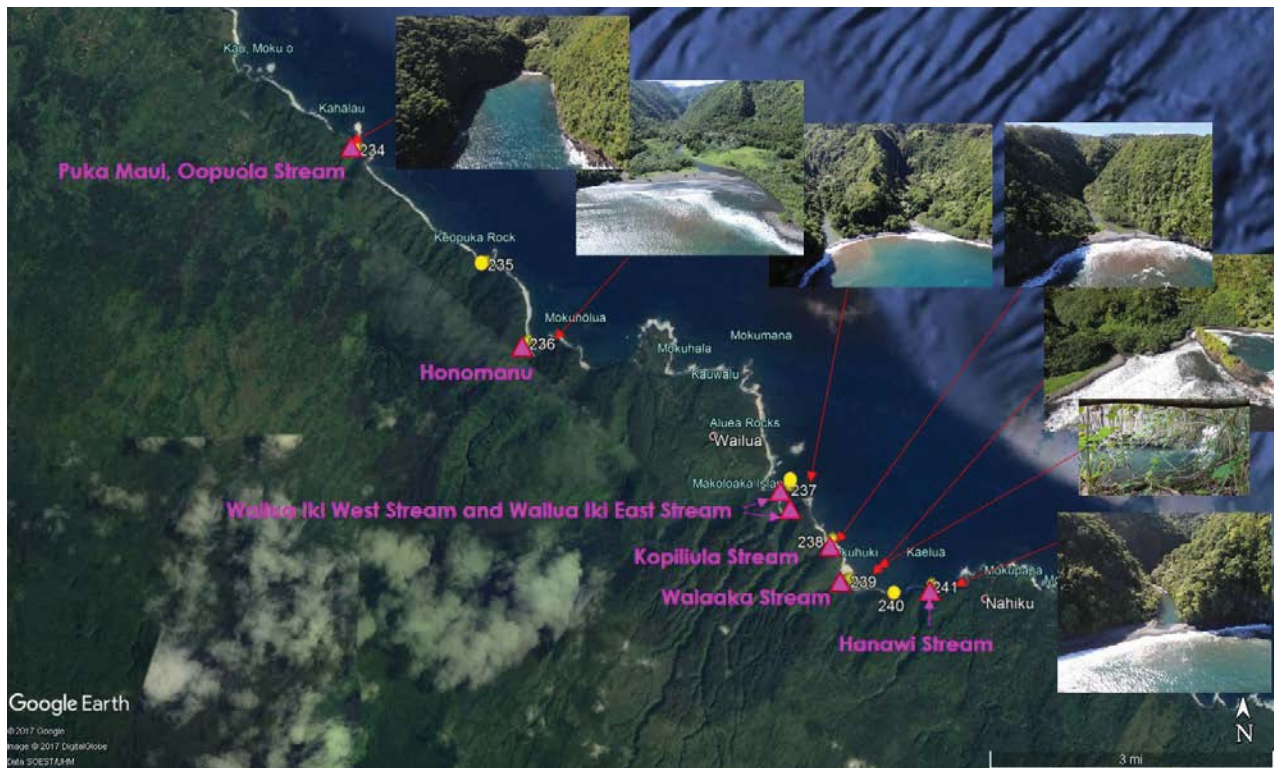
## 1.1 Survey Areas

Along the entire License Area there are 37 streams that reach the shoreline. The project team investigated six representative streams systems shown in Figure 1-1. The selection process for the study areas was based on the accessibility of streams by either motor vehicle or helicopter—streams with no accessibility were not investigated. Each of these streams was investigated during different seasonal conditions, with one field survey in January 2018 and one in July 2018. Some streams presently have no diversion of water and represent background conditions, and some streams presently have diversions occurring. While accessibility was the primary factor in the choice of study areas, it was also intended to evaluate the effect of diversion on the characterization of the offshore marine habitats.



**Figure 1-1. Locations of survey streams on East Maui.**





**Figure 1-2. Google earth image of East Maui showing locations of streams that were surveyed in 2018 during winter (January) and summer (July). Yellow circles indicate streams that were considered by the survey team from a helicopter, but were not included in the survey owing to lack of access or absence of flowing water.**

## 2. OCEANOGRAPHIC SETTING

The oceanographic environmental evaluation is based on existing available information. This evaluation includes a description of regional tides, currents, sea level rise, and waves for the License Area.

Understanding the existing oceanographic environment is critical for evaluating current and future impacts of these streams on the marine ecosystem.

### 2.1 Tides

Hawaii tides are semi-diurnal with pronounced diurnal inequalities (i.e., two high and low tides each 24-hour period with different elevations). A modulation of the tidal range results from the relative position of the moon and the sun: when the moon is new or full, the moon and the sun act together to produce larger "spring" tides; when the moon is in its first or last quarter, smaller "neap" tides occur (Rapaport, 2013). The cycle of spring to neap tides and back is half the 27-day period of the moon's revolution around the earth and is known as the fortnightly cycle. The combination of diurnal, semi-diurnal and fortnightly cycles dominates variations in sea level throughout the islands.

The geometry of the oceans - the basin shape, local coastline, bays, and even harbor geometry - has a major effect on the local behavior of the tides. On scales of oceanic basins, tides exist as very long waves propagating in patterns determined by their period and the geometry of the basin. Lines along which high tide occurs at the same time (called phase lines), converge to several points where the tidal range is zero. There are four of these points, called "amphidromes" in the Pacific: one on the North Pacific near the dateline, one near the equator in the eastern North Pacific, one in the central South Pacific near Tahiti, and one east of New Zealand. Phase lines rotate counter-clockwise around the amphidromes in the North Pacific and clockwise around the ones in the South Pacific. For example, at the Hawaiian Islands, the offshore diurnal tide reaches the Hawaii Island first, then sweeps across Maui, Oahu and finally Kauai. Tidal currents result from tidal variations of sea level, and near the shore are often stronger than the large-scale circulation (Rapaport, 2013).

Tidal predictions and historical extreme water levels are given by the Center for Operational Oceanographic Products and Services (COOPS), National Ocean Service (NOS), and NOAA. The nearest tide station to the project site is at Kahului Harbor on the north side of Maui. The water level data from this station is shown in Table 2-1 and is based on the 1983-2001 tidal epoch.

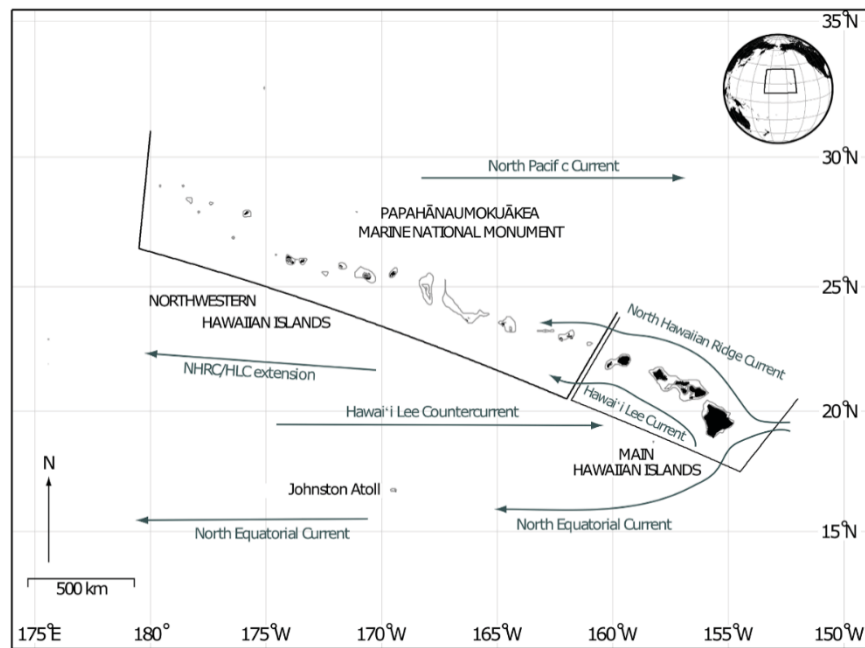
Hawaii is also subject to periodic extreme tide levels due to large scale oceanic eddies that propagate through the islands. Eddies are circulations of about 50 to 200 km across that are often variable over a period of weeks to months depending on the latitude. These eddies produce tide levels up to 0.5 to 1.0 feet higher than normal for periods of up to several weeks in the Hawaiian Islands.

**Table 2-1. Water level data for Kahului Harbor, Station 1615680 (NOAA)**

| Datum                  | Elevation<br>(feet, MLLW) | Elevation<br>(feet, MSL) |
|------------------------|---------------------------|--------------------------|
| Mean Higher High Water | +2.25                     | +1.13                    |
| Mean High Water        | +1.90                     | +0.78                    |
| Mean Sea Level         | +1.12                     | 0.00                     |
| Mean Low Water         | +0.33                     | -0.79                    |
| Mean Lower Low Water   | 0.00                      | -1.12                    |

## 2.2 Currents

The License Area is primarily influenced by the North Hawaiian Ridge Current that moves from the southeast to the northwest along the north side of the Main Hawaiian Islands Figure 2-1. Shown in Figure 2-2 are the ocean currents from the Regional Ocean Modeling System (ROMS) model near the project region that are predominately from the southeast to the northwest. Local currents can vary with the tidal cycle and eddies passing through the License Area.



**Figure 2-1. Regional ocean currents in the Hawaiian Islands (Wren, 2016).**

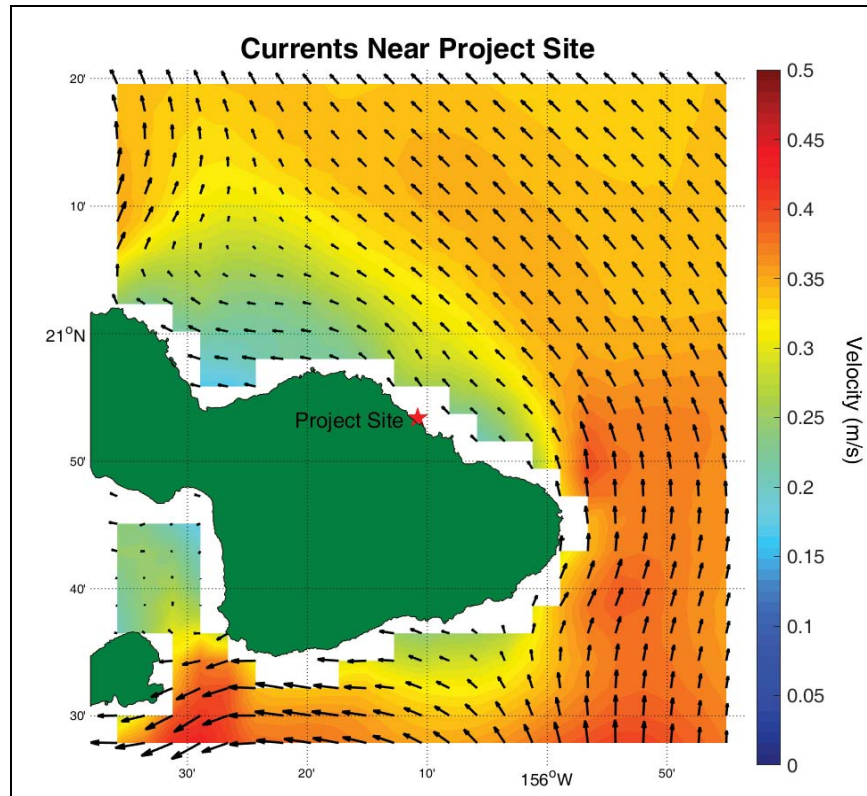


Figure 2-2. Local ocean currents for the Island of Maui (PacIOOS).

### 2.3 Sea Level Rise

The present rate of global mean sea-level change (SLC) is  $+3.4 \pm 0.4$  mm/year (Sweet, 2017), where a positive number represents a rising sea level. SLC appears to be accelerating compared to the mean of the 20<sup>th</sup> Century. Factors contributing to the measured rise in sea level include decreasing global ice volume and warming of the ocean. Sea level, however, is highly variable. The historical sea level trend for Kahului Harbor is shown in Figure 2-3 (NOAA, 2017). The mean historical rate of sea level change (RSLC) is  $+2.21 \pm 0.42$  mm/yr based on monthly data for the period 1947 to 2017. The tide gauge data also show interannual anomalies exceeding 0.5 feet (15 cm) in Kahului Harbor.

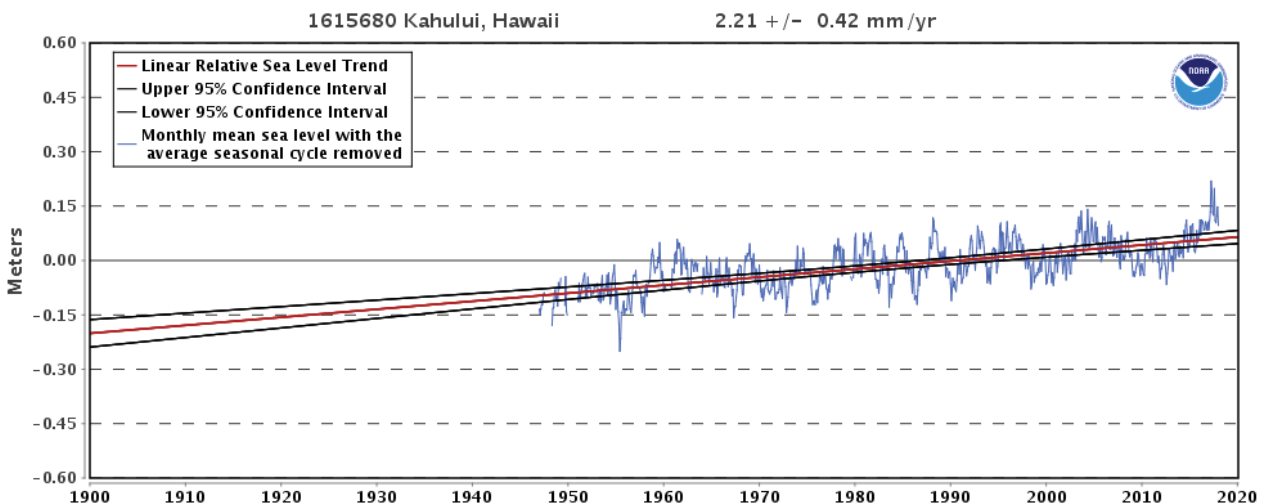


Figure 2-3. Mean sea level trend, Kahului Harbor, 1905 to present (NOAA, 2017).

The National Oceanic and Atmospheric Administration (NOAA) recently revised their sea level change projections through 2100 taking into account up-to-date scientific research and measurements. NOAA is projecting that global sea level rise as shown by their “Extreme” scenario could be as high as about 8 feet by 2100. NOAA’s recent report also identifies specific regions that are susceptible to a higher than average rise in sea level. Hawaii has thus far experienced a rate of sea level rise that is less than the global average; however, this is expected to change. Hawaii is in the “far field” of the effects of melting land ice. This means that those effects have been significantly less in Hawaii compared to areas closer to the ice melt. Over the next few decades, this effect is predicted to spread to Hawaii, which will then experience sea level rise greater than the global average.

Figure 2-4 presents mean sea level rise scenarios for Hawaii based on the revised NOAA projections, taking into account the far-field effects. While the projections are based on the most current scientific models and measurements, discretion is necessary in selecting the appropriate scenario. Selecting the appropriate sea level change projection is a function of many parameters, including topography, coastal setting, criticality of infrastructure, potential for resilience, budget, and function.

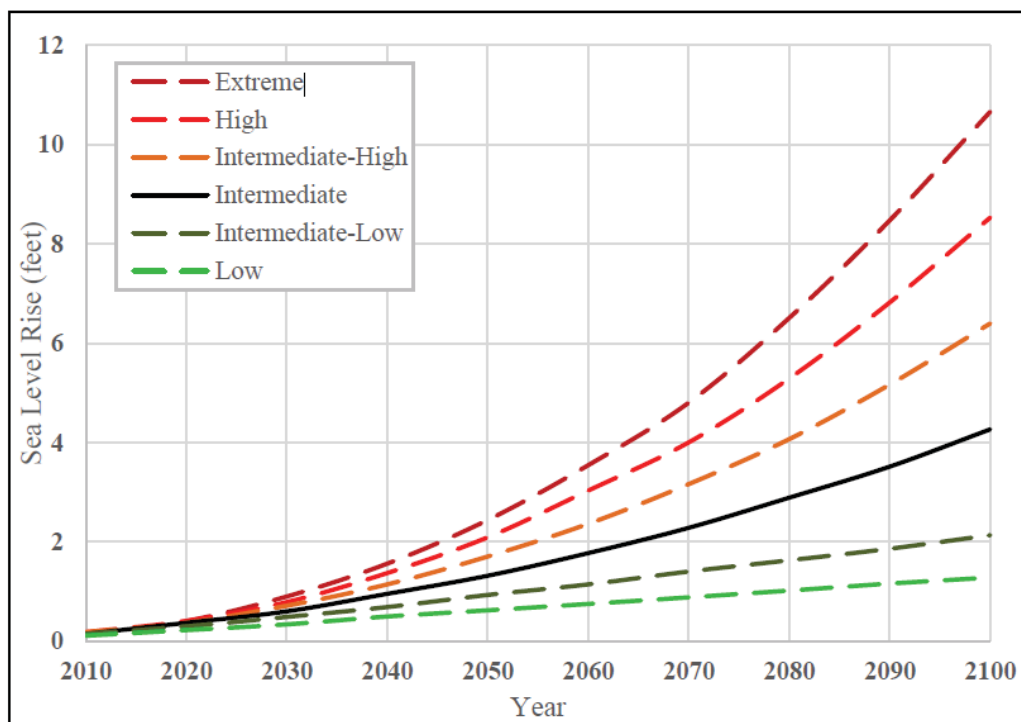


Figure 2-4. Hawaii sea level rise projections (adapted from NOAA, 2017).



**Table 2-2 Hawaii Local Mean Sea Level rise scenarios (feet)**

| Scenario                 | 2010       | 2020       | 2030       | 2040       | 2050       | 2060       | 2070       | 2080       | 2090       | 2100       |
|--------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>Low</b>               | 0.1        | 0.2        | 0.3        | 0.5        | 0.6        | 0.7        | 0.9        | 1.0        | 1.2        | 1.3        |
| <b>Intermediate-Low</b>  | 0.1        | 0.3        | 0.5        | 0.7        | 0.9        | 1.1        | 1.4        | 1.6        | 1.9        | 2.1        |
| <b>Intermediate</b>      | <b>0.1</b> | <b>0.4</b> | <b>0.6</b> | <b>1.0</b> | <b>1.3</b> | <b>1.8</b> | <b>2.3</b> | <b>2.9</b> | <b>3.5</b> | <b>4.2</b> |
| <b>Intermediate-High</b> | 0.2        | 0.4        | 0.7        | 1.1        | 1.7        | 2.4        | 3.2        | 4.1        | 5.0        | 6.3        |
| <b>High</b>              | 0.2        | 0.4        | 0.8        | 1.4        | 2.1        | 3.0        | 4.0        | 5.3        | 7.0        | 8.4        |
| <b>Extreme</b>           | 0.2        | 0.4        | 0.9        | 1.6        | 2.4        | 3.5        | 4.8        | 6.5        | 8.3        | 10.5       |

(Adapted from NOAA, 2017)

An important conclusion of the regional climate assessment is that NOAA’s revised *Intermediate* rate is recommended for planning and design purposes in Hawaii. The *Intermediate* rate projects that sea level in Hawaii will rise 4.2 feet by 2100 (Table 2-2). Given the recent upwardly revised projections and the potential for future revisions, consideration may also be given to the *Intermediate-High* rate for planning and design purposes, which projects that sea level in Hawaii will rise 6.3 feet by 2100.

Sea level rise has the potential to impact beaches and shorelines in Hawaii. Impacts may include beach narrowing and beach loss, loss of land due to erosion, and infrastructure damage due to inundation and flooding. The impacts from anomalous sea level events (e.g., king tides, mesoscale eddies, storm surge) are also likely to increase. A 2015 study found that, due to increasing sea level rise, average shoreline recession (erosion) in Hawaii is expected to be nearly twice the historical extrapolation by 2050, and nearly 2.5 times the historical extrapolation by 2100 (Anderson et al., 2015).

The State of Hawaii recently published the *Sea Level Rise Vulnerability and Adaptation Report for Hawaii*, which discusses the anticipated impacts of projected future sea level rise on coastal hazards, and the potential physical, economic, social, environmental, and cultural impacts of sea level rise in Hawaii (Hawai‘i Climate Change Mitigation and Adaptation Commission, 2017). The University of Hawaii conducted numerical modeling to estimate the potential impacts from sea level rises of 0.5 feet, 1.1 feet, 2.0 feet, and 3.2 feet on coastal hazards including passive flooding, annual high wave flooding, and coastal erosion. These sea level elevations were identified using the predictions associated with the United Nations Intergovernmental Panel on Climate Change’s 2014 reports for time marks at 2030, 2050, 2075, and 2100, respectively. These same elevations are correlated to the more recent and comprehensive scientific predictions made in the 2017 NOAA report, using the *Intermediate* rate, for time marks at 2025, 2043, 2064, and 2085, respectively. In summary, the 2017 NOAA report provides state-of-the-science predictions for rates of sea-level rise, while the Hawaii vulnerability report estimates projected coastal impacts at key sea level elevations.

The Pacific Islands Ocean Observing System (PacIOOS) data viewer presents the State sea level rise report’s predictions for passive flooding impacts in East Maui. Presented below (Figure 2-5 through Figure 2-10) are the areas predicted to be passively flooded by a sea level rise of +3.2 ft. This sea level equates to the 2085 *Intermediate* rate sea level prediction by the 2017 NOAA report. Passive flooding assumes there are no changes to the existing surface of the land and sea floor, and elevated water levels are projected across existing elevations. The blue areas indicate existing dry land that would become submerged under +3.2 ft of sea level rise.





Figure 2-5. PacIOOS +3.2 ft sea level rise passive flooding projection Oopuola Stream

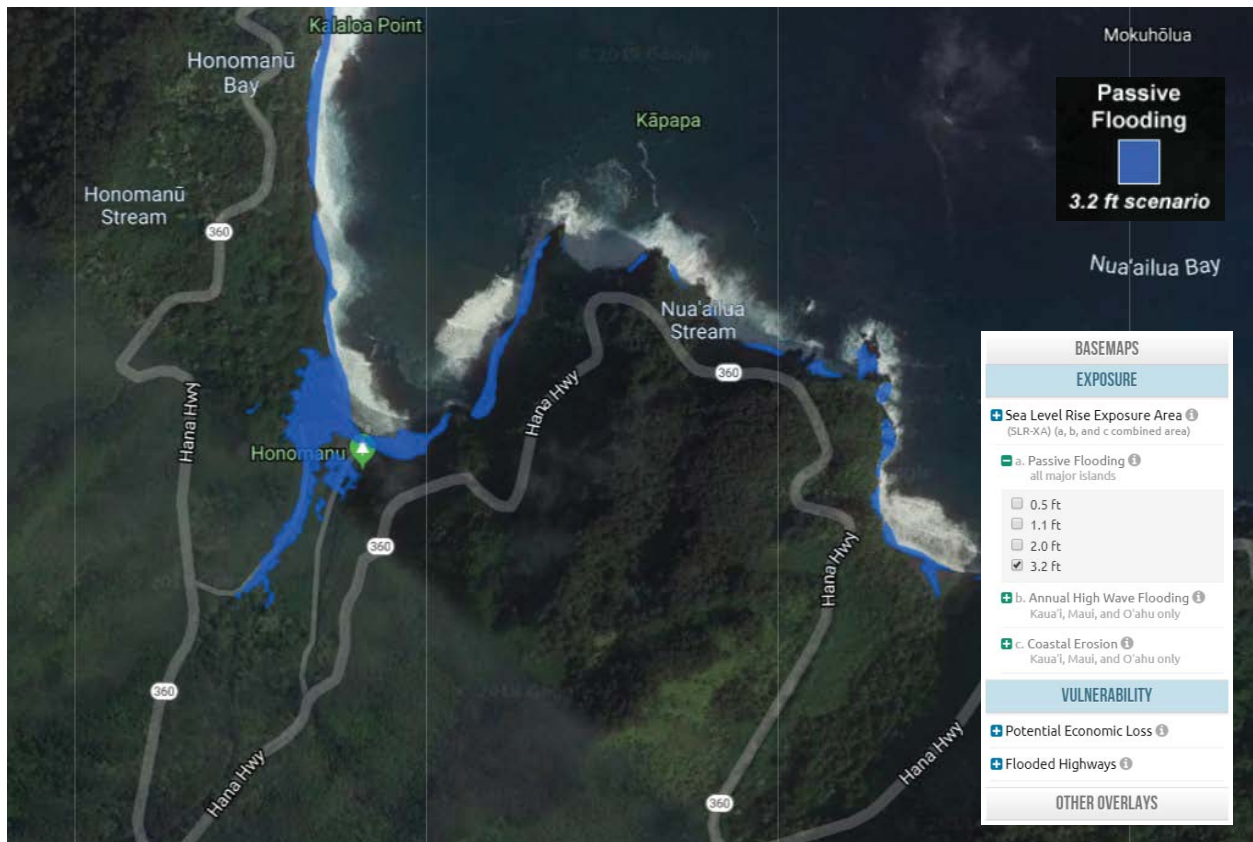


Figure 2-6. PacIOOS +3.2 ft sea level rise passive flooding projection Honomanu Stream

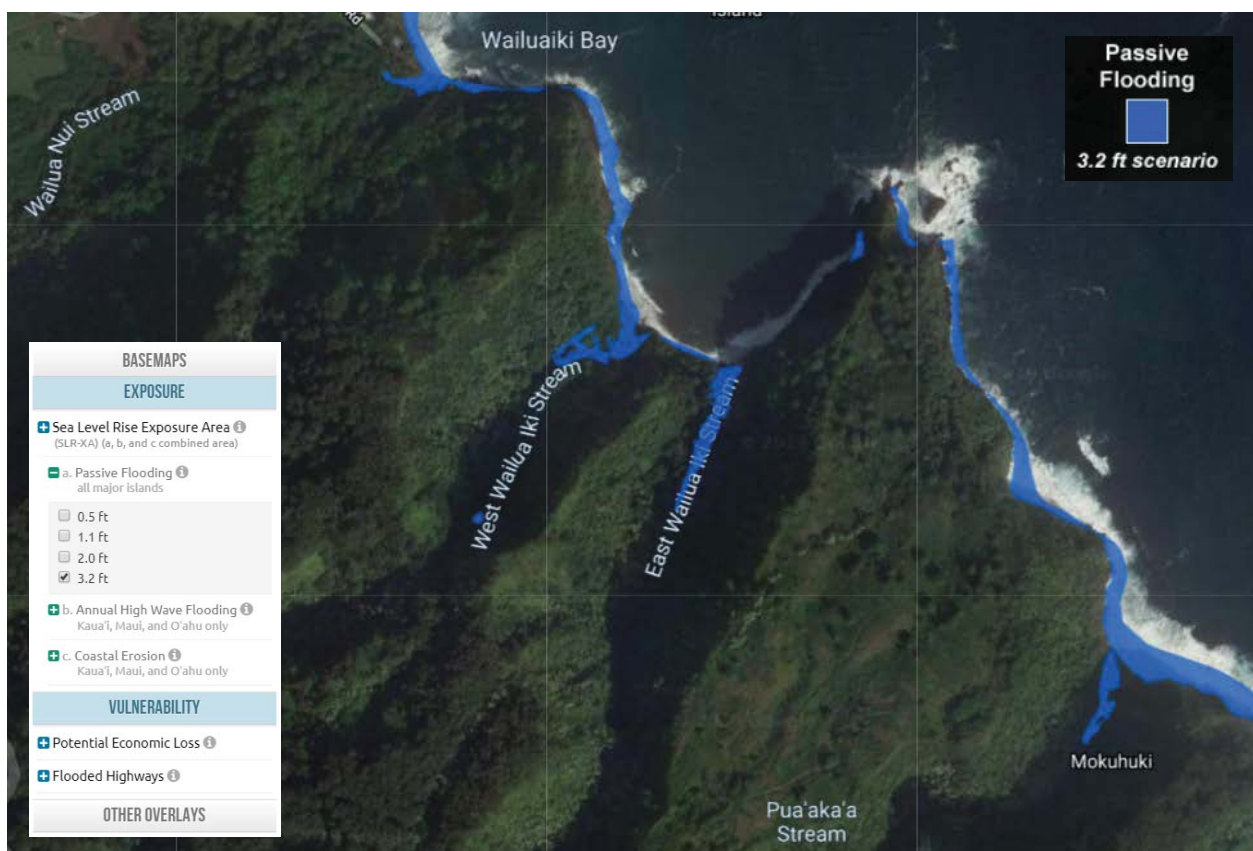


Figure 2-7. PacIOOS +3.2 ft sea level rise passive flooding projection East and West Wailua Iki streams



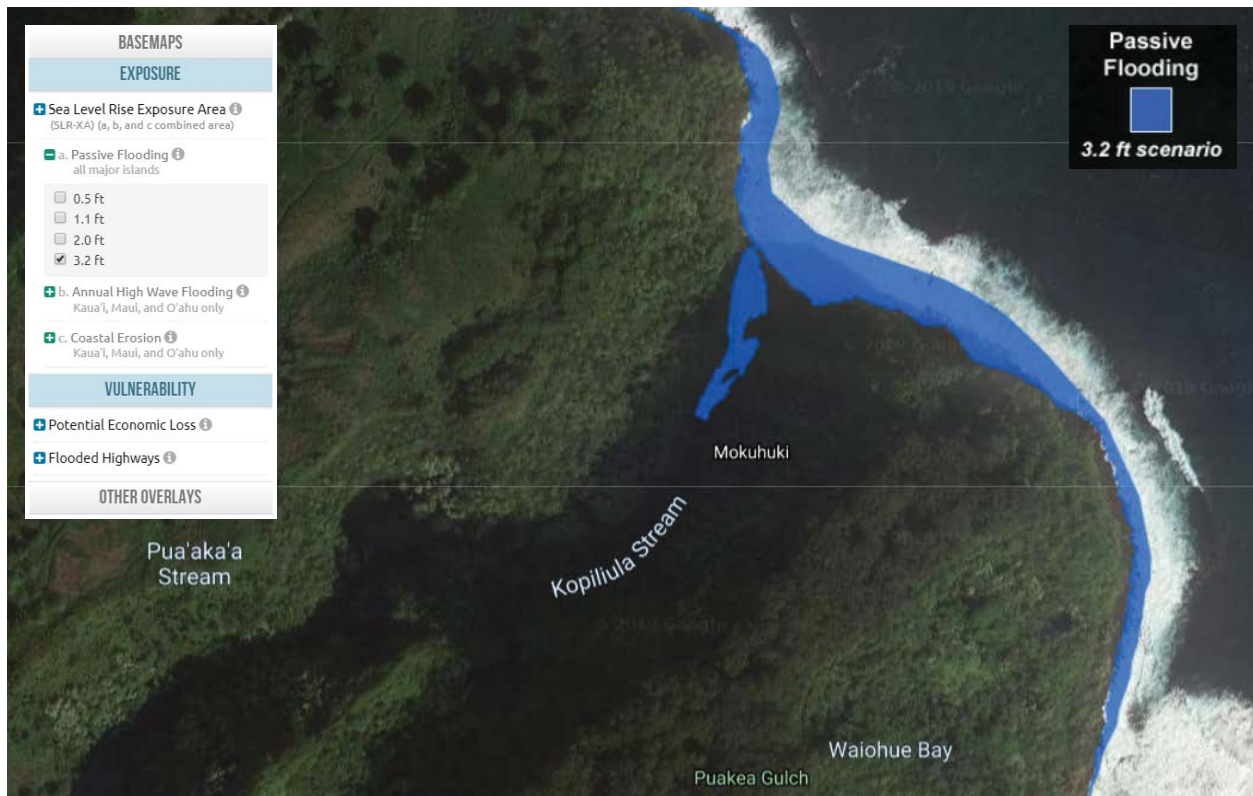


Figure 2-8. PacIOOS +3.2 ft sea level rise passive flooding projection Kopiliula Stream

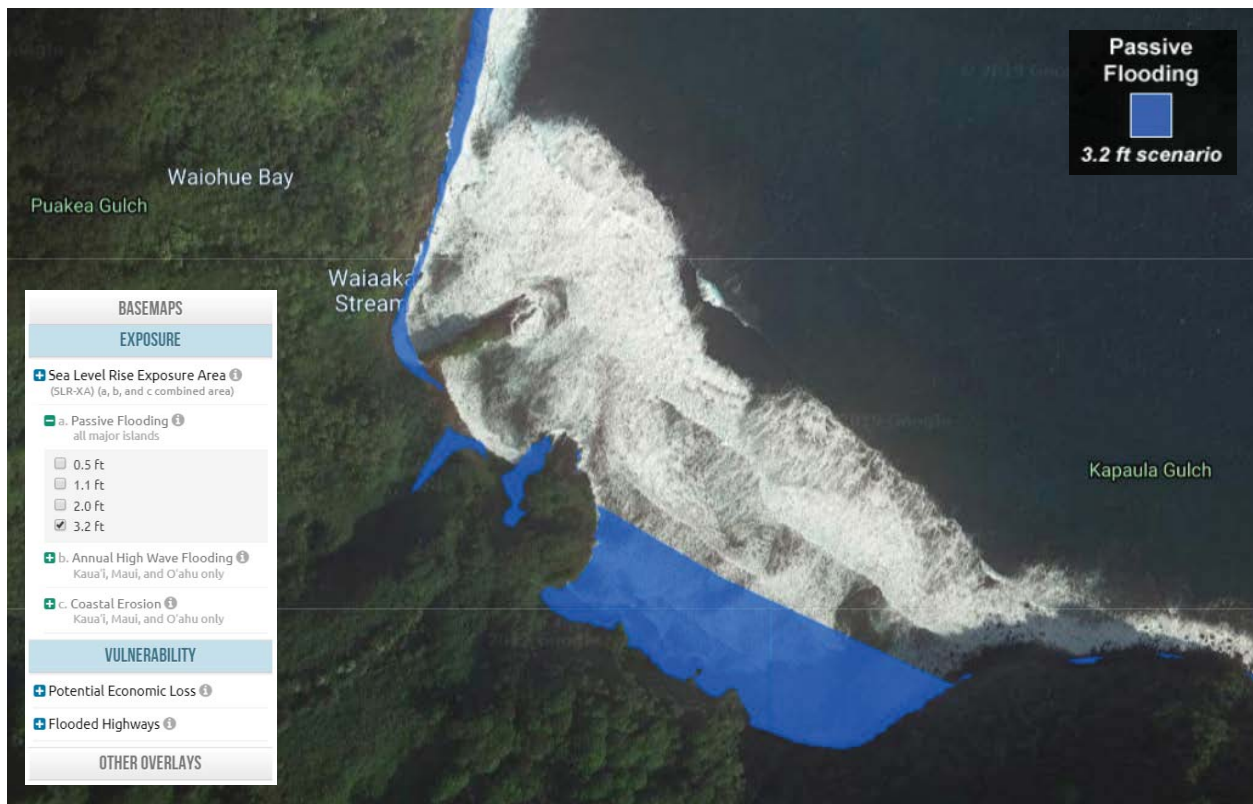
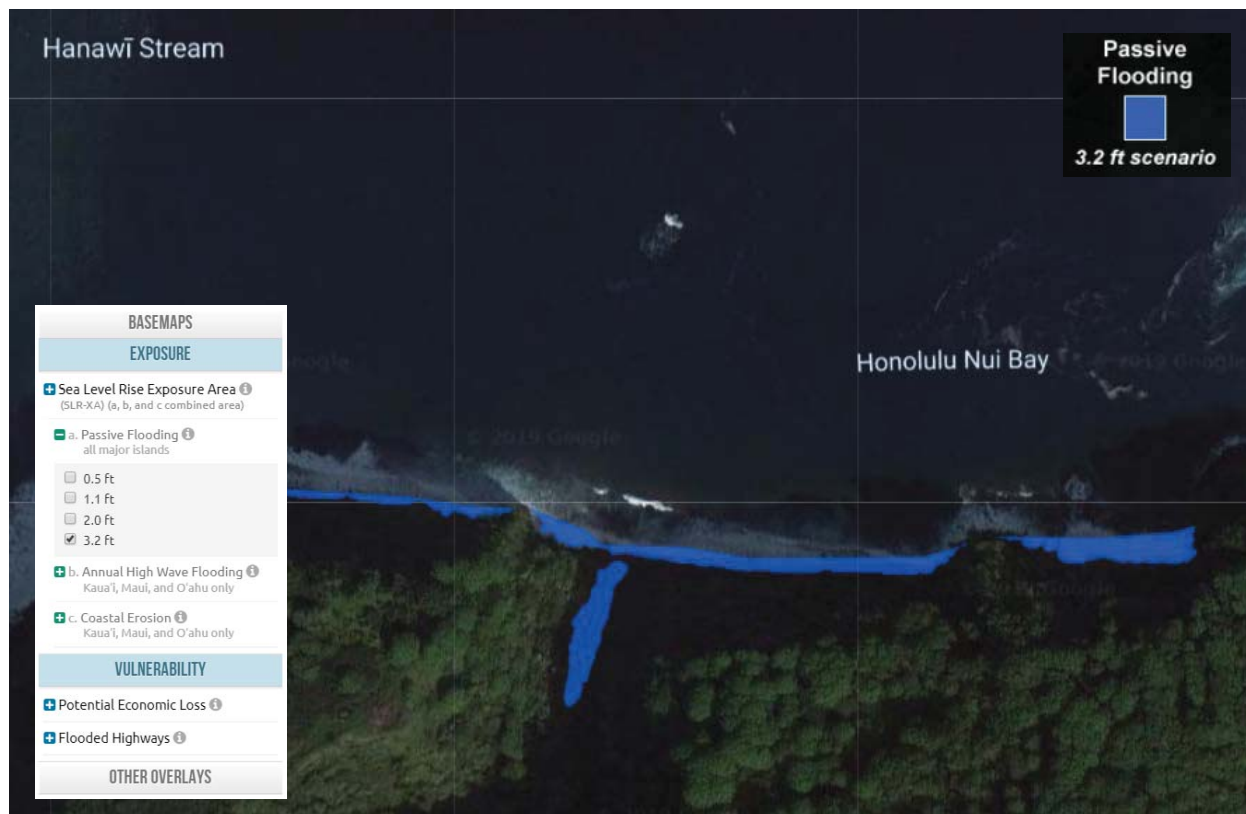


Figure 2-9. PacIOOS +3.2 ft sea level rise passive flooding projection Waiaaka Stream



**Figure 2-10. PacIOOS +3.2 ft sea level rise passive flooding projection Hanawi Stream**

Additional impacts to the East Maui area from sea level rise include increased inundation from wave flooding and typically increased rates of coastal erosion, as discussed above. The State sea level rise vulnerability report did not assess impacts to the project area related to wave inundation or coastal erosion. However, several results can be predicted for the project region based on existing conditions and empirical littoral response to progressively elevated water levels.

Typically, dynamic sediment coastlines, such as the cobble beaches and deltas at the East Maui stream mouths, respond to changes in water level, sediment supply, and wave energy in short time periods. Erosion or accretion along the shoreline becomes a function of the balance between these three primary factors. Rising seas, if all other factors are static, will typically result in the coastal landform rising up and moving landward, as the makai portions of the active profile are eroded to provide the volume required to elevate the entire landform. Storm and seasonally high waves provide the energy required to reshape the landform, carrying sediment higher on the profile.

Rising seas will likely result in the deltaic beaches, bars, and storm berms at the East Maui streams to rise in elevation, while also migrating landward. Storm and seasonal waves, which are typically depth limited by their interaction with the seafloor near the stream mouths, will also likely increase in size and possibly frequency as sea level rises and climate changes. Storm and seasonal wave inundation will migrate inland with the dynamic landforms. The predicted increase in frequency of heavier rain events and flooding may counter the landward migration of these features to some degree, as additional sediment is provided to the deltaic features during flood events. That said, the net change to the project area stream mouths, beaches, bars, and

storm berms, resulting from the estimated +3.2 ft of sea level rise is expected to be a landward regression of the landforms combined with an increase in elevation.

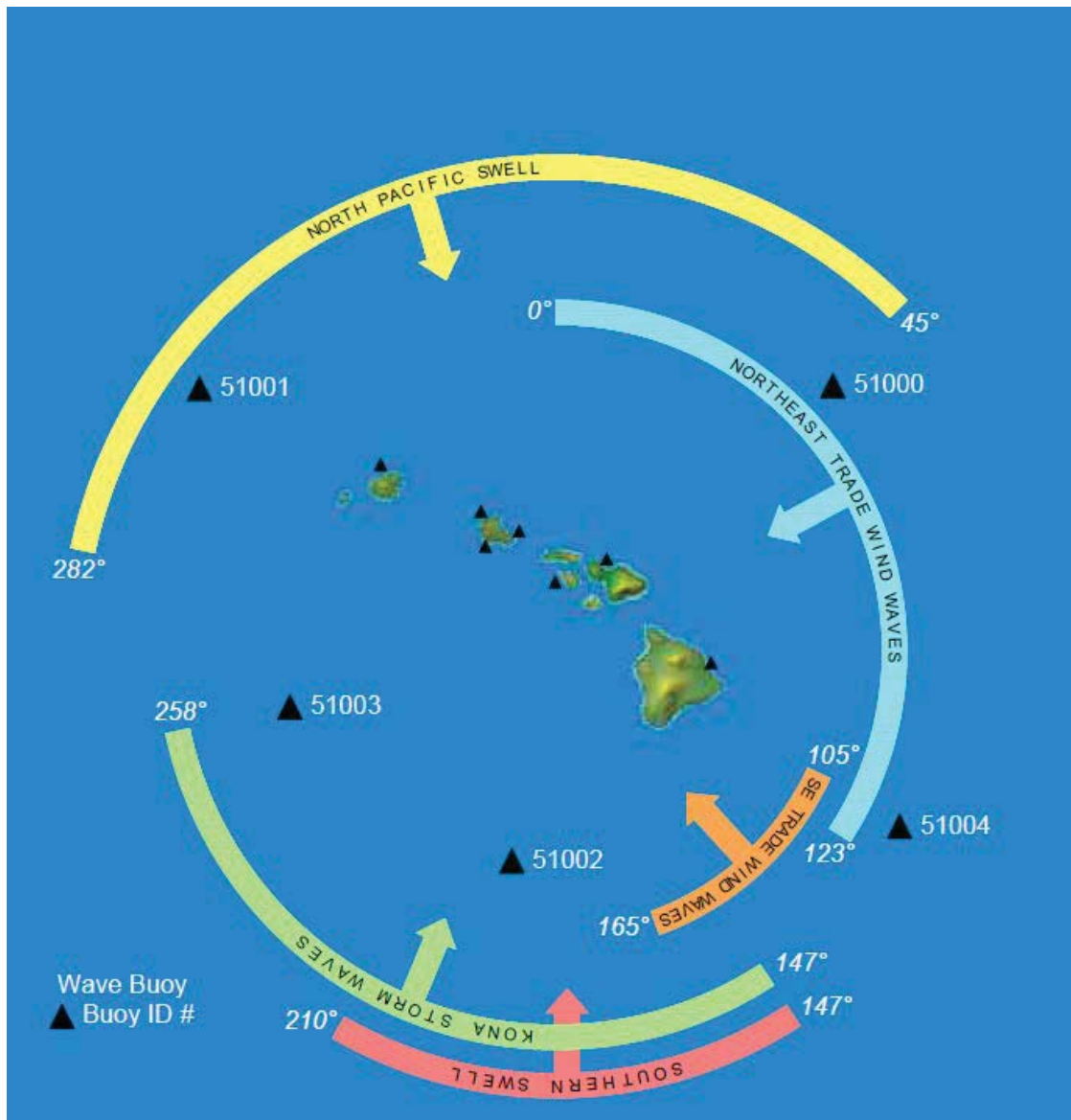
## **2.4 Deepwater Wave Climate**

The wave climate in Hawaii is dominated by long period swell generated by distant storm systems, by relatively low amplitude, short period waves generated by more local winds, and the occasional bursts of energy associated with intense local storms. Typically, Hawaii receives five general surface gravity wave types: 1) northeast tradewind waves, 2) southeast tradewind waves 3) southern swell, 4) North Pacific swell, and 5) Kona wind waves. The dominant swell regimes for Hawaii are shown in Figure 2-11.

As waves reach the shallow waters of a reef and island, they shoal, increase in amplitude and eventually break (Rapaport, 2013). The short period, tradewind sea produces relatively small surf height because of the short wavelengths. Large surf is produced by the long period swell from distant storms because of the correspondingly longer wavelength. The north shores of the Pacific islands receive this long-period swell in the northern hemisphere winter, and the south shores in the southern hemisphere winter. Tropical storms and hurricanes also generate waves that can approach the islands from virtually any direction. Unlike winds, all these wave conditions may occur at the same time.

Wave data available from the National Oceanographic and Atmospheric Administration (NOAA) was compiled and analyzed, in order to identify the primary components of the wave climate affecting the project coastline. These data provide a 31-year wave record and were statistically analyzed to determine the frequency of occurrence of different wave heights, periods, and directions along the coast. Coastal processes in this region are dominated by wave energy, as this coastline is exposed to both Tradewind waves and North Pacific swell. Understanding the magnitude and frequency of these events at the stream mouths and along the entire region's coastline is a key aspect of evaluating stream flow impacts to the marine ecosystem.

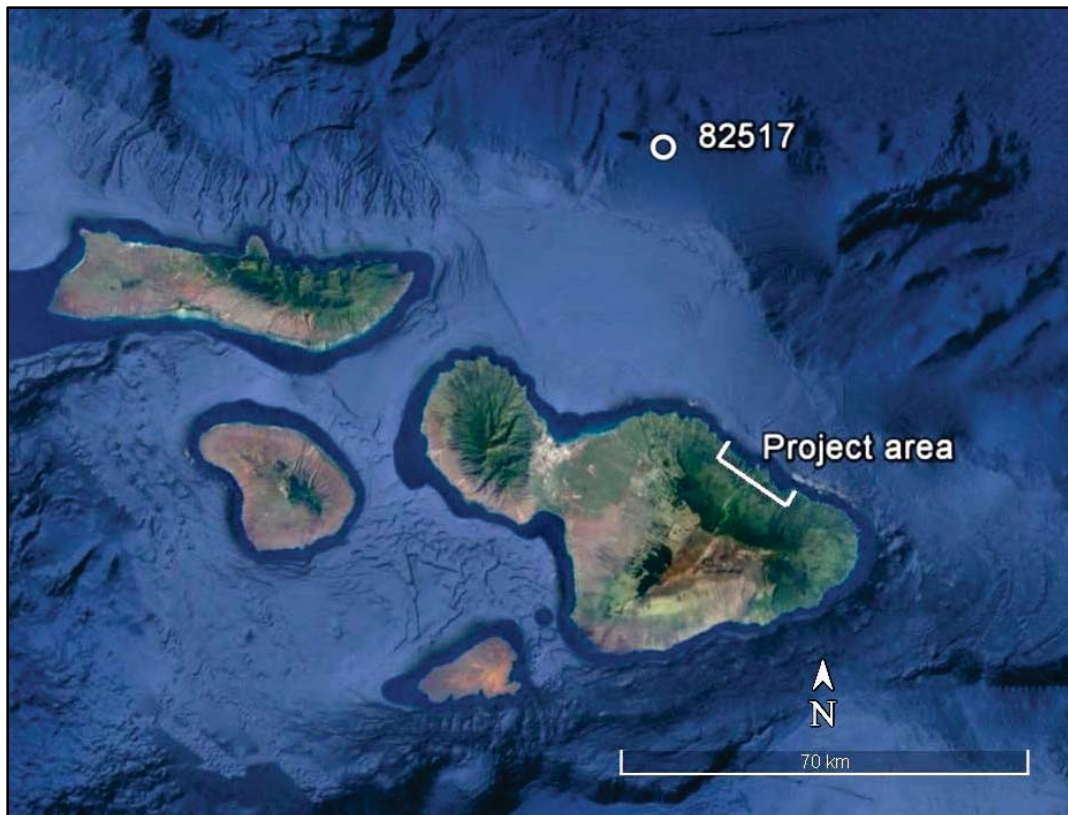
Wave hindcasting is a tool used to calculate past wave events based on weather models and historical data (Hubertz, 1992). With the proper inputs, wave hindcast models can calculate historical wave climates anywhere in the world. Hindcast model outputs are often recorded for a single location, known as a "virtual buoy".



**Figure 2-11. Hawaii dominant swell regimes.**

WaveWatch III (WWIII) is a numerical wave model used to forecast and hindcast waves. Hindcast data for a 31-year period (1979-2010) are available around the Hawaiian Islands from NOAA/NCEP. For this study, hindcast data were obtained from virtual buoy Station 82517, located approximately 35 miles north-northwest of the project site (Figure 2-12)





**Figure 2-12 Project site and virtual buoy locations.**

It is rare for the sea state to consist of a singular wave condition. Wave events are described by wave height, peak period, and peak direction. The wave parameters from the hindcast model are calculated from a modeled wave spectrum. The spectrum shows the distribution of wave energy relative to wave frequency (wave frequency is the inverse of wave period) and wave direction. This methodology allows multiple wave conditions to be accounted for at the same time for a more accurate description of the sea state. Figure 2-13 is a wave height rose diagram that shows the percent occurrence of wave height and direction for waves as measured at Station 82517. Table 2-3 is the corresponding histogram. Figure 2-14 is a wave period rose diagram that shows the percent occurrence of wave period and direction for waves as measured at Station 82517. Table 2-4 is the corresponding histogram.

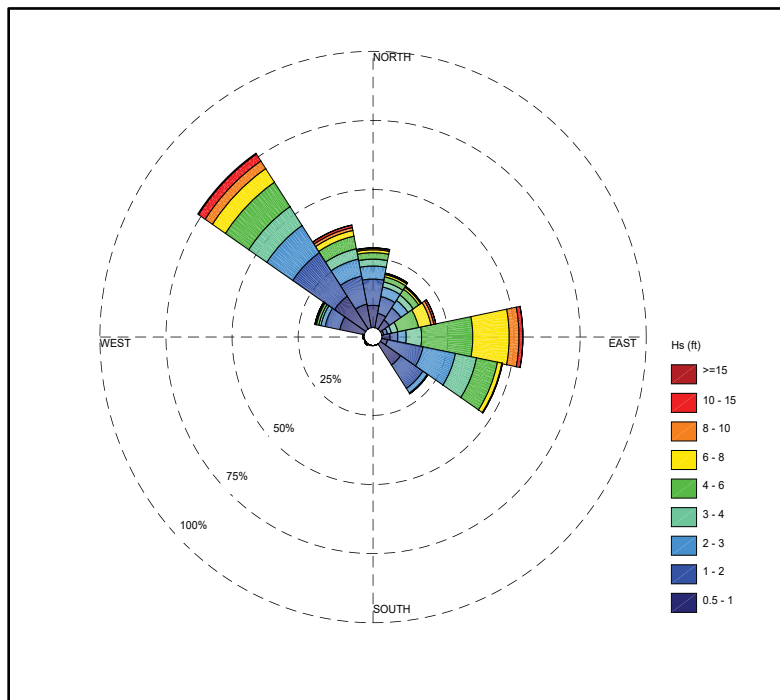


Figure 2-13. Station 82517 virtual buoy wave height rose from Jan 1979 – Jan 2010.

Table 2-3. Station 82517 wave height and direction histogram from Jan 1979 – Jan 2010.

| Hs (ft)\Dir | 0     | 22.5  | 45    | 67.5  | 90    | 112.5 | 135   | 157.5 | 180  | 202.5 | 225  | 247.5 | 270  | 292.5 | 315   | 337.5 | Total   |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|------|-------|------|-------|-------|-------|---------|
| 0.5-1.0     | 8.0   | 5.3   | 4.0   | 0.8   | 3.1   | 2.3   | 9.2   | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.4  | 9.5   | 14.2  | 8.7   | 65.50   |
| 1-2         | 9.5   | 6.2   | 5.3   | 1.5   | 3.0   | 13.7  | 10.2  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.1  | 5.7   | 19.0  | 10.3  | 84.32   |
| 2-3         | 4.7   | 3.5   | 3.2   | 1.5   | 3.2   | 12.5  | 2.0   | 0.0   | 0.0  | 0.0   | 0.2  | 0.0   | 0.0  | 1.6   | 11.8  | 6.3   | 50.72   |
| 3-4         | 2.5   | 1.9   | 2.3   | 2.5   | 5.8   | 8.1   | 0.3   | 0.0   | 0.0  | 0.0   | 0.2  | 0.0   | 0.0  | 0.8   | 8.2   | 3.8   | 36.45   |
| 4-6         | 2.4   | 1.9   | 2.5   | 8.0   | 19.4  | 8.1   | 0.0   | 0.0   | 0.0  | 0.0   | 0.1  | 0.0   | 0.0  | 0.9   | 10.6  | 4.6   | 58.65   |
| 6-8         | 1.0   | 0.8   | 0.8   | 4.7   | 13.8  | 1.7   | 0.0   | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.4   | 5.9   | 2.1   | 31.35   |
| 8-10        | 0.5   | 0.3   | 0.3   | 1.1   | 3.7   | 0.2   | 0.0   | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.1   | 3.3   | 1.1   | 10.65   |
| 10-12       | 0.1   | 0.1   | 0.1   | 0.4   | 1.1   | 0.1   | 0.0   | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.1   | 1.9   | 0.6   | 4.46    |
| 12-14       | 0.1   | 0.1   | 0.0   | 0.2   | 0.2   | 0.0   | 0.0   | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.9   | 0.3   | 1.82    |
| 14-16       | 0.0   | 0.0   | 0.0   | 0.1   | 0.1   | 0.0   | 0.0   | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.4   | 0.1   | 0.71    |
| 16-20       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.2   | 0.0   | 0.32    |
| 20+         | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0   | 0.0   | 0.02    |
| Total       | 28.80 | 20.15 | 18.68 | 20.89 | 53.40 | 46.62 | 21.64 | 0.02  | 0.00 | 0.07  | 0.54 | 0.19  | 0.57 | 19.11 | 76.44 | 37.84 |         |
|             | 0     | 22.5  | 45    | 67.5  | 90    | 112.5 | 135   | 157.5 | 180  | 202.5 | 225  | 247.5 | 270  | 292.5 | 315   | 337.5 | Overall |
| Mean        | 28.80 | 20.15 | 18.68 | 20.89 | 53.40 | 46.62 | 21.64 | 0.02  | 0.00 | 0.07  | 0.54 | 0.19  | 0.57 | 19.11 | 76.44 | 37.84 | 344.97  |
| StDev       | 2.25  | 2.38  | 2.61  | 5.13  | 5.17  | 2.87  | 1.24  | 1.97  | 1.93 | 3.38  | 3.62 | 3.49  | 1.40 | 1.61  | 3.39  | 2.85  | 3.21    |
| Min         | 1.94  | 2.04  | 2.00  | 2.45  | 2.37  | 1.53  | 0.58  | 1.32  | 1.16 | 0.97  | 1.28 | 2.47  | 1.51 | 1.62  | 2.97  | 2.52  | 2.56    |
| Max         | 0.52  | 0.52  | 0.52  | 0.52  | 0.52  | 0.52  | 0.52  | 0.52  | 0.82 | 1.28  | 0.52 | 0.52  | 0.52 | 0.52  | 0.52  | 0.52  | 0.52    |

Note: The color scheme on the histogram is a visual aid to help view the differences in percent occurrence. Empty cells indicate where the value is precisely zero. Cells ranging from green to yellow to red indicate lower to intermediate to higher values, respectively.

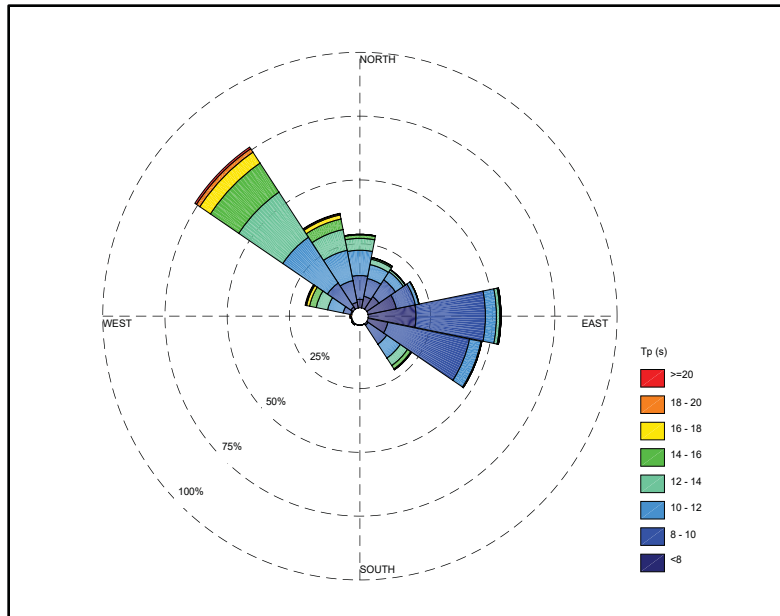


Figure 2-14. Station 82517 virtual buoy wave period rose from Jan 1979 – Jan 2010.

Table 2-4. Station 82517 wave period and direction histogram from Jan 1979 – Jan 2010.

| Tp (s)\Dir | 0     | 23    | 45    | 68    | 90    | 113   | 135   | 158   | 180  | 203  | 225   | 248   | 270   | 293   | 315   | 338   | Total   |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|-------|-------|-------|-------|---------|
| 4-6        | 0.3   | 0.4   | 0.6   | 1.0   | 2.2   | 1.1   | 0.1   | 0.0   | 0.0  | 0.1  | 0.5   | 0.1   | 0.1   | 0.1   | 0.1   | 0.1   | 6.81    |
| 6-8        | 3.0   | 4.2   | 5.3   | 10.6  | 17.0  | 7.0   | 0.6   | 0.0   | 0.0  | 0.0  | 0.0   | 0.0   | 0.1   | 0.3   | 0.9   | 2.2   | 51.26   |
| 8-10       | 9.3   | 7.1   | 8.0   | 7.8   | 27.9  | 33.5  | 9.0   | 0.0   | 0.0  | 0.0  | 0.0   | 0.0   | 0.2   | 3.1   | 11.3  | 8.7   | 125.87  |
| 10-12      | 9.9   | 5.6   | 3.8   | 1.4   | 4.4   | 4.7   | 6.5   | 0.0   |      |      | 0.0   | 0.0   | 0.1   | 6.4   | 21.6  | 12.1  | 76.45   |
| 12-14      | 4.7   | 2.2   | 0.9   | 0.2   | 1.3   | 0.3   | 3.5   |       |      |      | 0.0   | 0.0   | 0.1   | 4.7   | 21.3  | 8.3   | 47.28   |
| 14-16      | 1.3   | 0.6   | 0.1   | 0.0   | 0.4   | 0.1   | 1.6   |       |      |      |       | 0.0   | 0.0   | 2.7   | 13.7  | 4.2   | 24.74   |
| 16-18      | 0.2   | 0.1   | 0.0   | 0.0   | 0.1   | 0.0   | 0.3   |       |      |      |       |       | 0.0   | 1.2   | 5.1   | 1.6   | 8.75    |
| 18-20      | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   |       |      |      |       |       | 0.0   | 0.4   | 1.6   | 0.5   | 2.62    |
| 20+        | 0.0   | 0.0   |       |       | 0.0   |       | 0.0   |       |      |      |       |       |       | 0.2   | 0.8   | 0.2   | 1.19    |
| Total      | 28.80 | 20.15 | 18.68 | 20.89 | 53.40 | 46.62 | 21.64 | 0.02  | 0.00 | 0.07 | 0.54  | 0.19  | 0.57  | 19.11 | 76.44 | 37.84 |         |
|            | 0     | 23    | 45    | 68    | 90    | 113   | 135   | 158   | 180  | 203  | 225   | 248   | 270   | 293   | 315   | 338   | Overall |
| Mean       | 10.44 | 9.69  | 8.97  | 7.98  | 8.51  | 8.80  | 10.78 | 7.78  | 6.41 | 4.60 | 4.79  | 5.76  | 9.08  | 12.31 | 12.60 | 11.60 | 10.36   |
| StDev      | 2.10  | 2.15  | 1.80  | 1.28  | 1.59  | 1.15  | 2.09  | 2.19  | 1.54 | 0.59 | 0.97  | 1.74  | 3.04  | 2.70  | 2.62  | 2.61  | 2.71    |
| Min        | 4.01  | 4.01  | 4.02  | 4.01  | 4.01  | 4.01  | 4.03  | 4.01  | 4.43 | 4.01 | 4.01  | 4.01  | 4.01  | 4.01  | 4.02  | 4.05  | 4.01    |
| Max        | 21.22 | 20.76 | 19.77 | 17.77 | 20.96 | 18.38 | 20.21 | 11.75 | 8.52 | 9.79 | 13.74 | 14.42 | 18.63 | 24.42 | 25.38 | 24.48 | 25.38   |

*Note:* The color scheme on the histogram is a visual aid to help view the differences in percent occurrence. Empty cells indicate where the value is precisely zero. Cells ranging from green to yellow to red indicate lower to intermediate to higher values, respectively.

### 2.4.1 Deep Water Wave Generation Regions

Sea-swell waves in the ocean are generated by surface winds. As the wind blows, energy is put into the ruffled sea surface and waves begin to grow in both height and length (Agustin, 2017). Waves will travel along great circle routes until their energy is dissipated. We use the ESTELA (Evaluating the Source and Travel-time of the wave Energy reaching a Local Area) model by Perez et. Al. (2014) to determine the source of waves arriving at the project site. The ESTELA model begins by evaluating geographic criteria to remove areas where wave propagation to the project site is clearly obstructed by land (Agustin, 2017). These criteria rely on the assumption that deep water waves travel along great circle paths. A limitation of this assumption is that it does not capture refraction and diffraction around islands. The model then calculates the wave energy in wave generation regions that have met the geographic criteria

Shown in Figure 2-15 is the mean energy flux per unit degree for the wave generation regions that impact the project site over 1993 to 2012. Energy flux is the product of wave energy, proportional to wave height squared, and group velocity, the rate at which wave energy moves. The colored regions show the effective energy flux for generation regions that met the geographic criteria. Black dashes show the great circle routes waves travel along, and black contours represent the wave travel time in days. Yellow areas represent the regions with the highest wave energy flux traveling toward the project site whereas the effective energy flux of dark blue areas is negligible. The primary source of energy impacting the study site is the northwest swell according to the ESTELA model. The northwest wave source region in the model output is known to be an area of high storm activity (Bromirski et al., 2005). Lower in energy, but also a source of waves shown in the ESTELA output are trade wind waves. Trade wind waves are generated by the trade winds from the northeast to east throughout the year forced by the subtropical high-pressure region (Stopa, 2011).

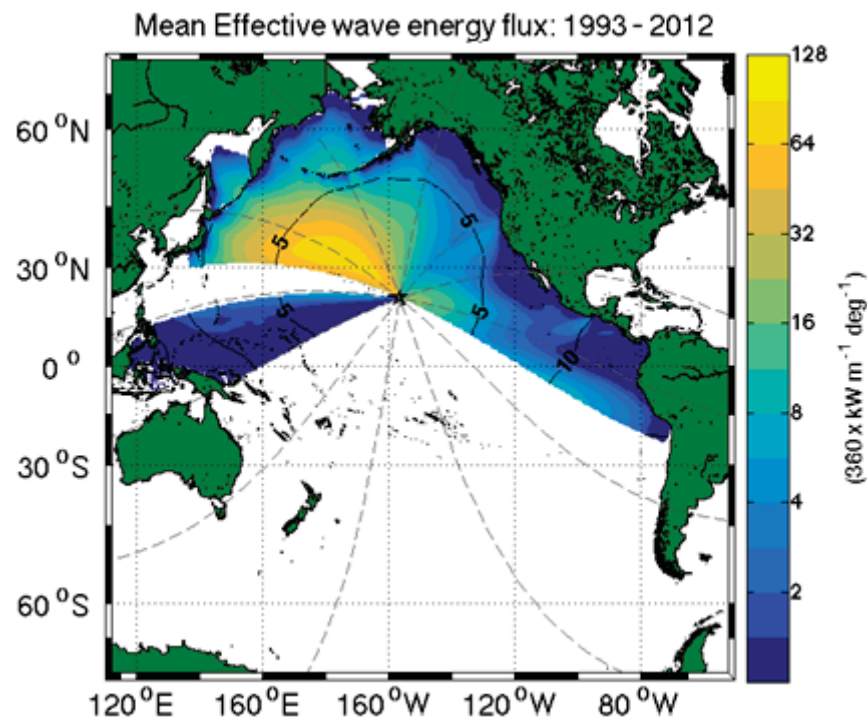


Figure 2-15. North Maui mean effective wave energy flux ESTELA model output.

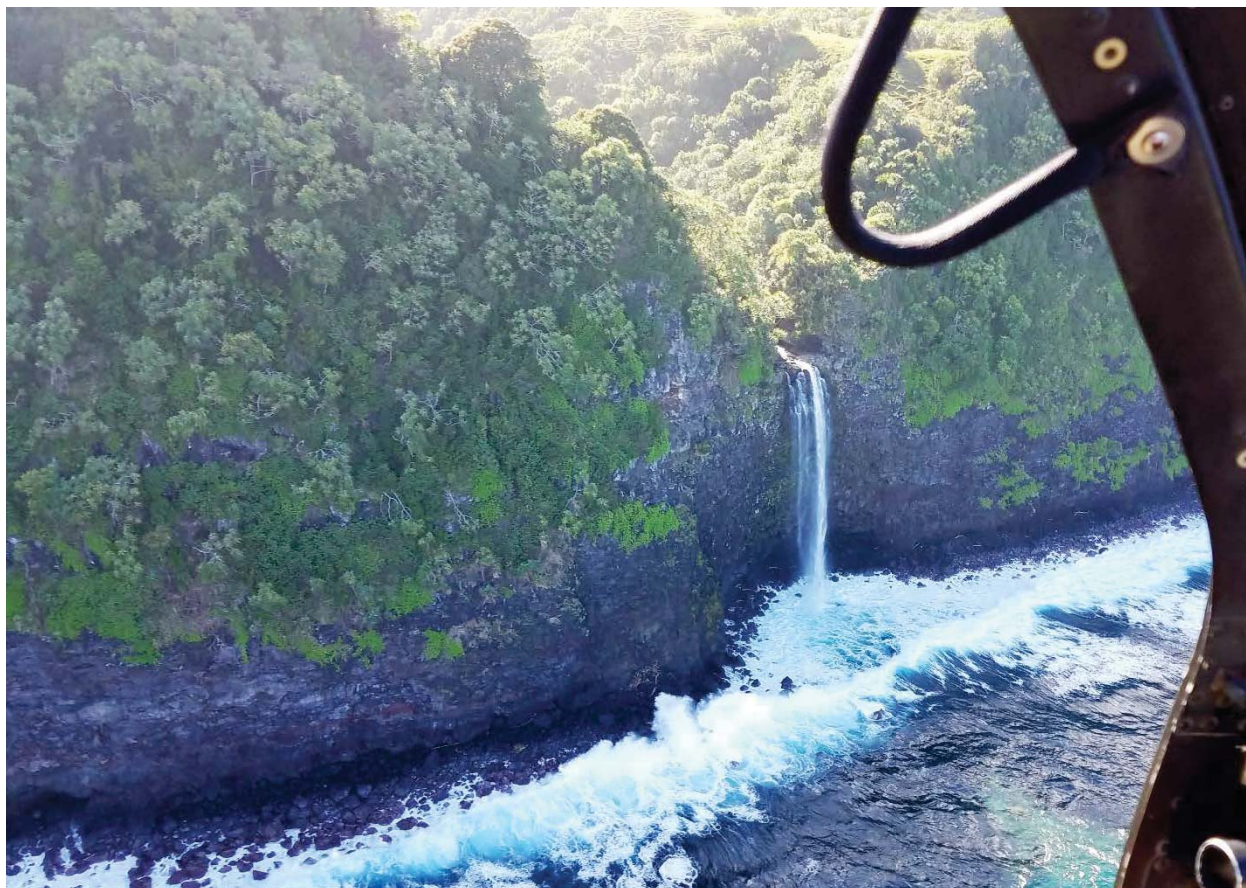


### 3. COASTAL GEOLOGY

The east flank of Haleakala is dominated by basalt flows from the Kula Volcanics and Hana Volcanics. These overlapping flows are incised by deep valleys with steep walls, dropping rapidly from the upper terrace landscape down to the stream beds that continually erode the basalt substrate (Figure 3-1). Smaller watersheds may produce valleys have not fully incised the basalt flows and exit the coastline at waterfalls nestled within the seacliffs (Figure 3-2). The ongoing erosion of the basalt terrace, from the crater walls of Haleakala down to the coastline, produces ample volume of basalt boulders, cobbles, pebbles, and sand for both the stream beds and the cobble and shingle beaches (Figure 3-4). Honomanu Basalt flows outcrop as many of the headlands along this stretch coastline, providing stable seacliffs and sides to the small embayments notched into the shore (Figure 3-5, Figure 3-6).



**Figure 3-1. Aerial view of Wailua Iki East and Wailua Iki West streams showing valleys cut into the basalt slope of East Maui.**



**Figure 3-2. Stream valley exiting the coastline at a seacliff.**





**Figure 3-3. Basalt sediment from the stream bed mixing with the basalt beach at Wailua Iki East stream.**



**Figure 3-4. Stream bed basalt sediment mixing with the basalt sediment beach at Honomanu stream.**





**Figure 3-5. Rocky seacliff headlands alongside basalt cobble and shingle beaches at Kopiliula Stream.**





**Figure 3-6. Steep, columnar basalt headland next to basalt boulder beach on the west side of Waiaaka Stream.**

Beaches along this coast comprise almost entirely basalt sediment. The limited reef environment and high energy coastline are neither amenable to producing carbonate sand grains nor allowing for settling of carbonate sand grains along the shoreline. Instead, these beaches are made of basalt sediment ranging in size from coarse sand to boulders (Figure 3-7).



**Figure 3-7. Basalt beaches with sediment sizes ranging from coarse sand to boulder at Wailua Iki West Stream.**

The rugged, exposed coastline is battered year-round by large waves. In the summer months, unobstructed Tradewind waves attack the shore and in the winter months large North Pacific swell and local storm events send large waves toward the coast. The seafloor drops off quickly from the shoreline and does not provide significant protection from offshore waves. Though the shoreline is generally rocky, there is still an erosion hazard present, especially within the low-lying stream valleys. The small islets along the coast are erosional relicts left after the seacliffs migrated inland. The coastal natural hazards for East Maui are categorized and evaluated in the *Atlas of Natural Hazards in the Hawaiian Coastal Zone* (2002) (Figure 3-8, Figure 3-9, and Figure 3-10). These hazards in coastal erosion, as well as tsunami, stream flood, sea-level rise, and storm hazards. The Atlas ranks the stream mouths and valley shorelines as high coastal hazard areas due to their low-lying topography and unprotected coast (Figure 3-11). By contrast, the taller seacliffs and headlands that surround the valleys have a moderate exposure level due to their elevation and substrate characteristics.



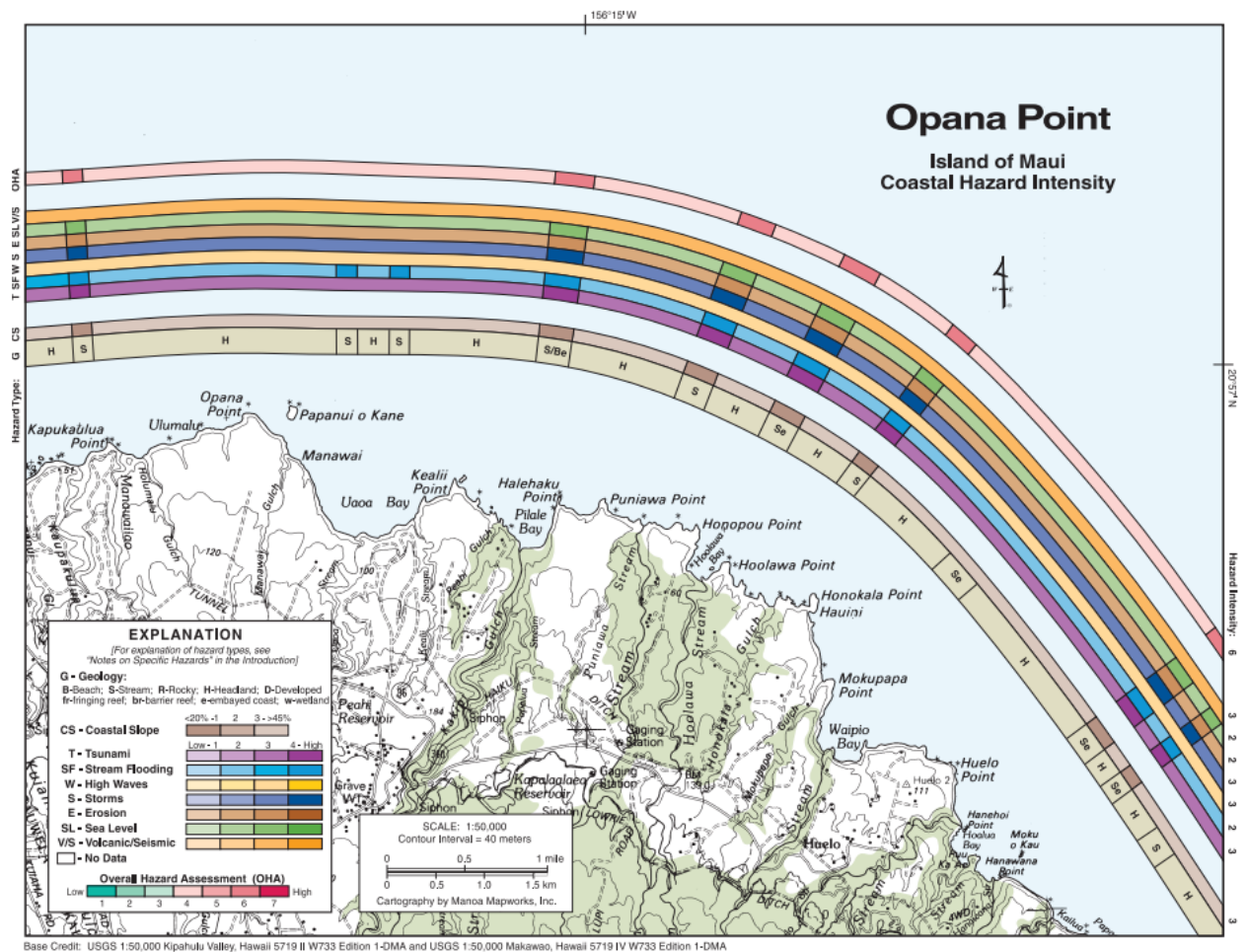


Figure 3-8. Atlas of Natural Hazards in the Hawaiian Coastal Zone – Opana Point Region.



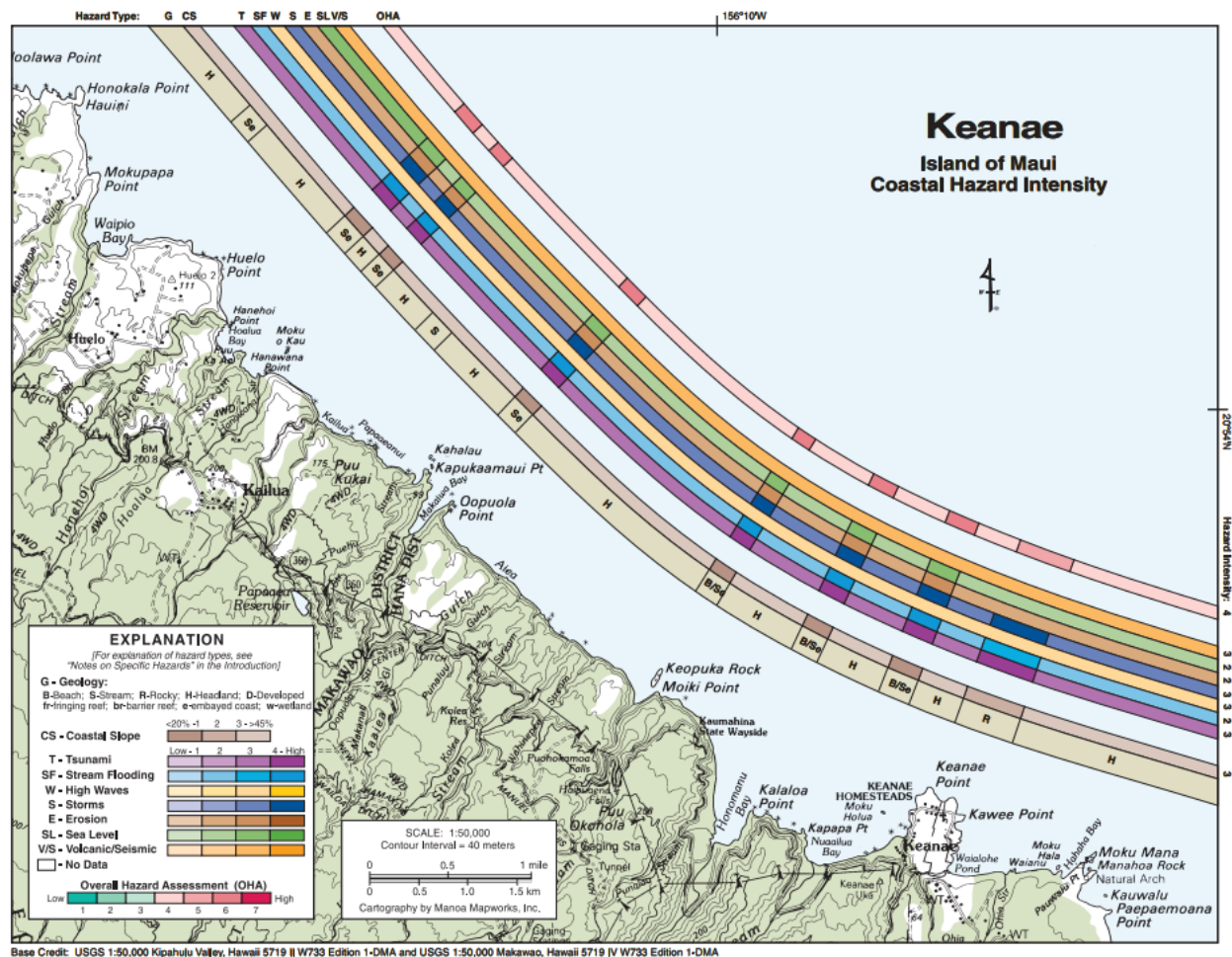


Figure 3-9. Atlas of Natural Hazards in the Hawaiian Coastal Zone – Keanae Region.

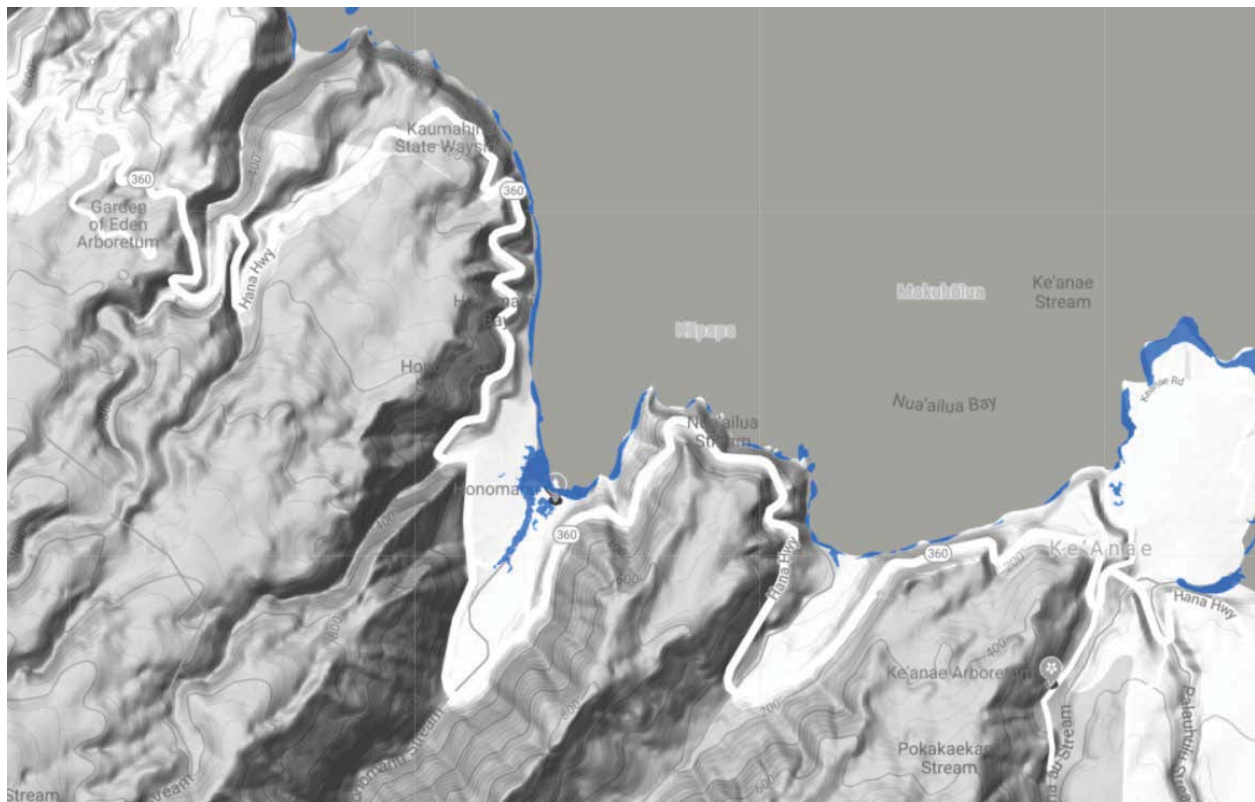




**Figure 3-11. Aerial view of waves washing across the low-lying basalt cobble and boulder beaches, at the base of basalt seacliffs at Hanawi Stream.**

The Hawaii Sea Level Rise Vulnerability and Adaptation Report, completed in 2017, specifically addresses sea-level rise exposure due to waves, passive flooding, and shoreline erosion. This report identified limited sea-level rise exposure along much of the coastline. The rocky, cliffed shorelines have minimal exposure due to their steep slopes and durable substrate. The areas showing sea-level rise exposure are near the shoreline within the stream valleys and low-lying basalt terraces near the waterline (Figure 3-12).





**Figure 3-12. Example - Sea Level Rise Exposure Area at shoreline for Honomanu Stream, 3.2 ft rise, PacIOOS viewer for Hawaii Sea Level Rise Vulnerability and Adaptation Report.**

## 4. EAST MAUI STREAM FIELD SAMPLING

Field surveys were conducted twice (winter, summer) at six stream systems on East Maui that were accessible by either roads or helicopter (Figures 1-1, 1-2). During an initial reconnaissance flight several other streams were observed, but were not included in the survey owing to either inaccessibility or absence of water flowing to the ocean (Figure 1-2). The winter survey commenced on January 2, 2018 with collection of sediment and water samples from Honomanu Stream and estuary. On January 3, four streams/estuaries along the northern coast of East Maui (Hanawi, Kopiliula, Waiaaka East and Waiaaka West) were accessed by helicopter and sampled. On January 5 Wailua Iki and Wailua Nui streams and Oopuola were sampled in a similar manner. For the summer sampling, the Honomanu Stream and estuary were sampled on July 19, 2018, Hanawi, Kopiliula, Waiaaka East and Waiaaka West were sampled on July 20, and Oopuola, Wailua Nui East and West were sampled on July 23.

At each of the survey streams water samples were collected by investigators walking along transects that extended from the most inland accessible upstream areas through the transition zone where stream water mixes with ocean water, and as far seaward in the nearshore ocean as was possible. At each sampling point, location was recorded using a hand-held GPS. All sampling done in both January and July 2018 was conducted during periods of normal seasonal swell which limited safe access to offshore sites. Samples were stored on ice and delivered to the analytical laboratory in Honolulu as soon as possible following collection.

### 4.1 Water Chemistry Analytical Methods

Water quality parameters evaluated included all of the specific criteria designated for open coastal waters in Chapter 11-54, Section 06 (Open Coastal waters) of the State of Hawaii Department of Health (DOH) Water Quality Standards. These criteria include: total nitrogen (TN), nitrate + nitrite nitrogen ( $\text{NO}_3^- + \text{NO}_2^-$ , hereafter referred to as  $\text{NO}_3^-$ ), ammonium nitrogen ( $\text{NH}_4^+$ ), total phosphorus (TP), chlorophyll *a* (Chl *a*), turbidity, pH, salinity and temperature. In addition, orthophosphate phosphorus ( $\text{PO}_4^{3-}$ ) and silica (Si) were also reported because these parameters are sensitive indicators of biological activity and the degree of stream water and groundwater mixing.

Following collection, subsamples for nutrient analyses were immediately placed in 125-milliliter (ml) acid washed, triple rinsed, polyethylene bottles and stored on ice. Analyses for  $\text{NH}_4^+$ ,  $\text{PO}_4^{3-}$ , and  $\text{NO}_3^-$  were performed with a Technicon autoanalyzer using standard methods for seawater analysis. TN and TP were analyzed in a similar fashion following oxidative digestion. Total organic nitrogen (TON) and total organic phosphorus (TOP) were calculated as the difference between TN and dissolved inorganic N and TP and dissolved inorganic P, respectively.

Water for other analyses was subsampled from 1-liter polyethylene bottles and kept chilled until analysis. Chl *a* was measured by filtering enough water through glass fiber filters for color to be visible; pigments on filters were extracted in 90% acetone in the dark at 20° C for 12-24 hours. Fluorescence before and after acidification of the extract was measured with a Turner Designs fluorometer. Salinity was determined using an AGE Model 2100 laboratory salinometer with a readability of 0.0001‰ (ppt). Turbidity was determined on 60 ml subsamples using a Monitek Model 21 nephelometer, and reported in nephelometric turbidity units (NTU).

*In situ* field measurements of water temperature, pH, dissolved oxygen and salinity were acquired using an RBR Concerto CTD calibrated to factory specifications. The CTD has a

readability of 0.001°C, 0.001pH units, 0.001% saturation, and 0.001 parts per thousand (salinity). All laboratory analyses were conducted by Marine Analytical Specialists in Honolulu, Hawaii. Marine Analytical Specialists possesses the acceptable rating for EPA-compliant proficiency and quality control testing.

## 4.2 Water Chemistry Results

Appendix A contains results of all water chemistry analyses for each stream during each sampling period. Figures 4-1 through 4-12 show pictographic representations of the distribution of temperature in each stream and the nearshore ocean for the winter and summer sampling events. Figures 4-13 through 4-24 show similar pictographs for temperature, Figures 4-25 through 4-36 show data for phosphate phosphorus, and Figures 37 through 48 show distributions of nitrate nitrogen. These data are plotted within accurate topographic representations of the stream beds with the intent of providing a clear depiction of the relationship between the streams and the ocean. Symbols on the pictographs are color-coded to vary in intensity according to the magnitude of the values, which are shown in the table embedded in each figure.

The best delineator between stream water and ocean water is salinity. Examination of the pictographs reveals that there are generally similar patterns of salinity for all six of the streams. In all of the streams sampled, salinity at the inland ends of the sampling transects was near zero, indicating that water in these areas was of terrestrial origin, and above the reach of tidal exchange with the ocean. Near the shorelines of all streams, there was a narrow transition zone where stream water mixed with ocean water, resulting in salinity of intermediate values. Beyond the shoreline, salinity rose sharply to near oceanic values. It is of interest, however, that at none of the samples collected at the most offshore stations had oceanic values of salinity of about 34 ppt. The highest values measured in ocean samples occurred at Kopiliula stream in the summer (~33 ppt) (Figure 4-6), Oopuola in the winter (~32 ppt) (Figure 4-7), and Honomanu stream in the winter (~31 ppt) (Figure 4-1). Such a result indicates that there is at least a slight effect of freshwater input in the nearshore marine areas that were investigated.

The only stream that did not show salinity near ocean values was Hanawi in the winter where all samples were essentially freshwater. At Hanawi surface salinity ranged from 0.0-0.1 ppt at eight of the sampling stations and only rose to 1.56 ppt at the stream mouth (Figure 4-3). The cause of the lack of any discernable gradient was the inability to sample in the nearshore ocean owing to dangerous breaking surf.

Gradients of temperature along the transects of each stream mirror salinity, as freshwater in the streams was consistently cooler than ocean waters (Figures 4-13 to 4-24). As would be expected, stream water was substantially warmer in the summer sampling than the winter. The smallest gradient in temperature in the streams occurred at Hanawi in the winter (Figure 4-15).

The two most important macronutrients for plant growth that could affect biotic resources are phosphorus and nitrogen. The most common inorganic forms of these elements that are metabolically active in stream and marine waters are phosphate phosphorus ( $\text{PO}_4^{3-}$ ) and nitrate nitrogen ( $\text{NO}_3^+$ ). Examination of the pictographs of the concentrations of these elements along the stream-ocean transects reveals substantial differences in the patterns of distribution between streams.

At Honomanu peak values in stream waters for both  $\text{PO}_4^{3-}$  (Figure 4-25) and  $\text{NO}_3^+$  (Figure 4-37) decrease by an order of magnitude in the nearshore ocean. Stream values of both  $\text{PO}_4^{3-}$  and  $\text{NO}_3^+$  are approximately double in the winter relative to the summer, while the marine values are



similar during both seasons. There are also sharp gradients between the concentrations at the shoreline indicating a narrow mixing zone. The elevated values in winter likely reflect higher winter season rainfall in upland areas. However, the sharp change at the shoreline, and the similar seasonal values in the ocean suggest that the input of stream water likely has little overall effect on concentrations in the nearshore ocean.

Other streams showed varying patterns of nutrient distribution along the stream gradients. At Hanawi the concentrations of both nutrient compounds are essentially consistent during the winter, owing to the inability to sample in the open ocean (Figure 4-39). During the summer sampling event, the elevated concentrations of  $\text{NO}_3^+$  in the streams dropped by an order of magnitude at the shoreline (Figure 4-40). The pattern for  $\text{PO}_4^{3-}$  at Hanawi was similar to that of  $\text{NO}_3^+$  although the magnitude of the changes were smaller (Figures 4-27, 4-28).

Kopiliula and Oopuola streams presents a different pattern than any of the other streams. During both the summer and winter sampling events the concentrations of  $\text{PO}_4^{3-}$  and  $\text{NO}_3^+$  show little variation between the stream and ocean waters (Figures 4-29 to 4-32 and 4-41 to 4-44). As there are substantial changes in salinity at the shoreline transition zone during both sampling events at these sites, the lack of the same type of nutrient gradient between the stream and the ocean suggests that the source waters are substantially different than in other areas. As there is no elevated nutrient levels in stream water similar to what occurs at other locations, it is evident that the stream water that reaches the ocean emanates from different sources.

The gradients of nutrients at Waiaaka Stream display another pattern. The concentrations of  $\text{PO}_4^{3-}$  from both the East and West branches show little variation with distance from the shoreline in both winter and summer, although the winter values are overall higher than during the summer (Figure 4-34). However, values of  $\text{NO}_3^+$  at Waiaaka West are lower in the summer by an order of magnitude than during the winter (Figures 4-45 and 4-46). Such variability in time suggests that the nutrient concentrations are sensitive to local upland conditions of rainfall and drainage.

Sampling at the two branches of Wailua Iki showed an opposite trend as at Honomanu in that nutrient concentrations in the upper reaches of the sampling transect were lower than the values in areas closer to the ocean (Figures 4-35 and 4-36, Figures 4-47 and 4-48). This pattern suggests that nutrient regeneration is occurring in still water ponds that occur at the base of the streams which are separated from the ocean by beach rock berms (Figure 3-3).

In summary, these data indicate substantial variability in nutrient dynamics between streams in terms of both sources and seasons. The consistent factor is that regardless of stream water composition, values in ocean waters seaward of the transition zone are relatively constant.

While not shown in pictographs, examination of the data tables in Appendix A indicates little evidence of consistent patterns with other water quality constituent. In particular, turbidity and Chl *a* did not display any consistent differences between streams or within streams.

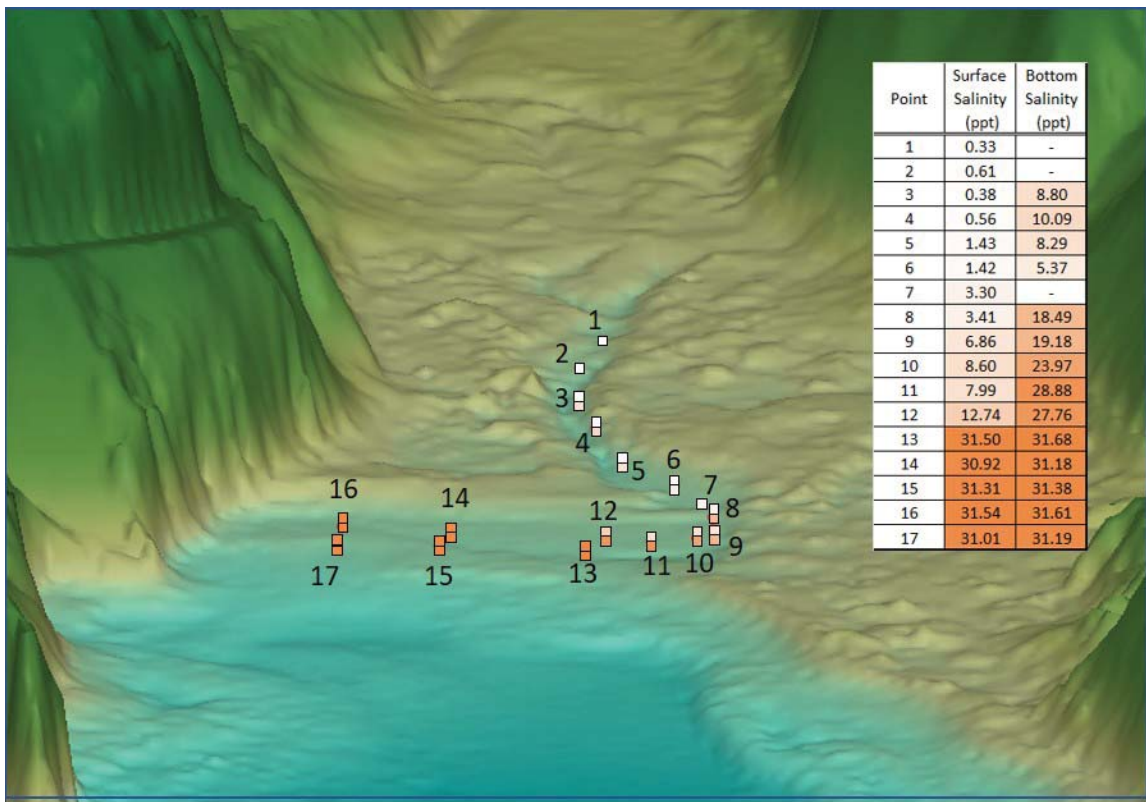


Figure 4-1. Honomanu Salinity Winter Sample.

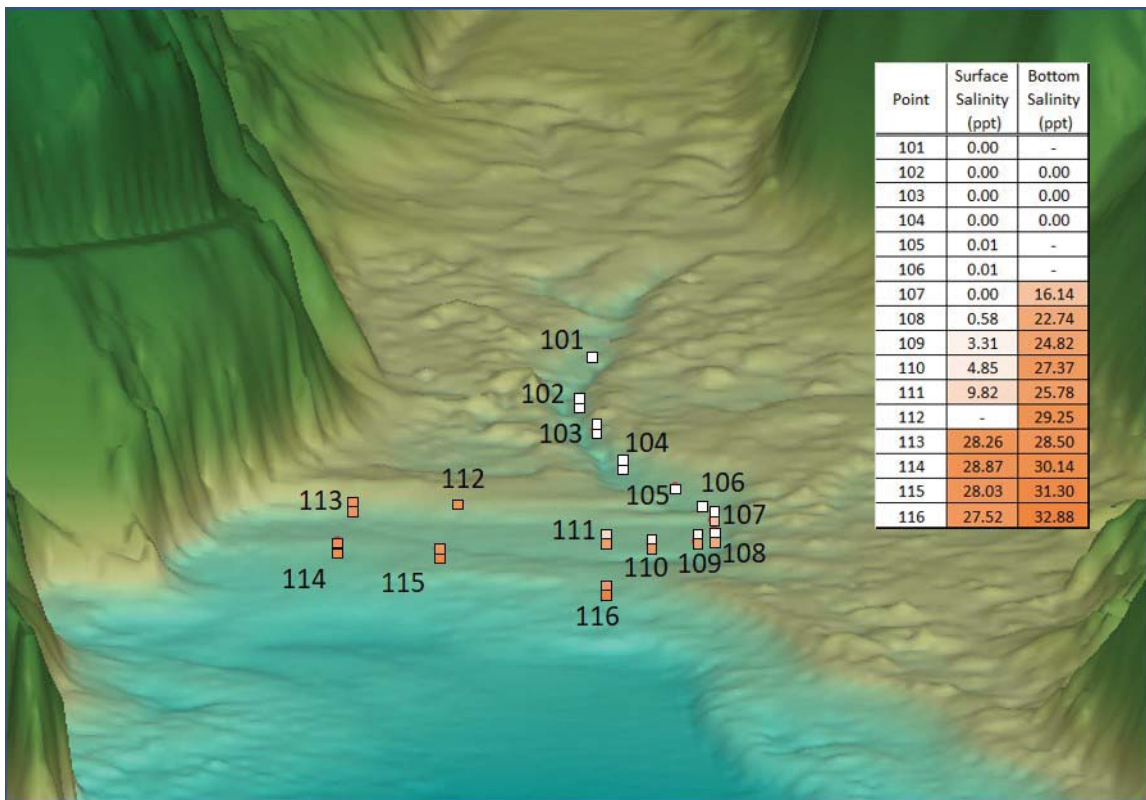


Figure 4-2. Honomanu Salinity Summer Sample.

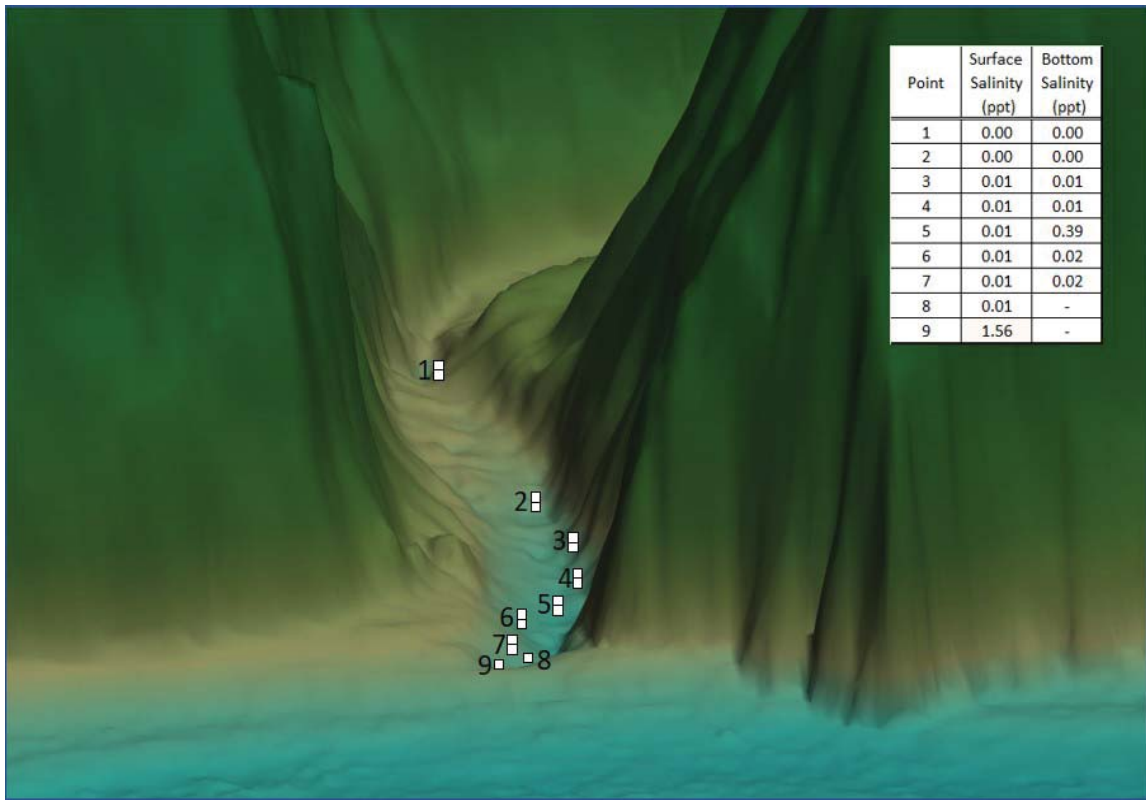


Figure 4-3. Hanawi Salinity Winter Sample.

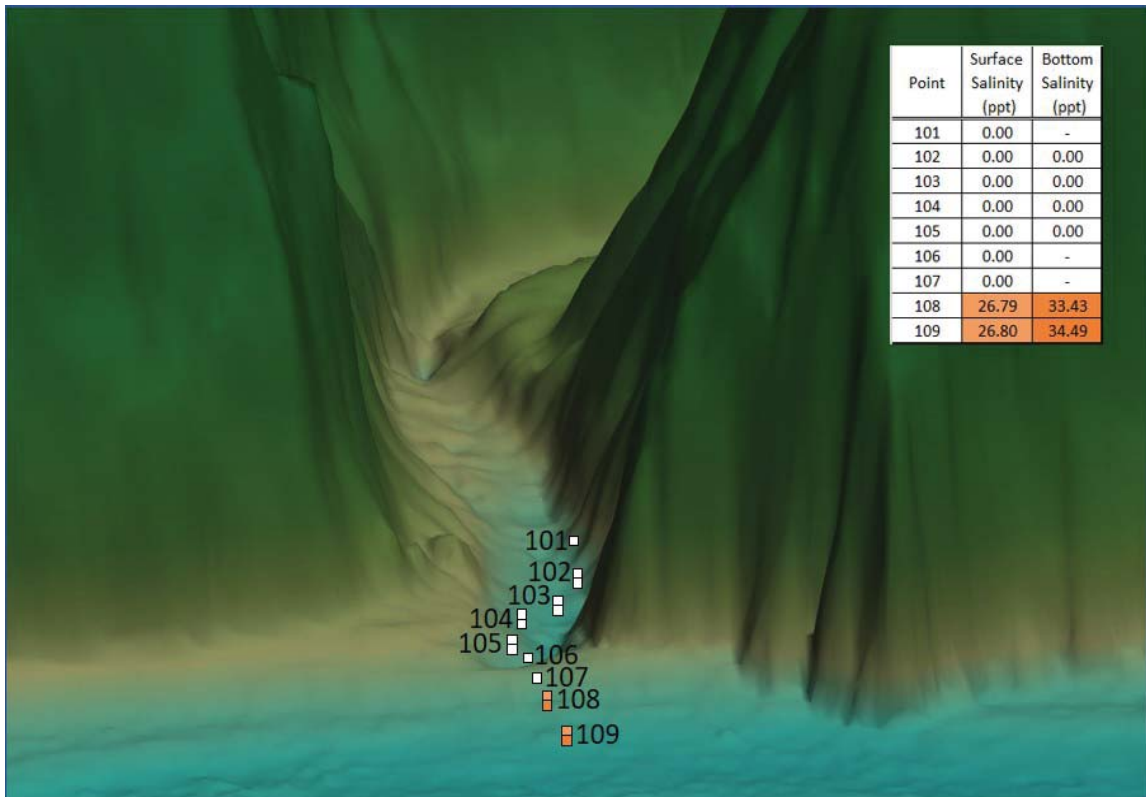


Figure 4-4. Hanawi Salinity Summer Sample.



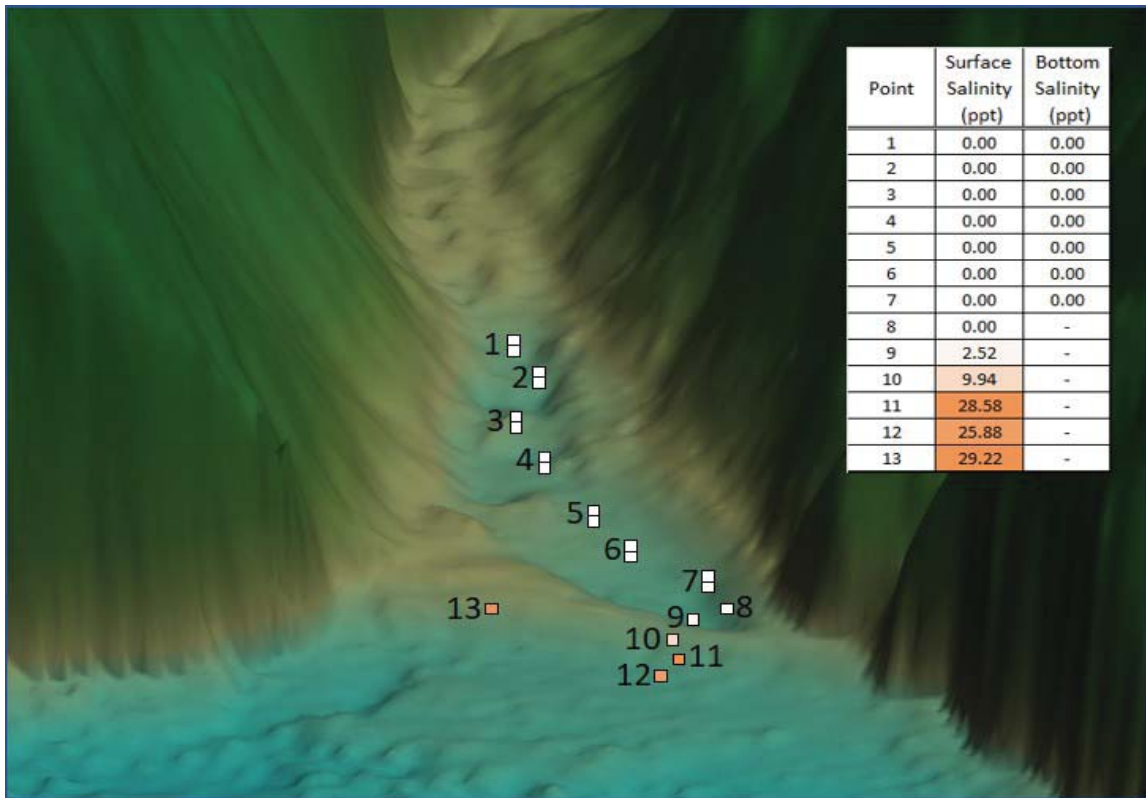


Figure 4-5. Kopiliula Salinity Winter Sample.

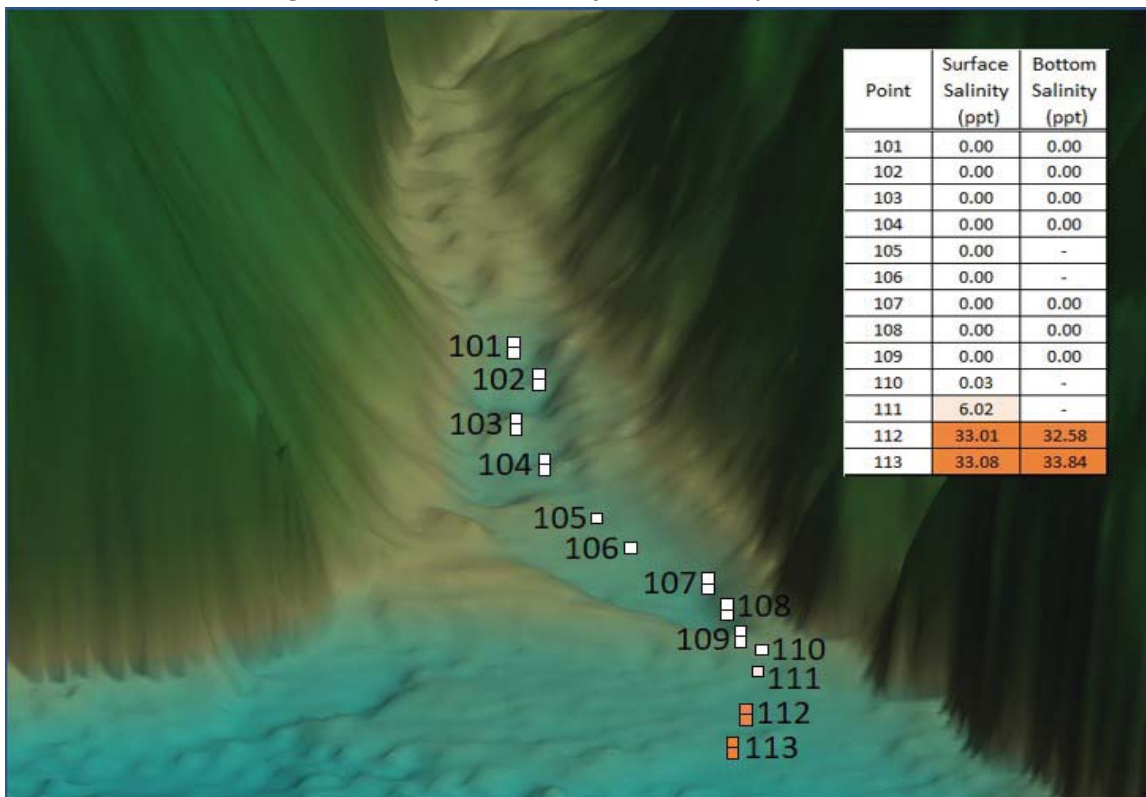


Figure 4-6. Kopiliula Salinity Summer Sample.

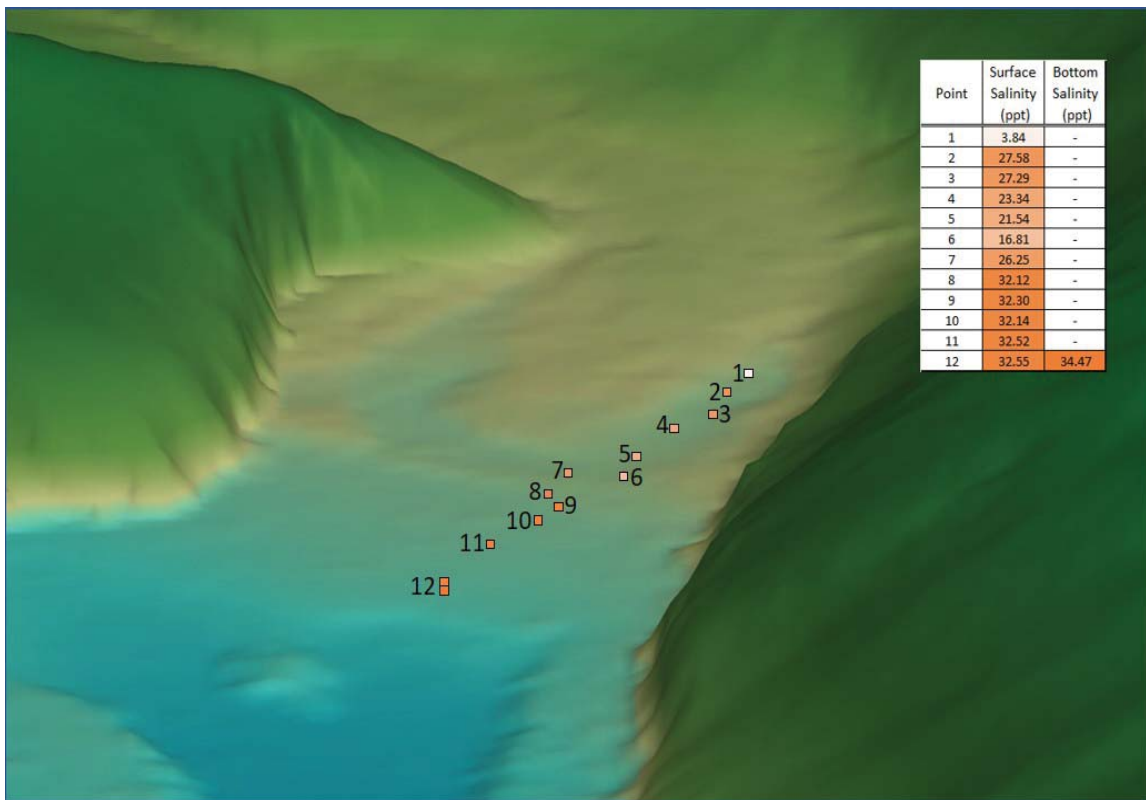


Figure 4-7. Oopuola Salinity Winter Sample.

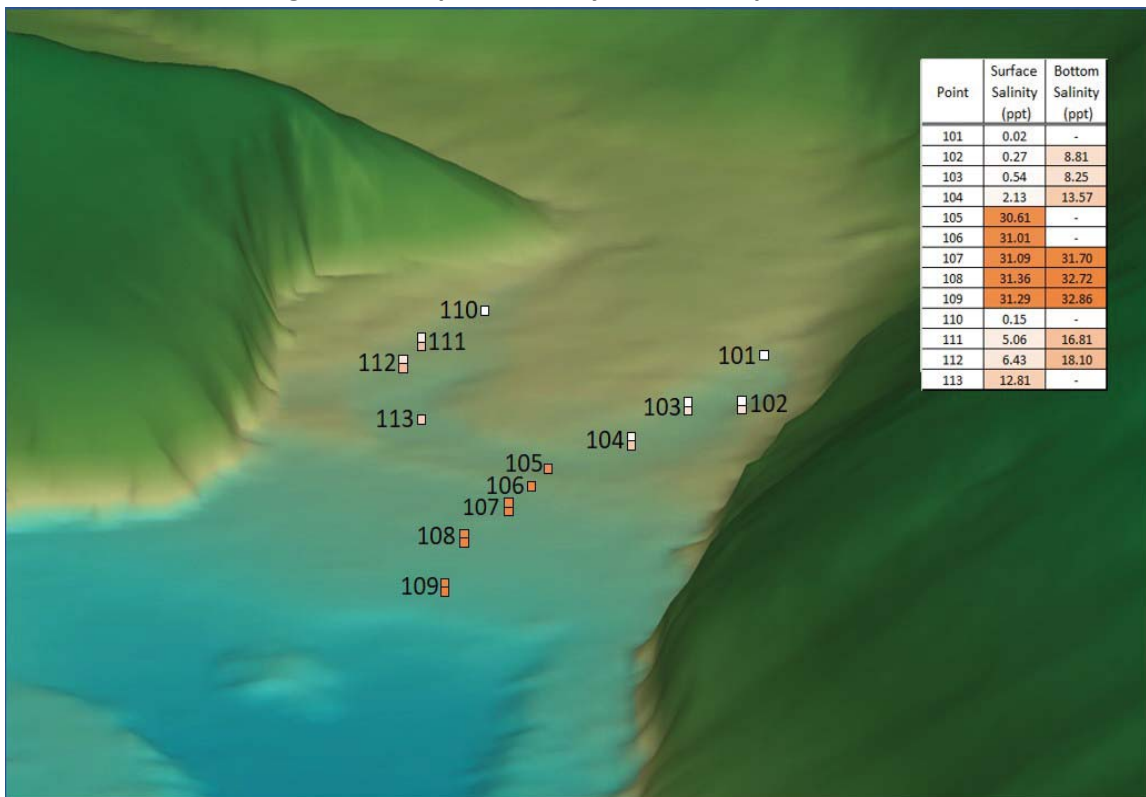


Figure 4-8. Oopuola Salinity Summer Sample.

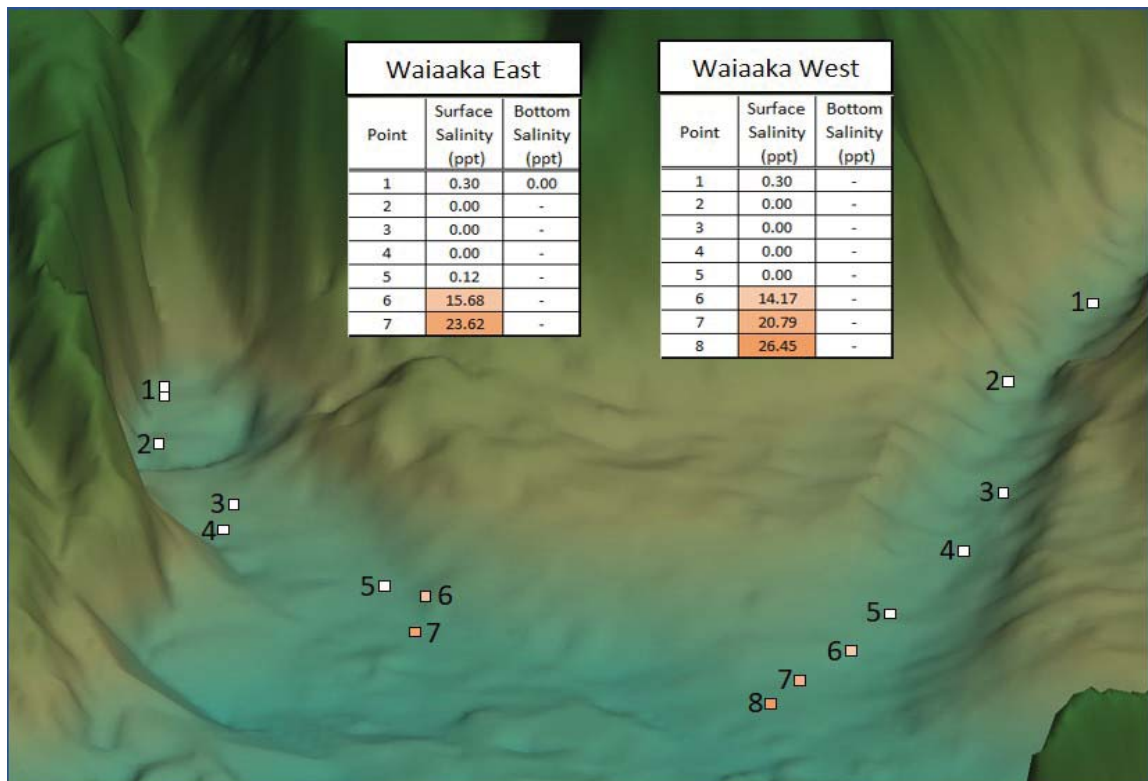


Figure 4-9. Waiaaka Salinity Winter Sample.

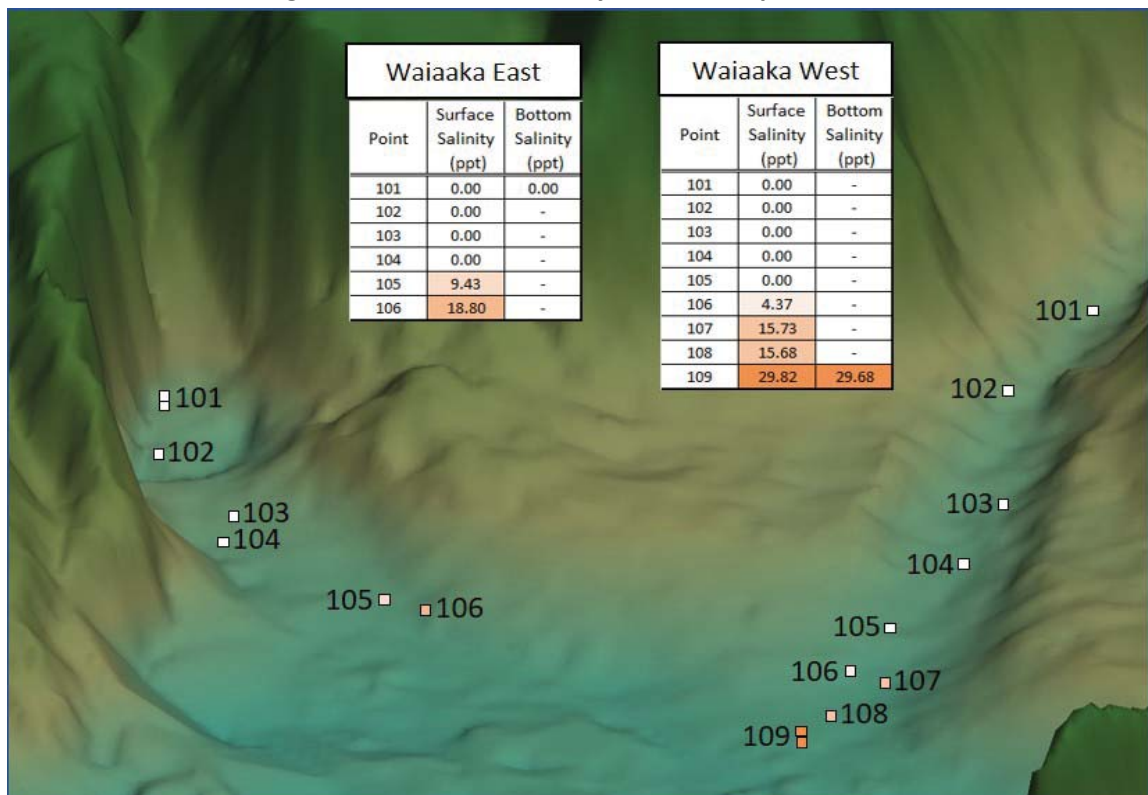


Figure 4-10. Waiaaka Salinity Summer Sample.



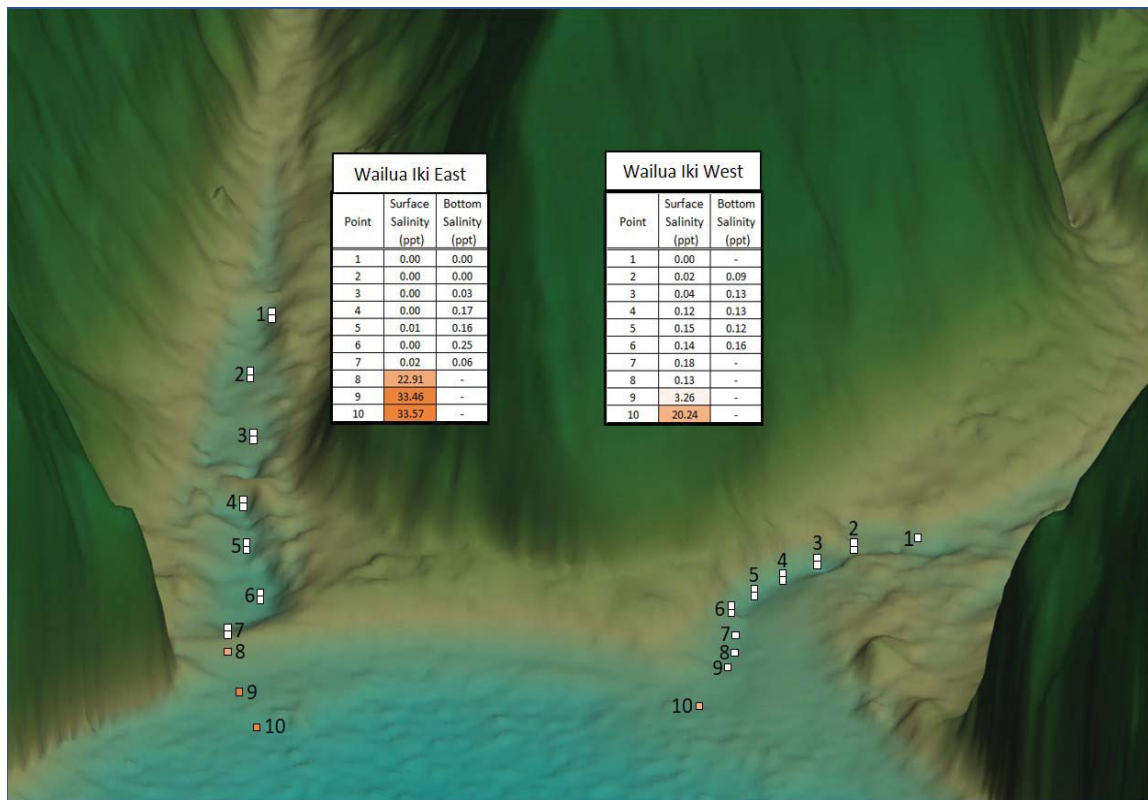


Figure 4-11. Wailua Salinity Winter Sample.

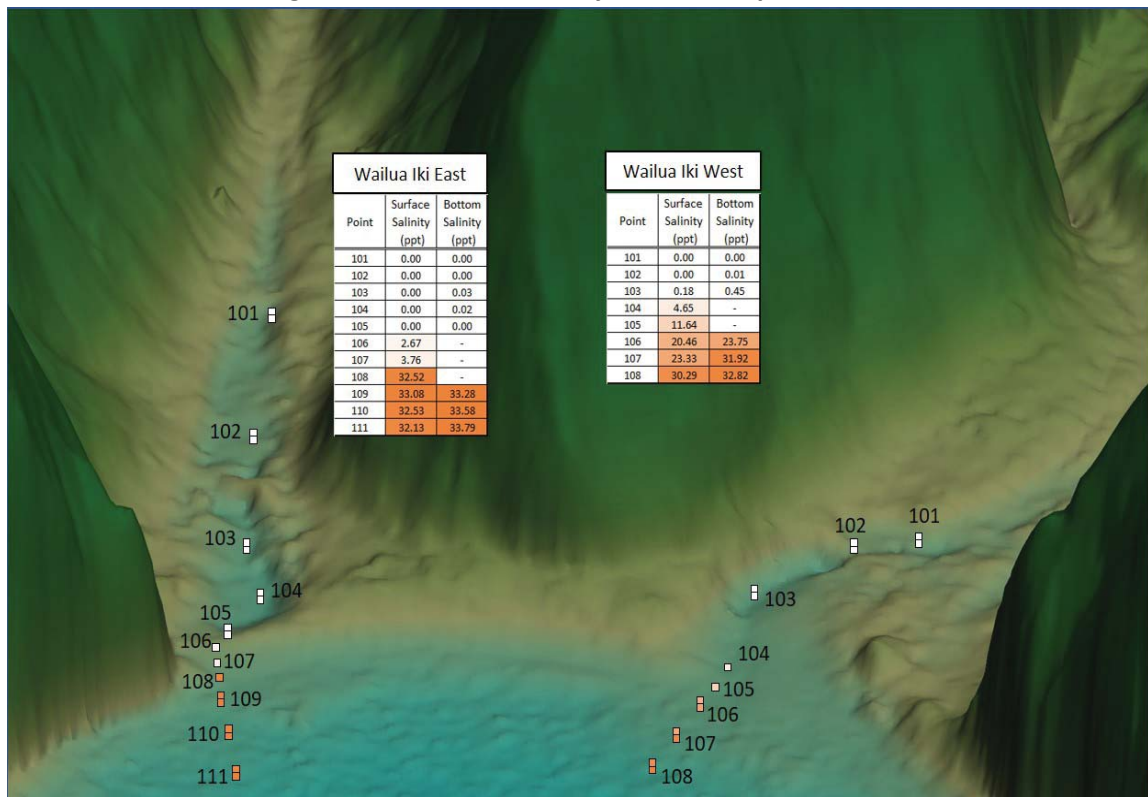


Figure 4-12. Wailua Salinity Summer Sample.

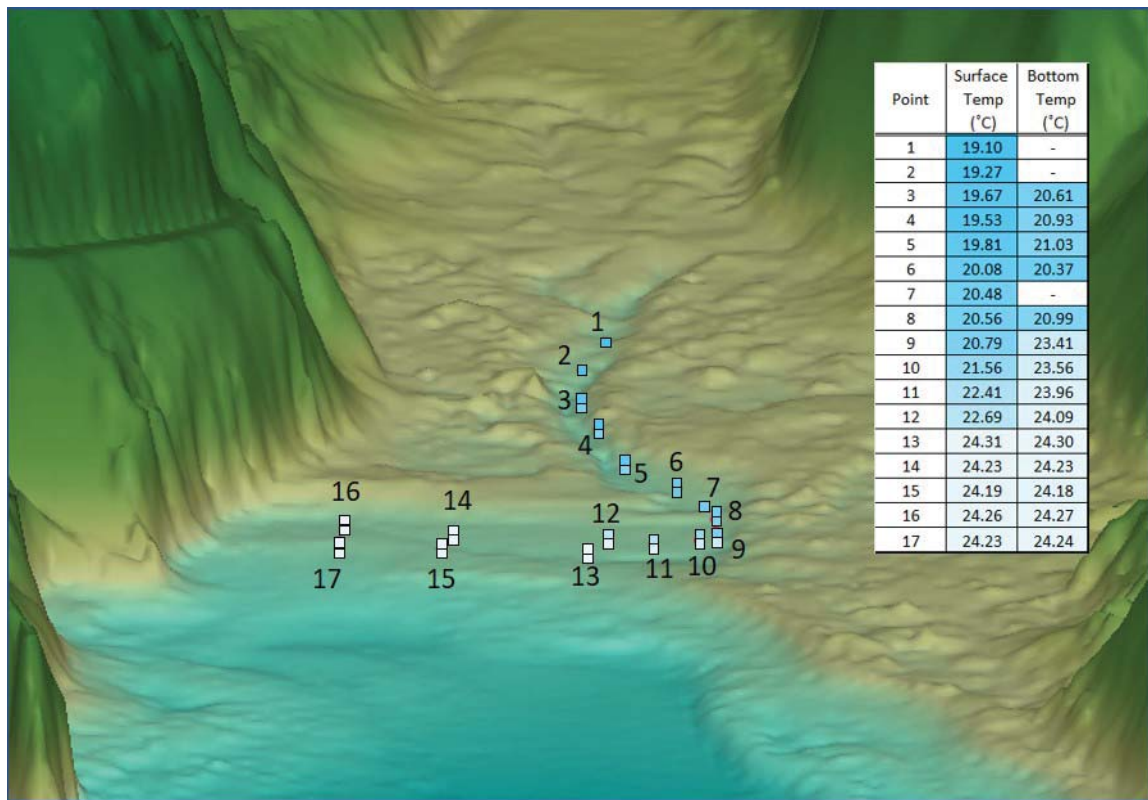


Figure 4-13. Honomanu Temperature Winter Sample.

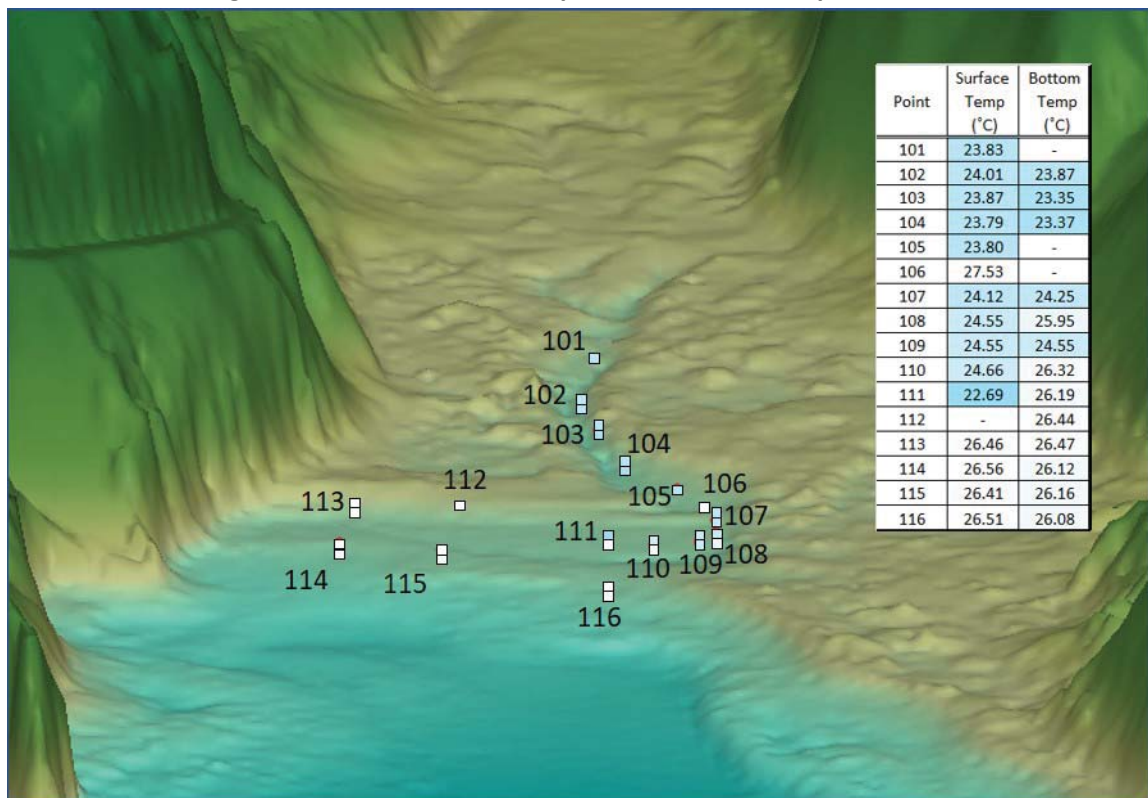


Figure 4-14. Honomanu Temperature Summer Sample.

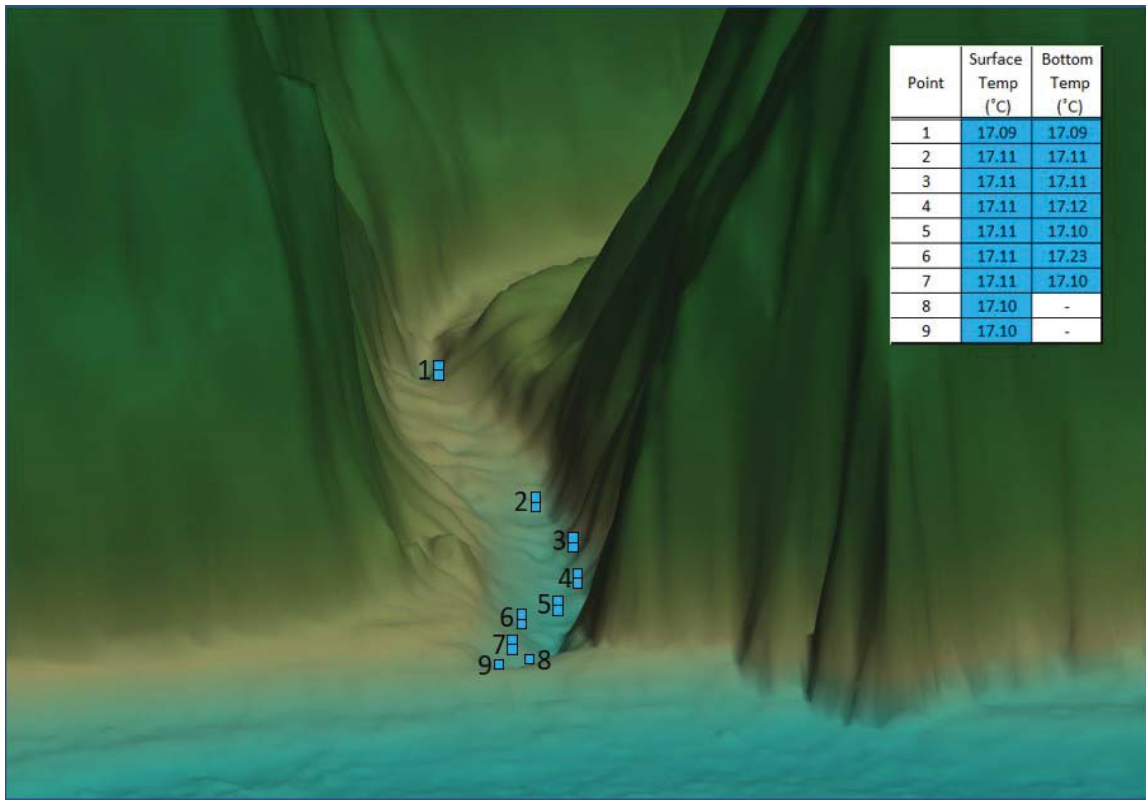


Figure 4-15. Hanawi Temperature Winter Sample.

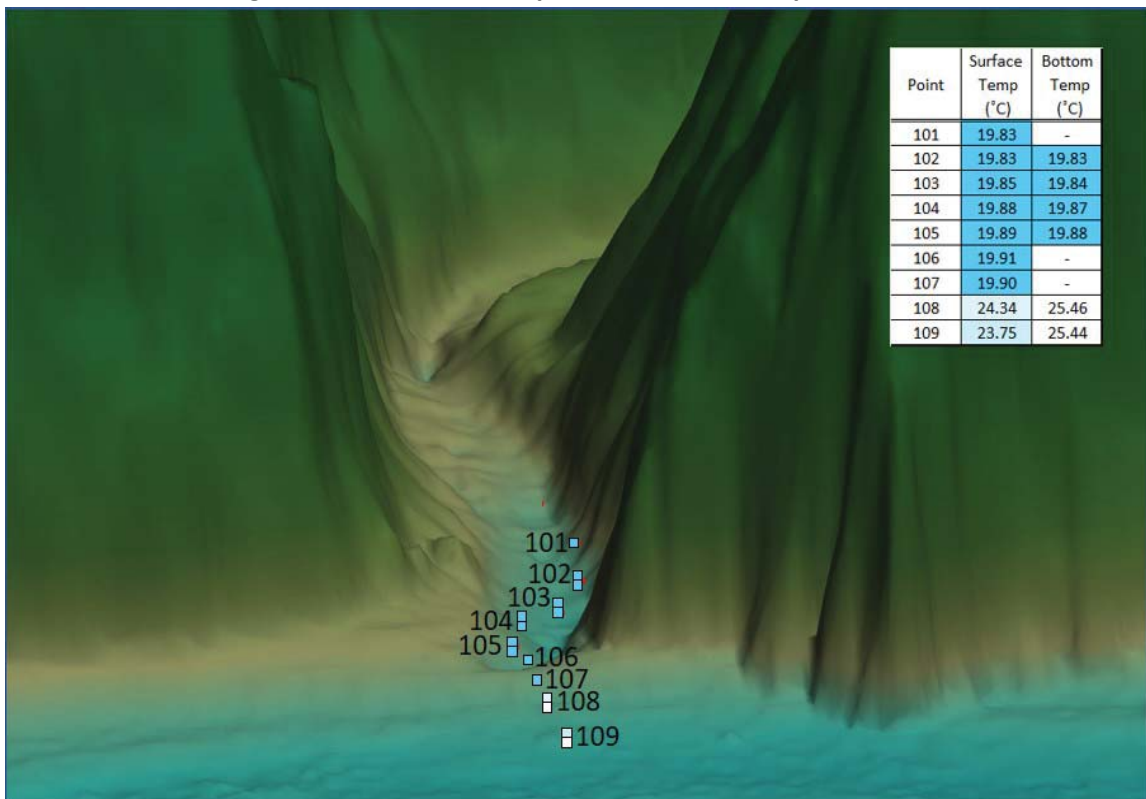


Figure 4-16. Hanawi Temperature Summer Sample.



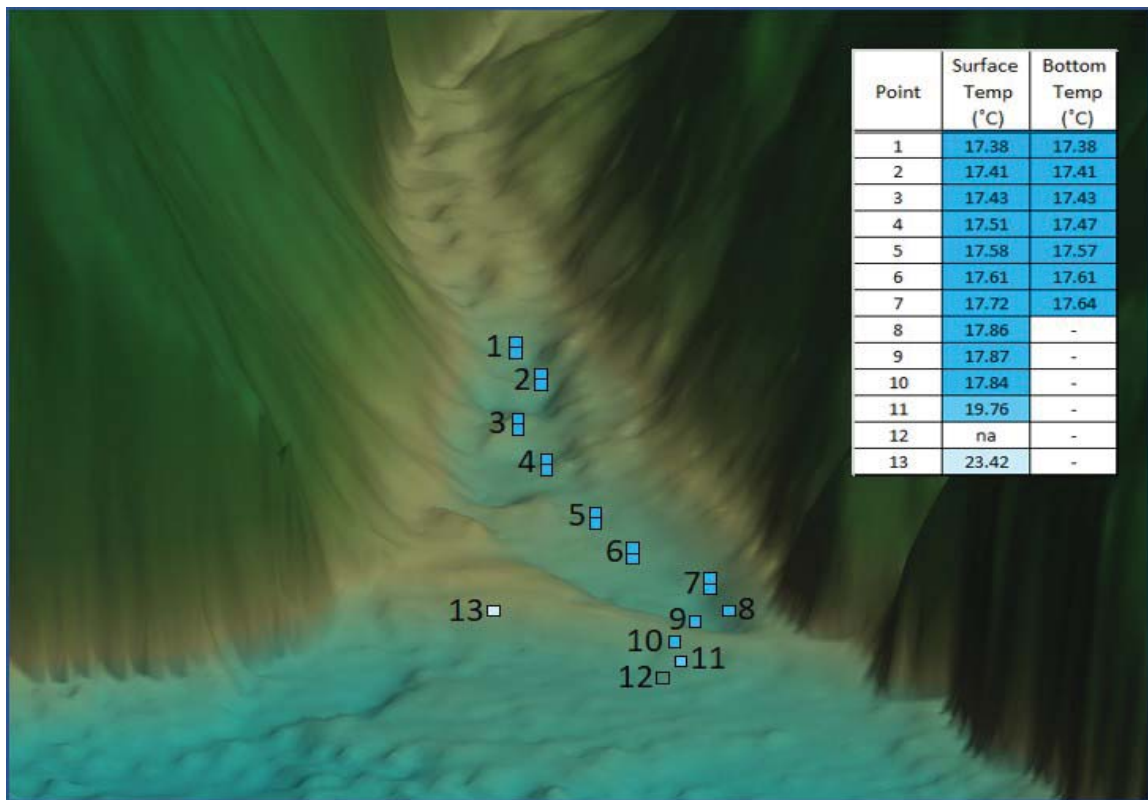


Figure 4-17. Kopiliula Temperature Winter Sample.

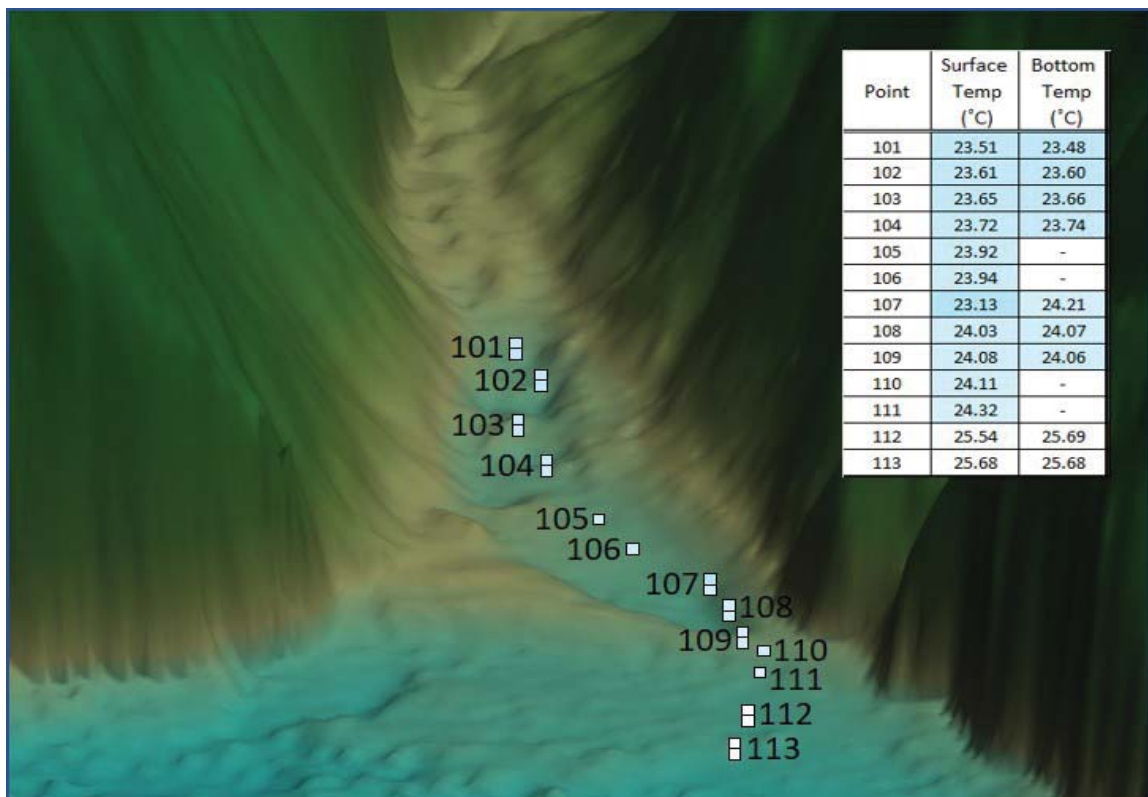


Figure 4-18. Kopiliula Temperature Summer Sample.

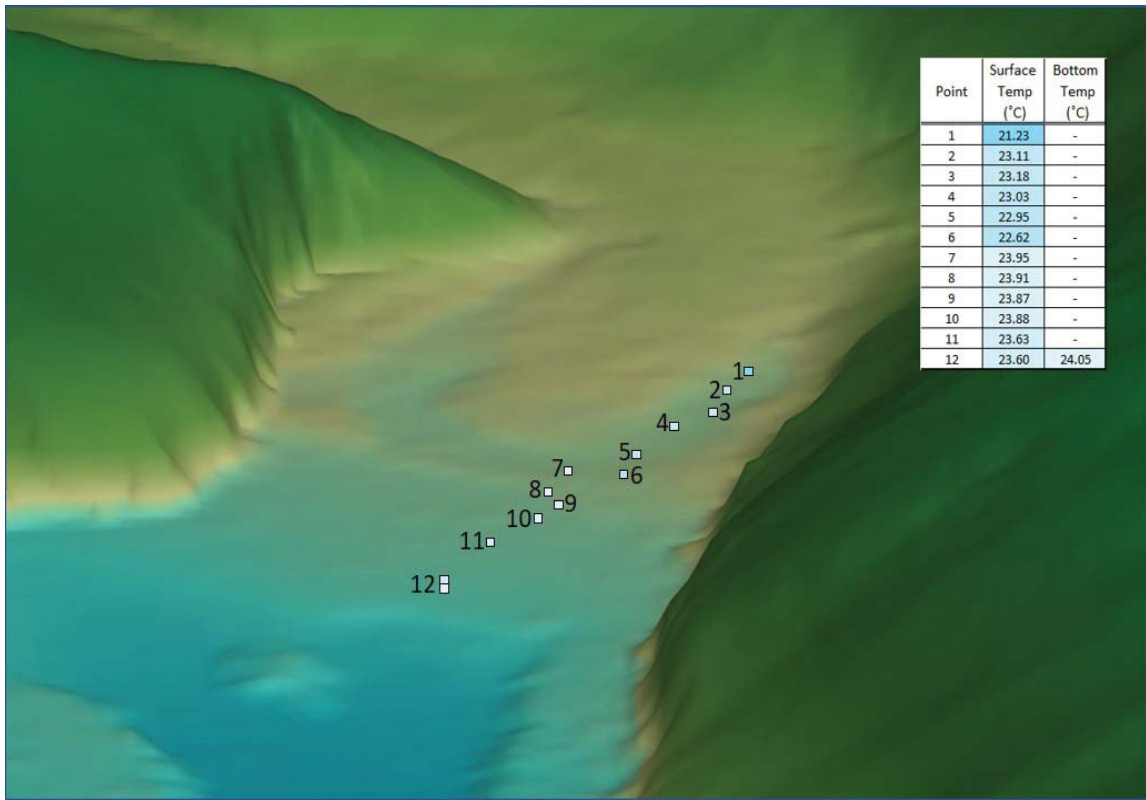


Figure 4-19. Oopuola Temperature Winter Sample.

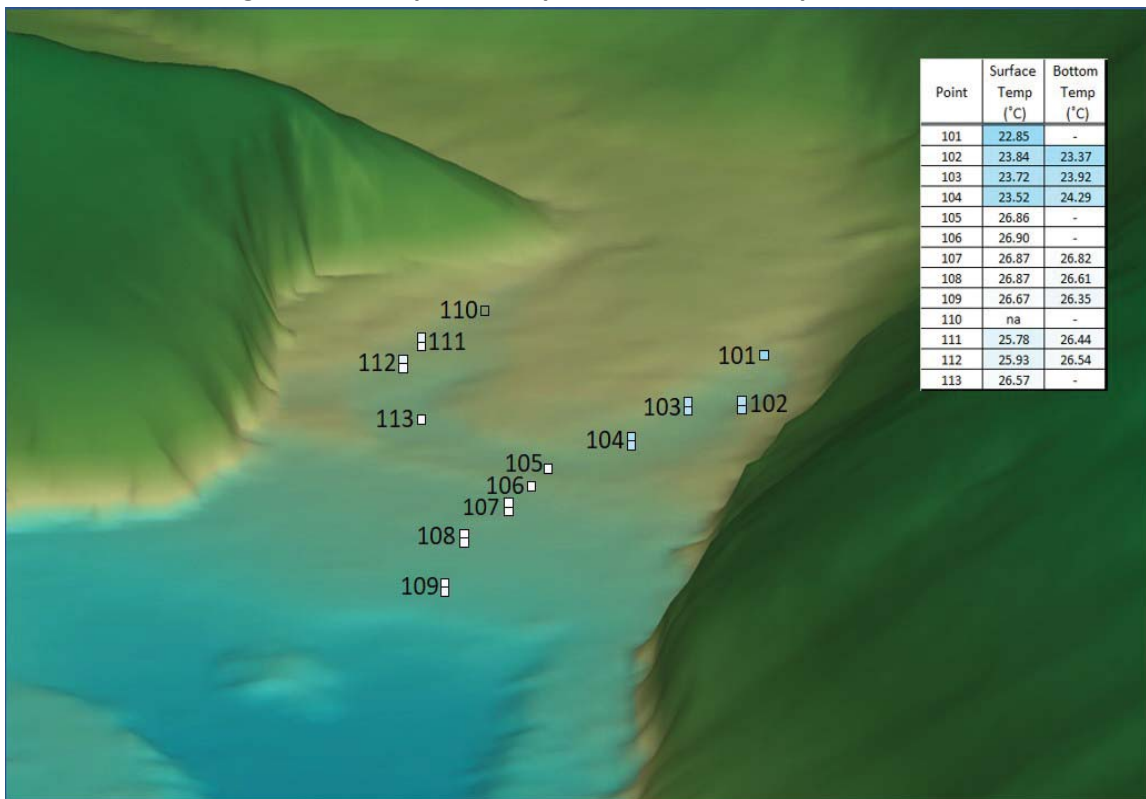


Figure 4-20. Oopuola Temperature Summer Sample.

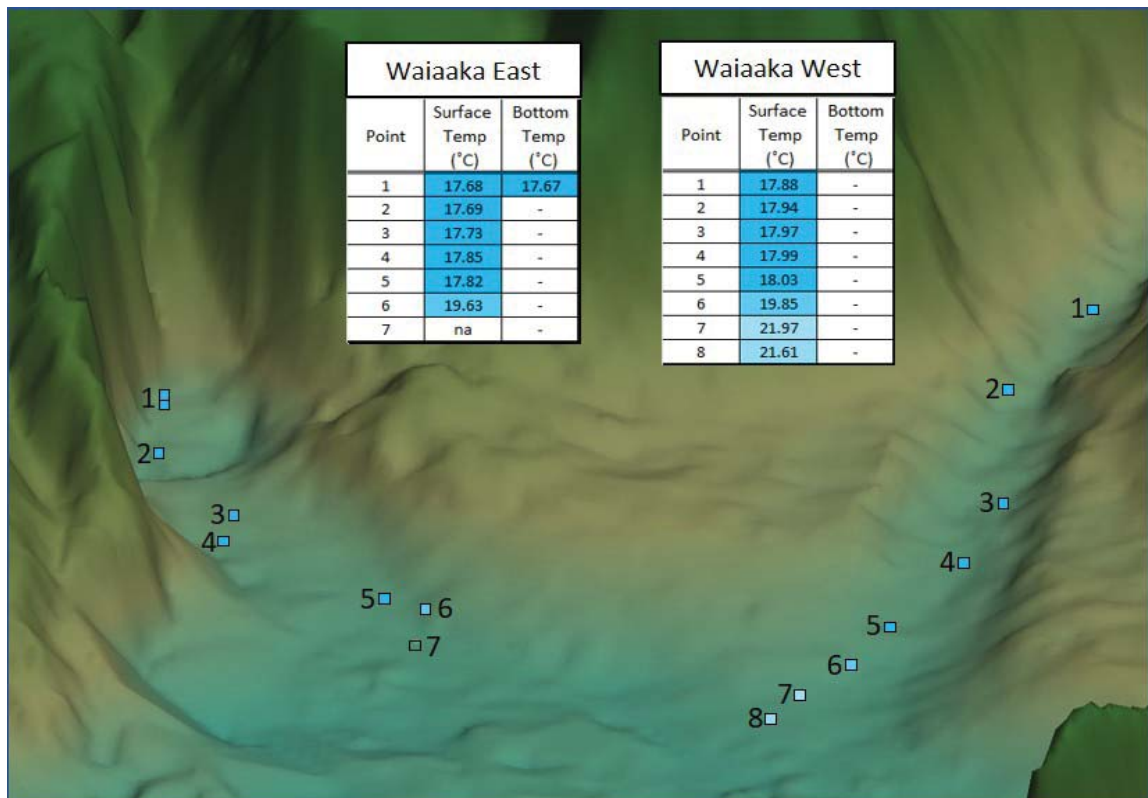


Figure 4-21. Waiaaka Temperature Winter Sample.

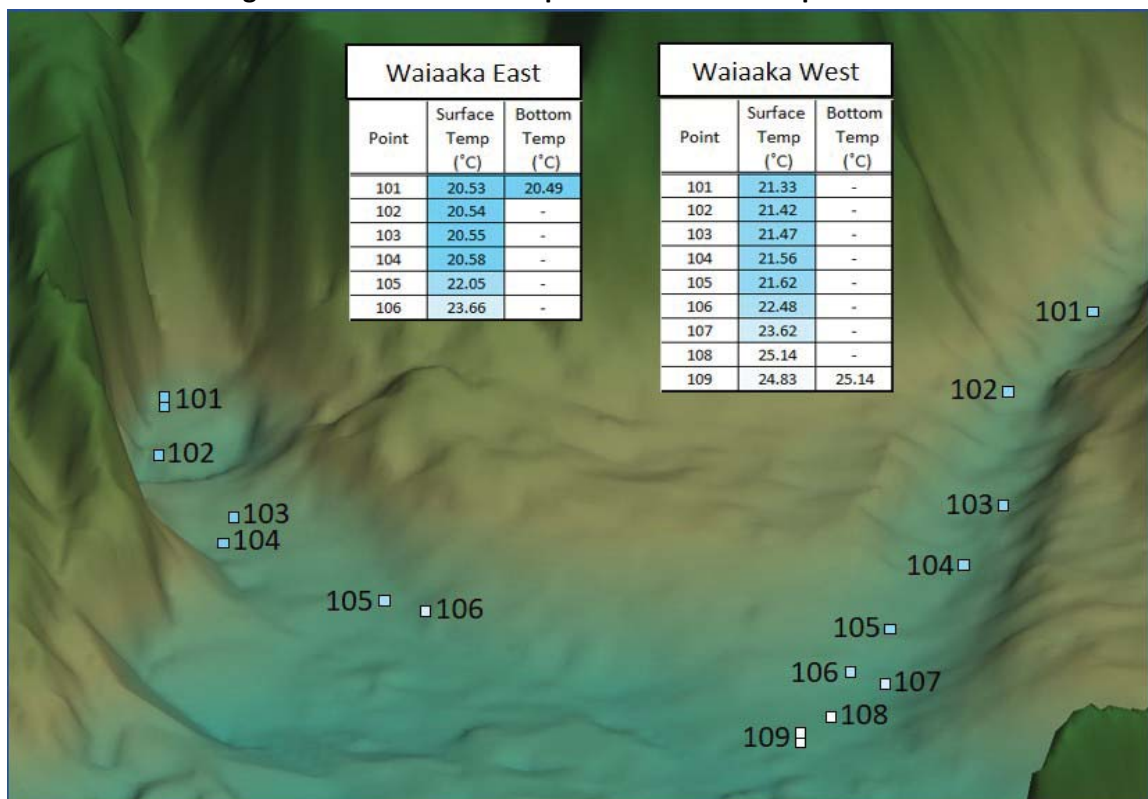


Figure 4-22. Waiaaka Temperature Summer Sample.



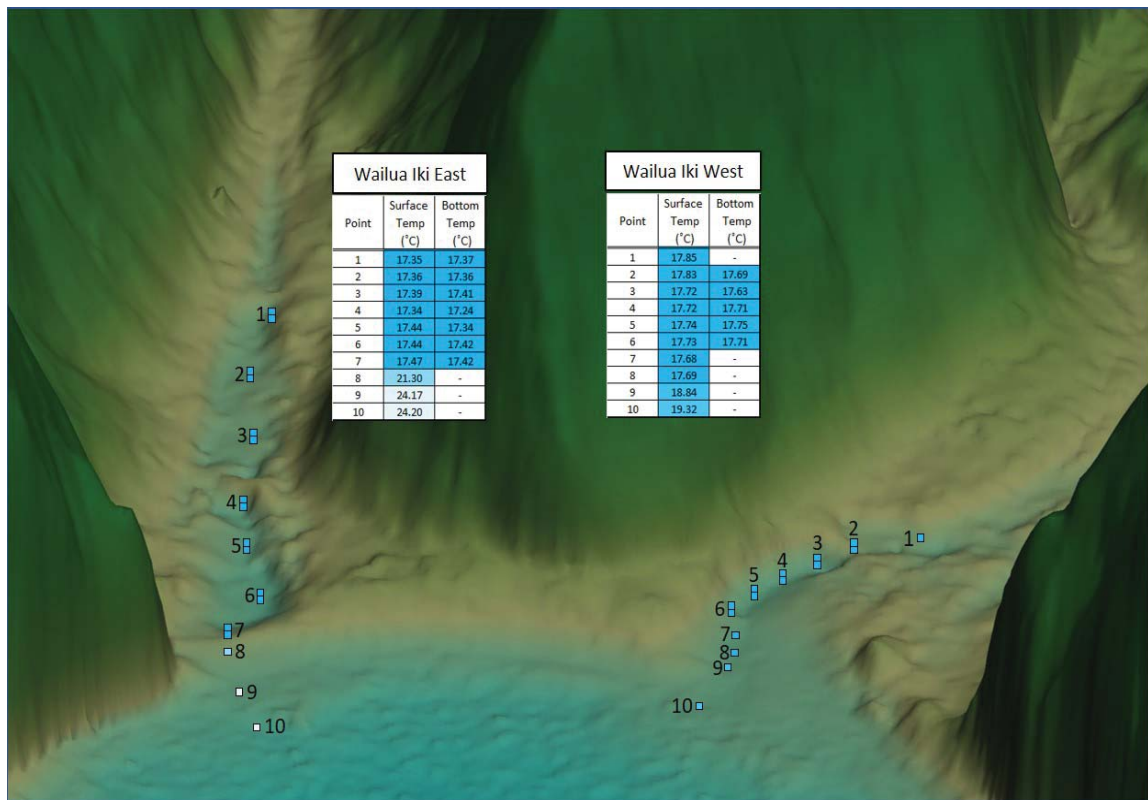


Figure 4-23. Wailua Temperature Winter Sample.

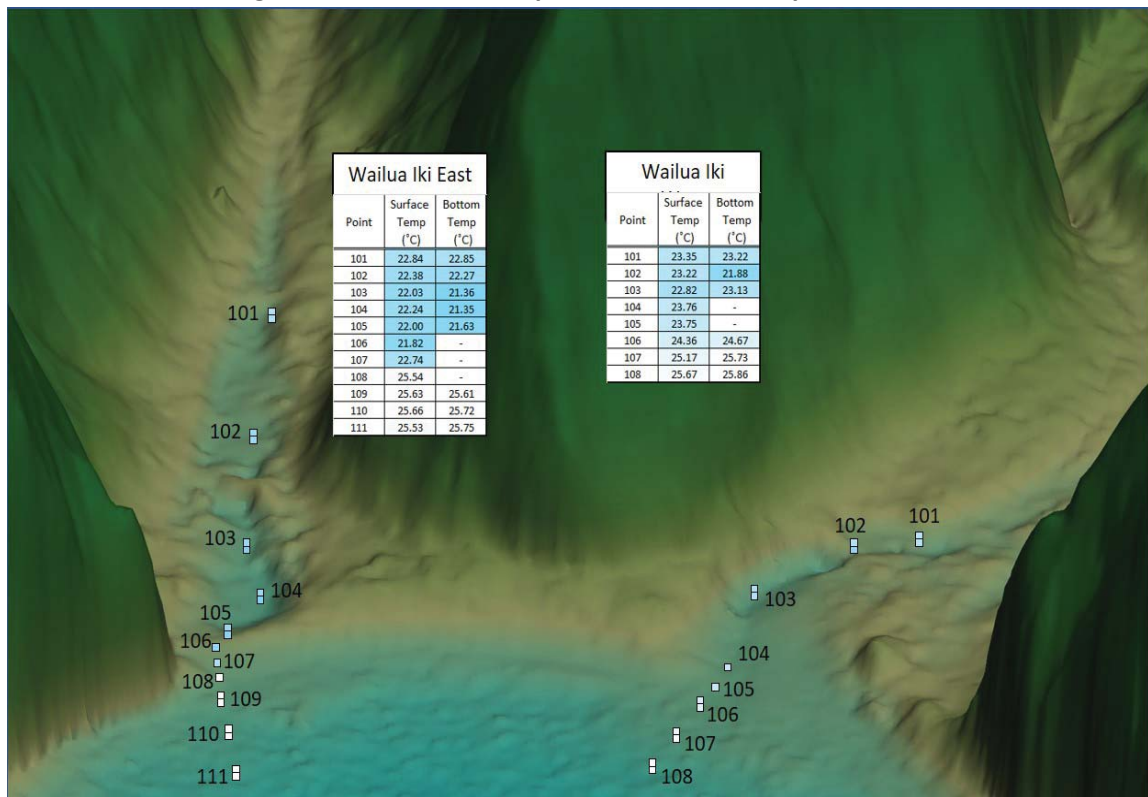


Figure 4-24. Wailua Temperature Summer Sample.

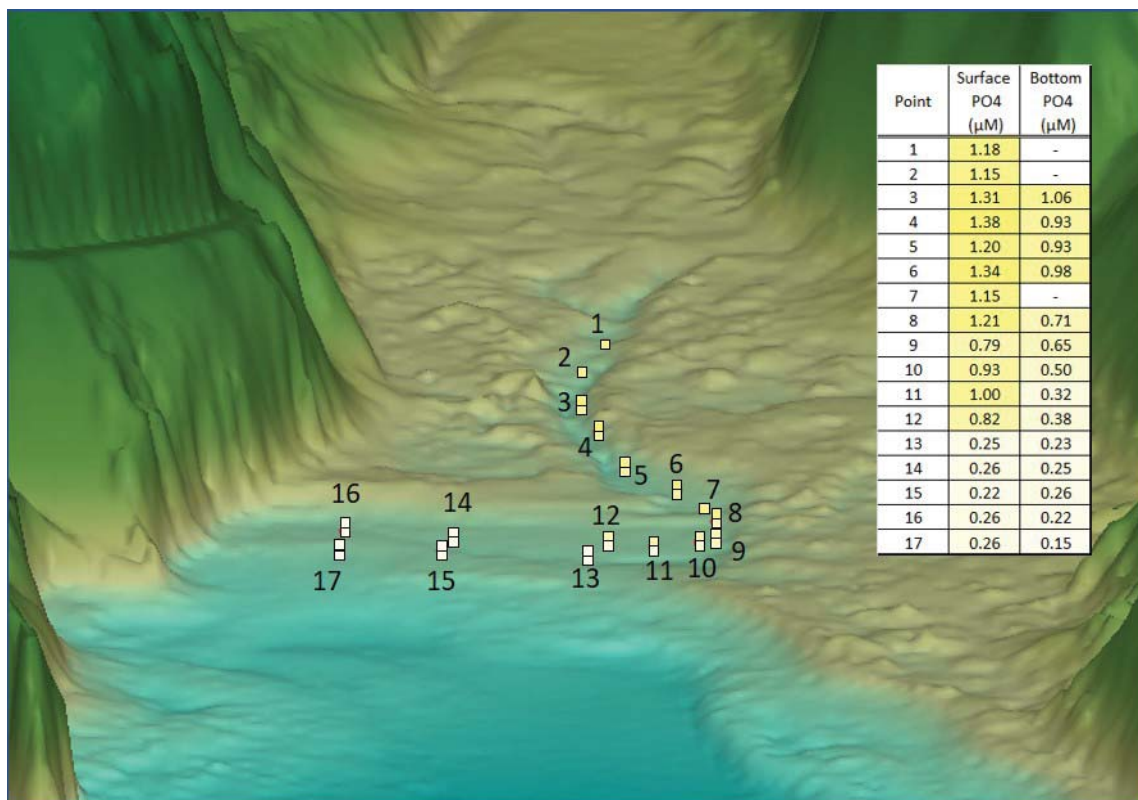


Figure 4-25. Honomanu Phosphate Winter Sample.

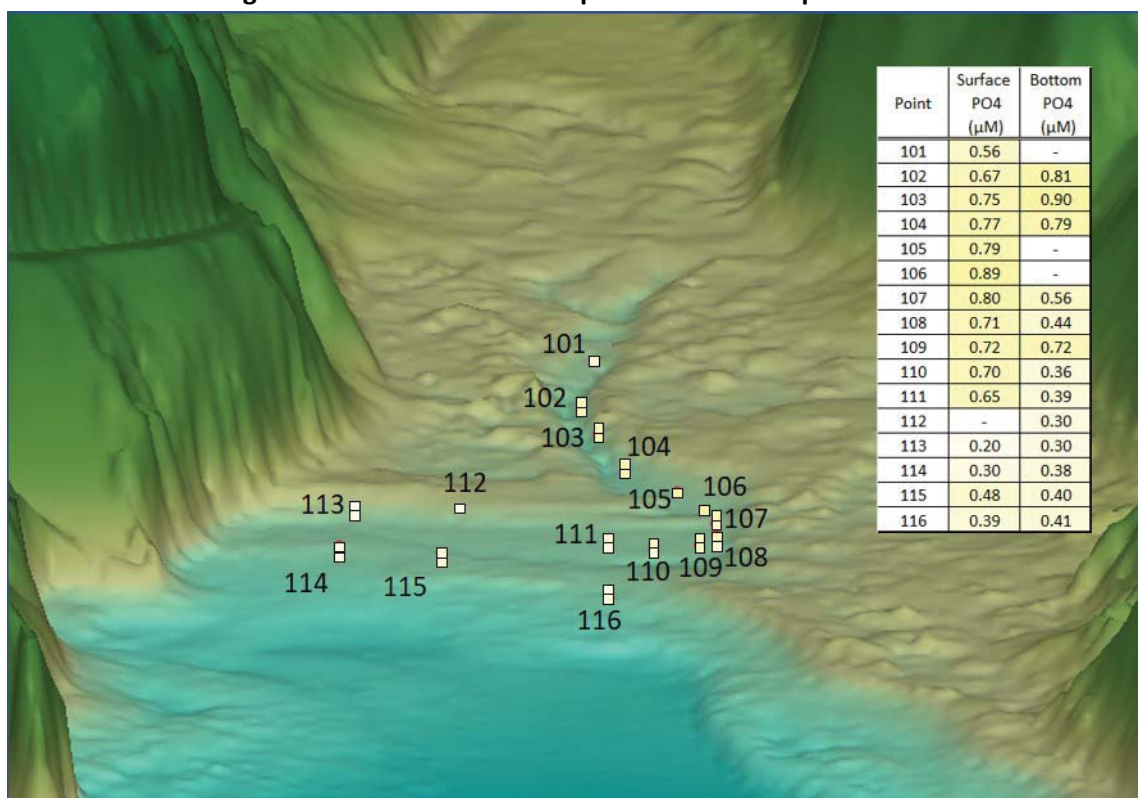


Figure 4-26. Honomanu Phosphate Summer Sample.

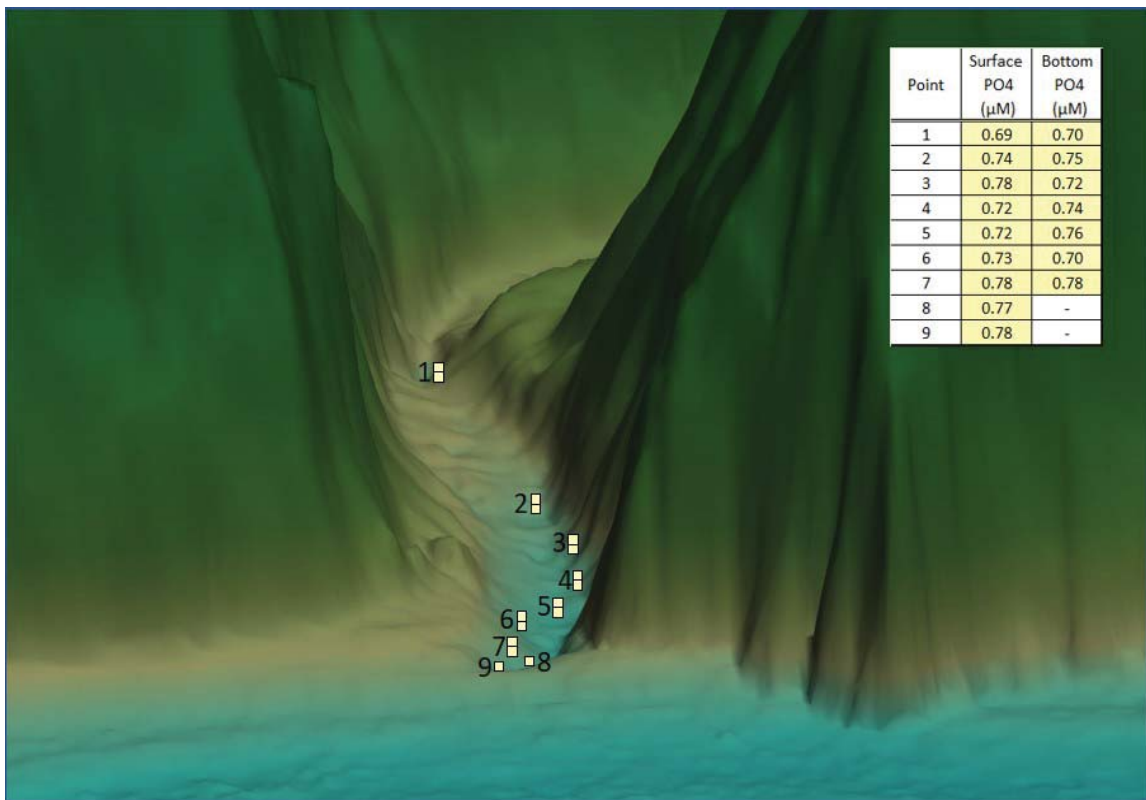


Figure 4-27. Hanawi Phosphate Winter Sample.

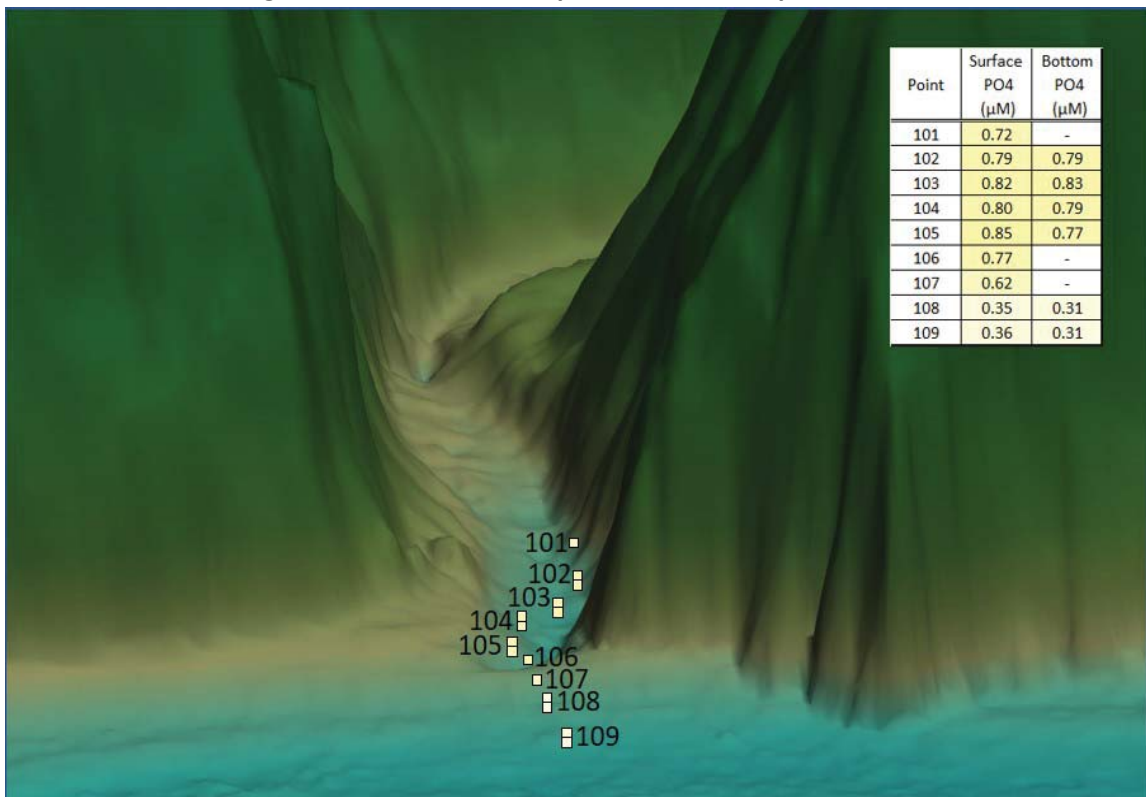


Figure 4-28. Hanawi Phosphate Summer Sample.



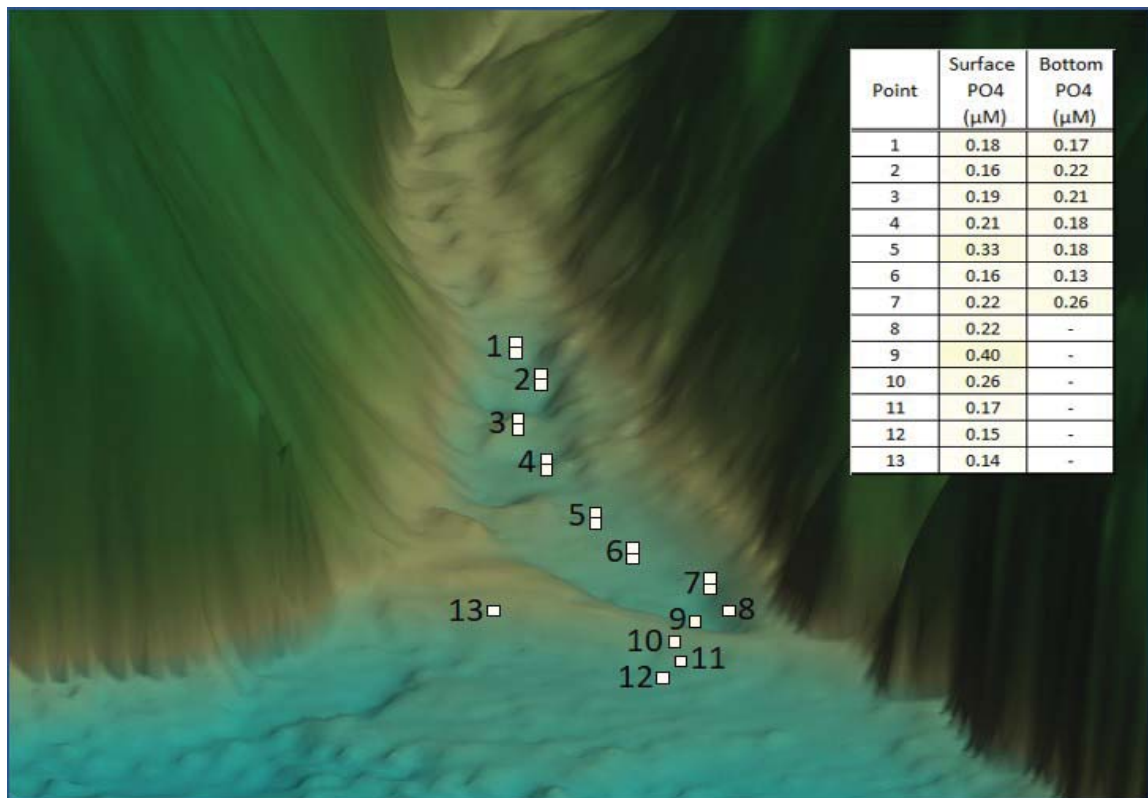


Figure 4-29. Kopiliula Phosphate Winter Sample.

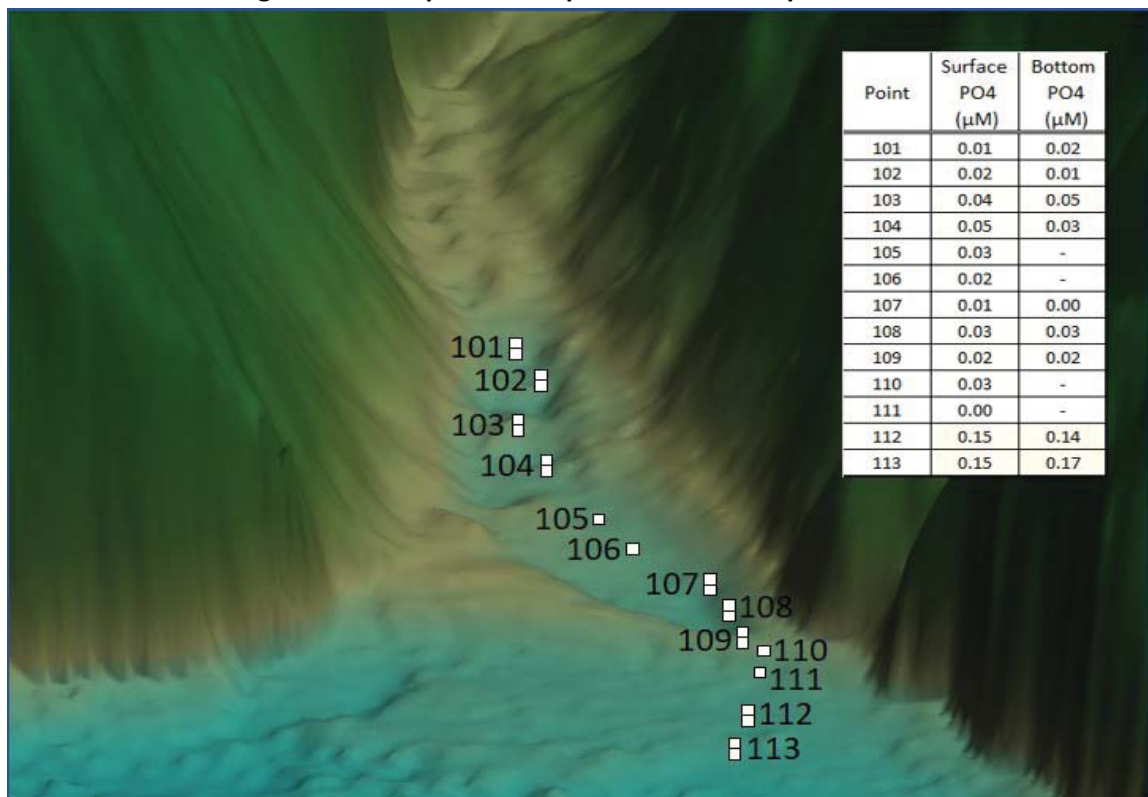


Figure 4-30. Kopiliula Phosphate Summer Sample.

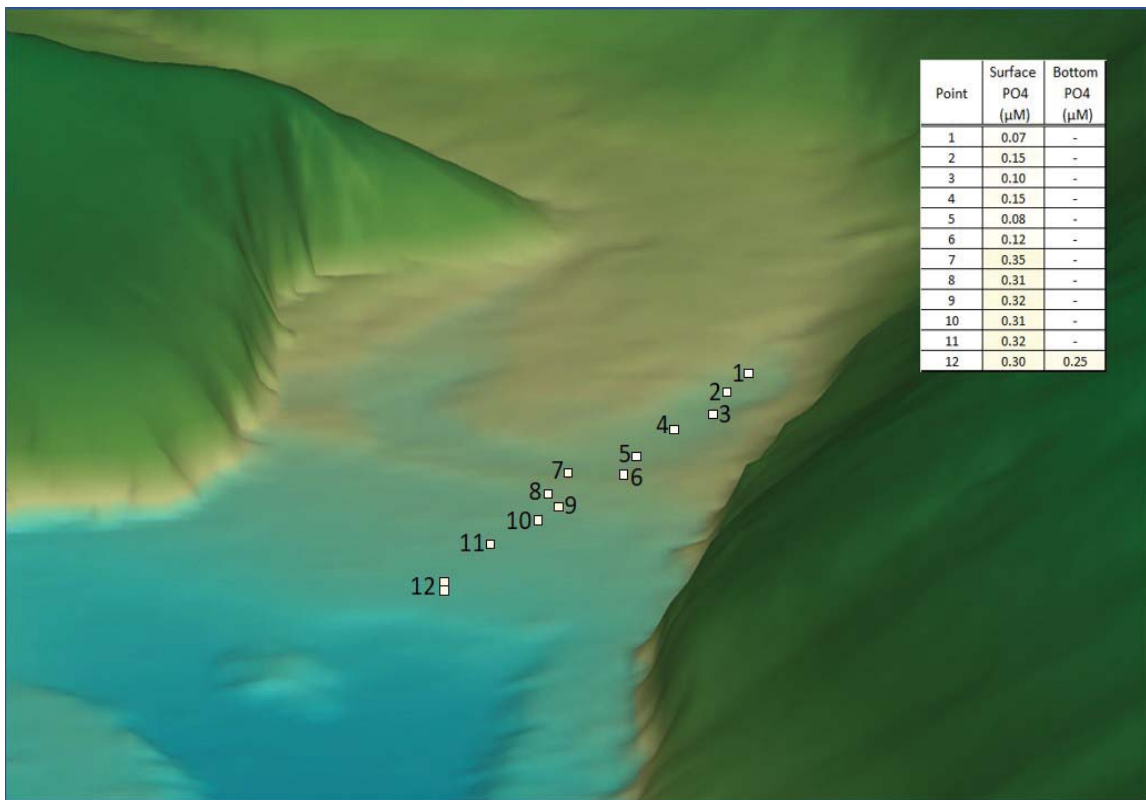


Figure 4-31. Oopuola Phosphate Winter Sample.

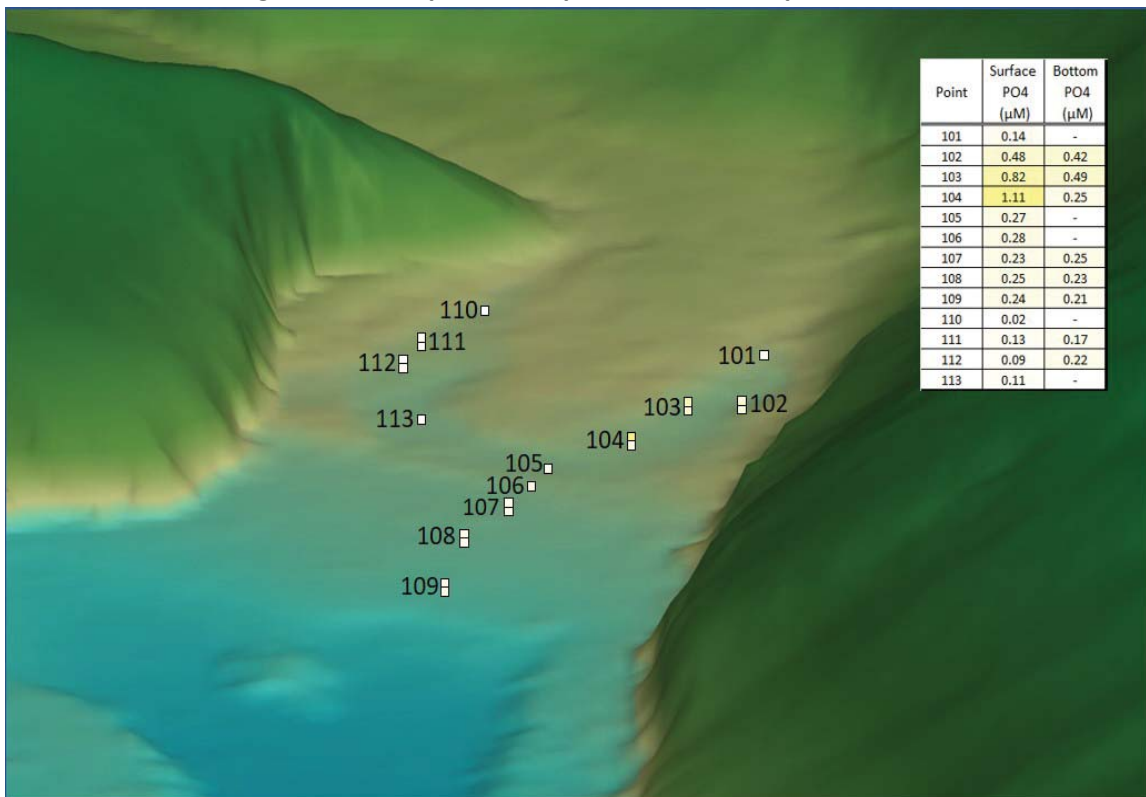


Figure 4-32. Oopuola Phosphate Summer Sample.

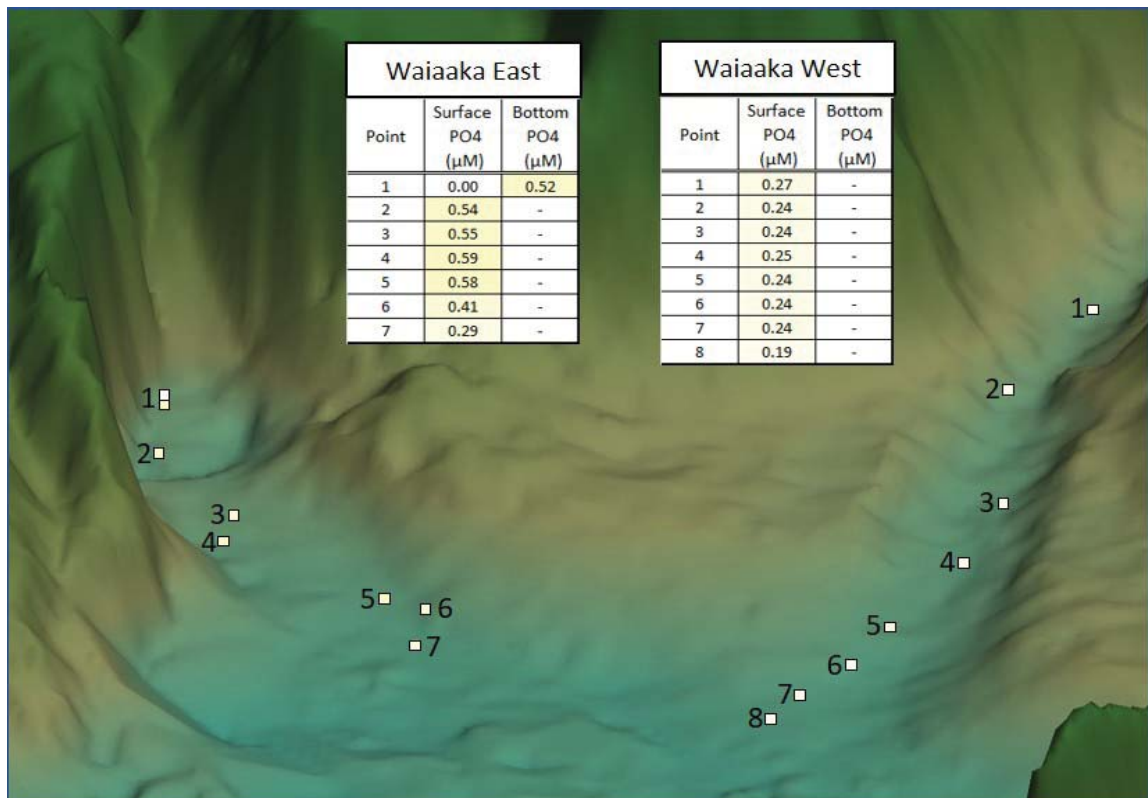


Figure 4-33. Waiaaka Phosphate Winter Sample.

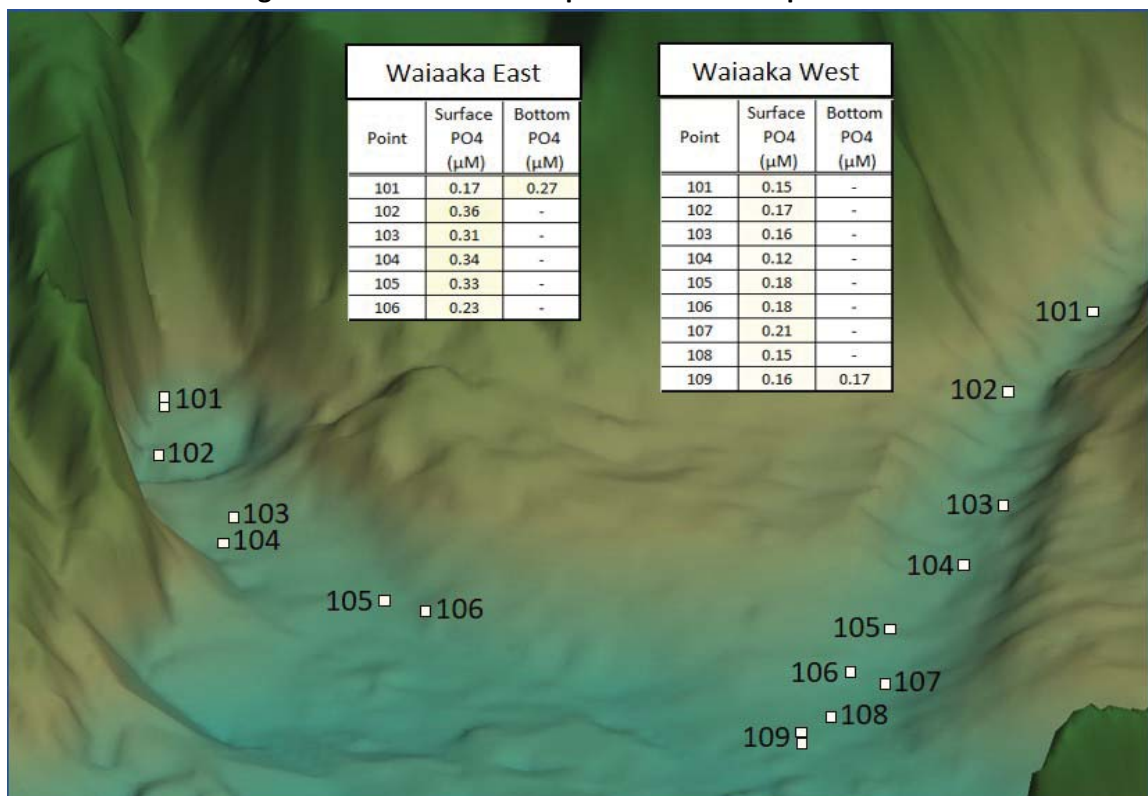


Figure 4-34. Waiaaka Phosphate Summer Sample.



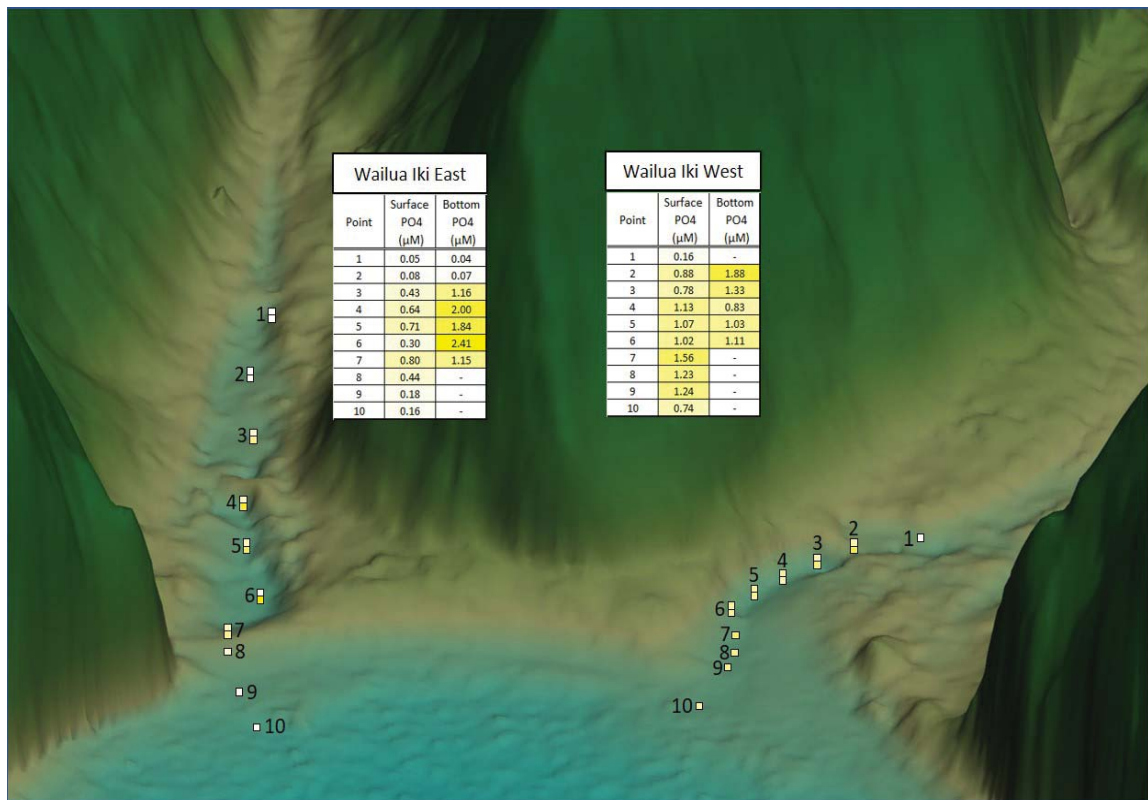


Figure 4-35. Wailua Phosphate Winter Sample.

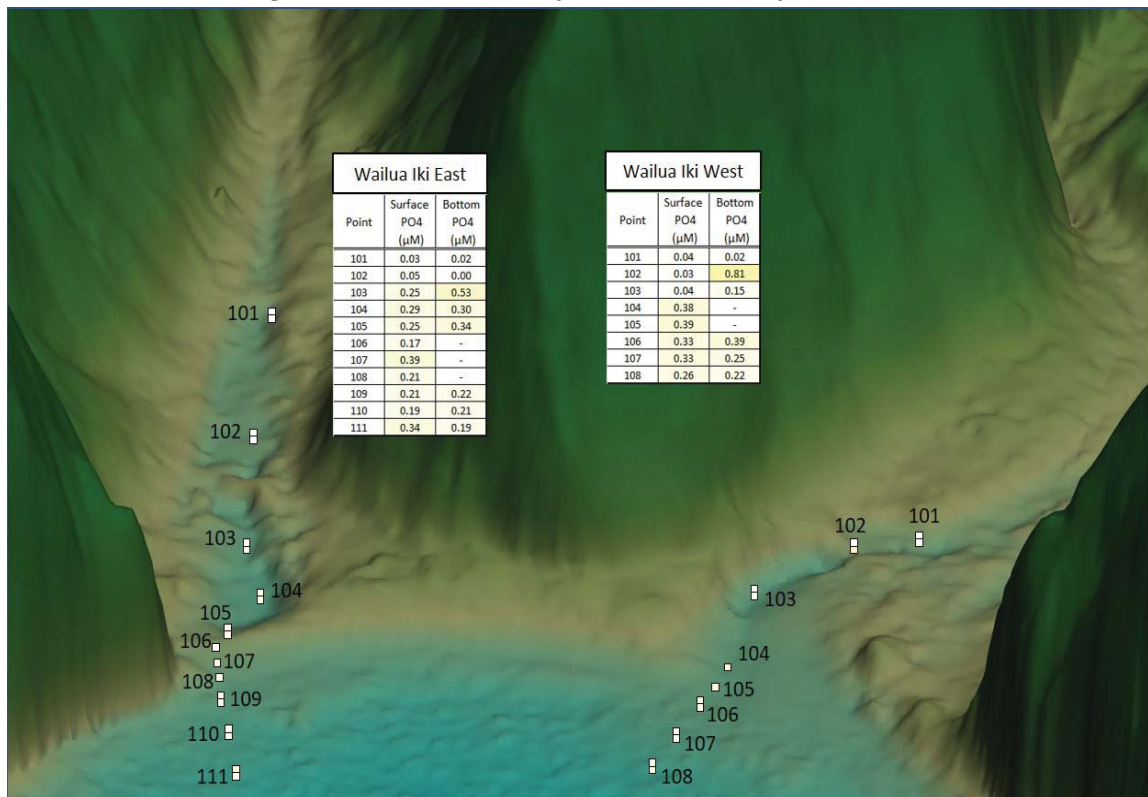
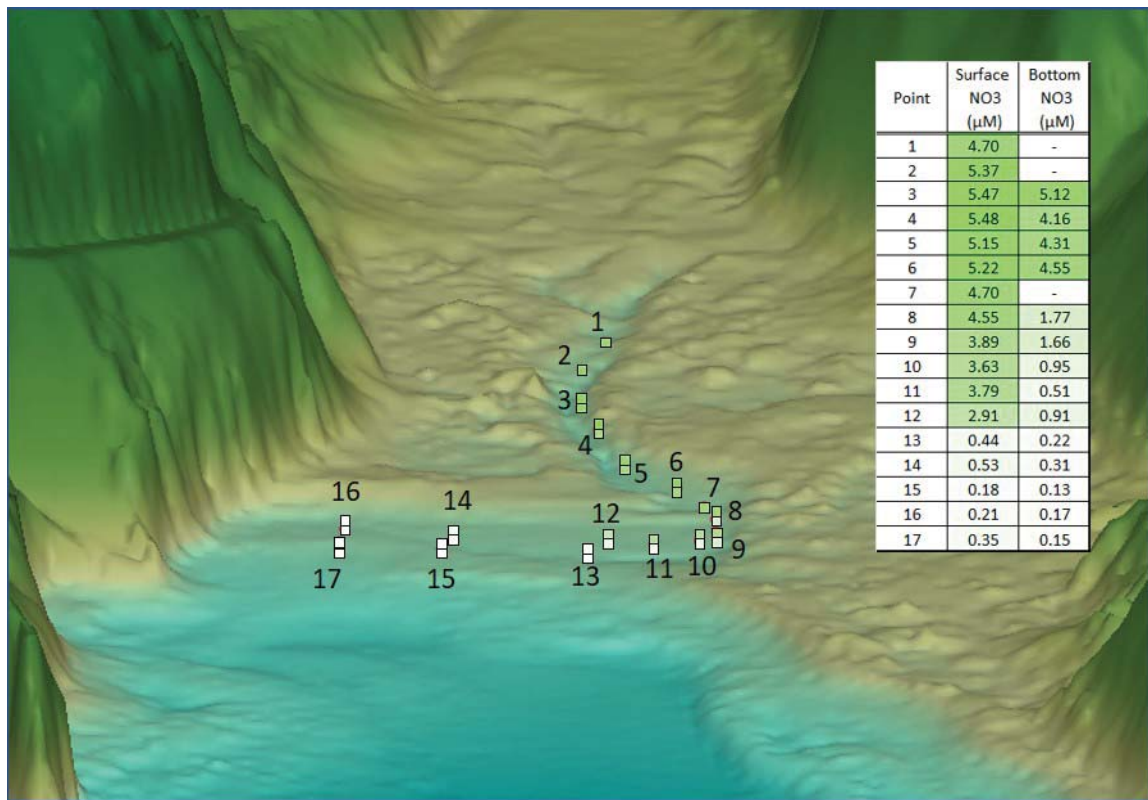
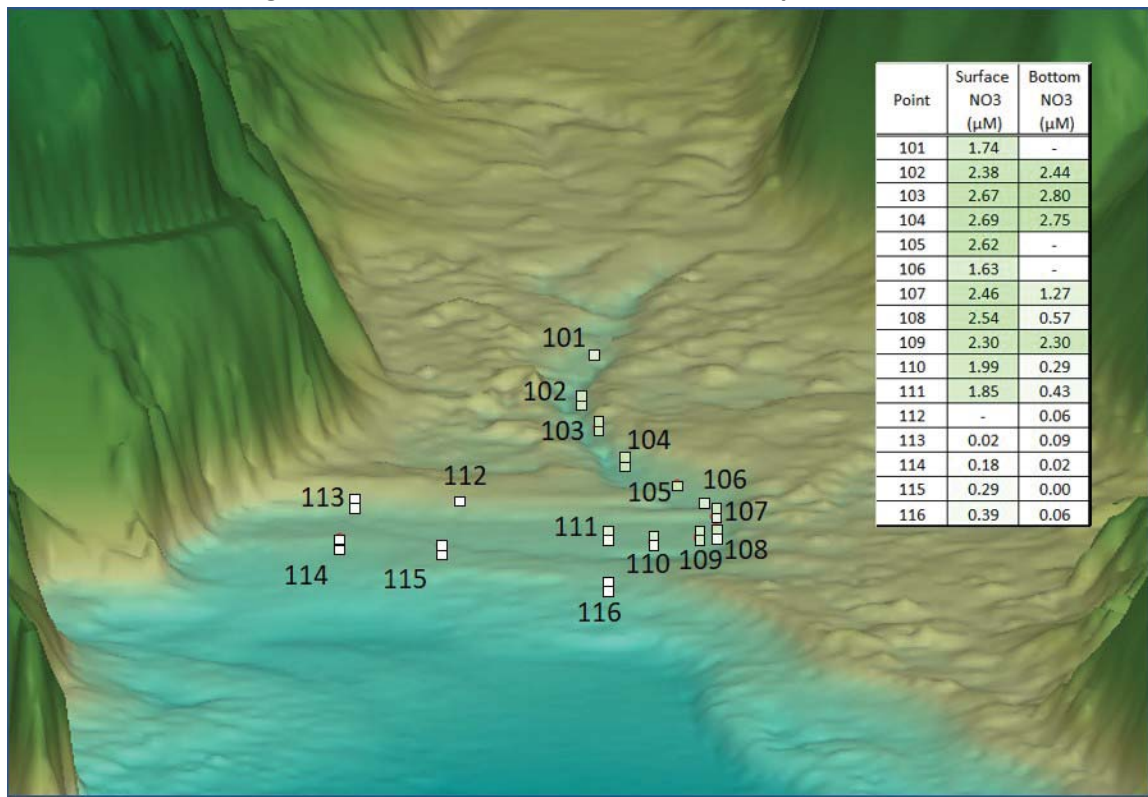


Figure 4-36. Wailua Phosphate Summer Sample.



**Figure 4-37. Honomanu Nitrate Winter Sample.**



**Figure 4-38. Honomanu Nitrate Summer Sample.**

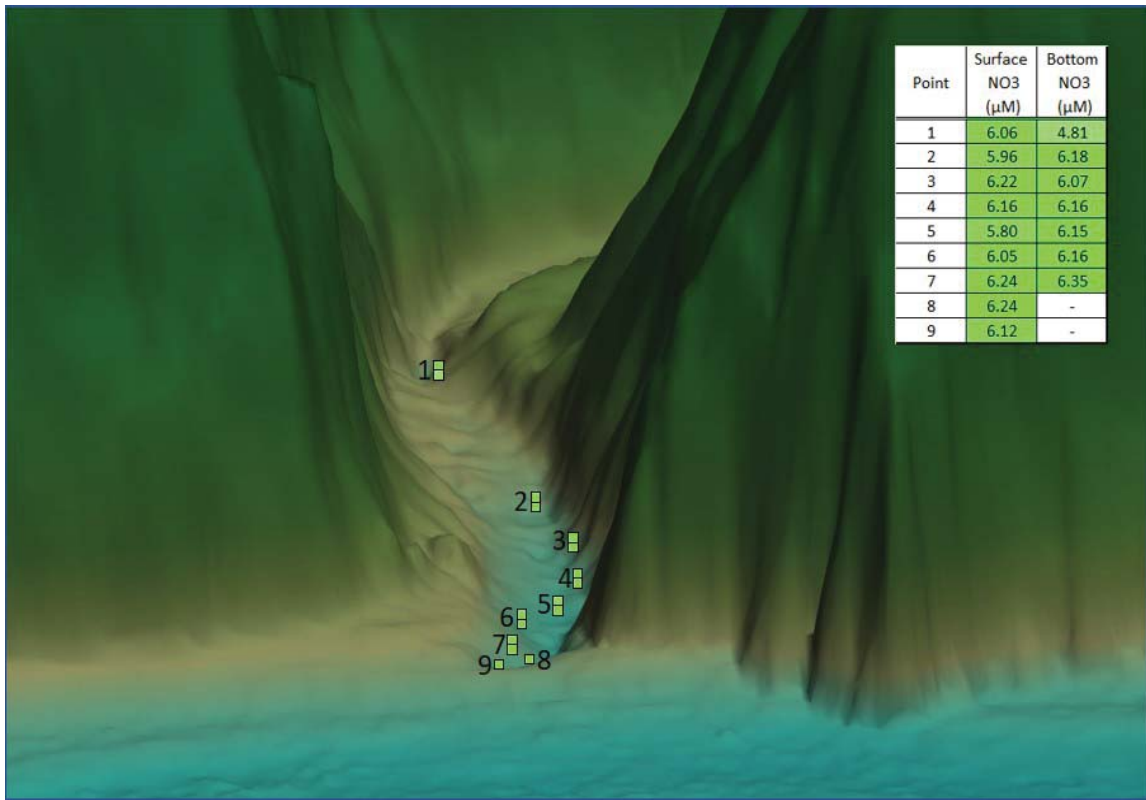


Figure 4-39. Hanawi Nitrate Winter Sample.

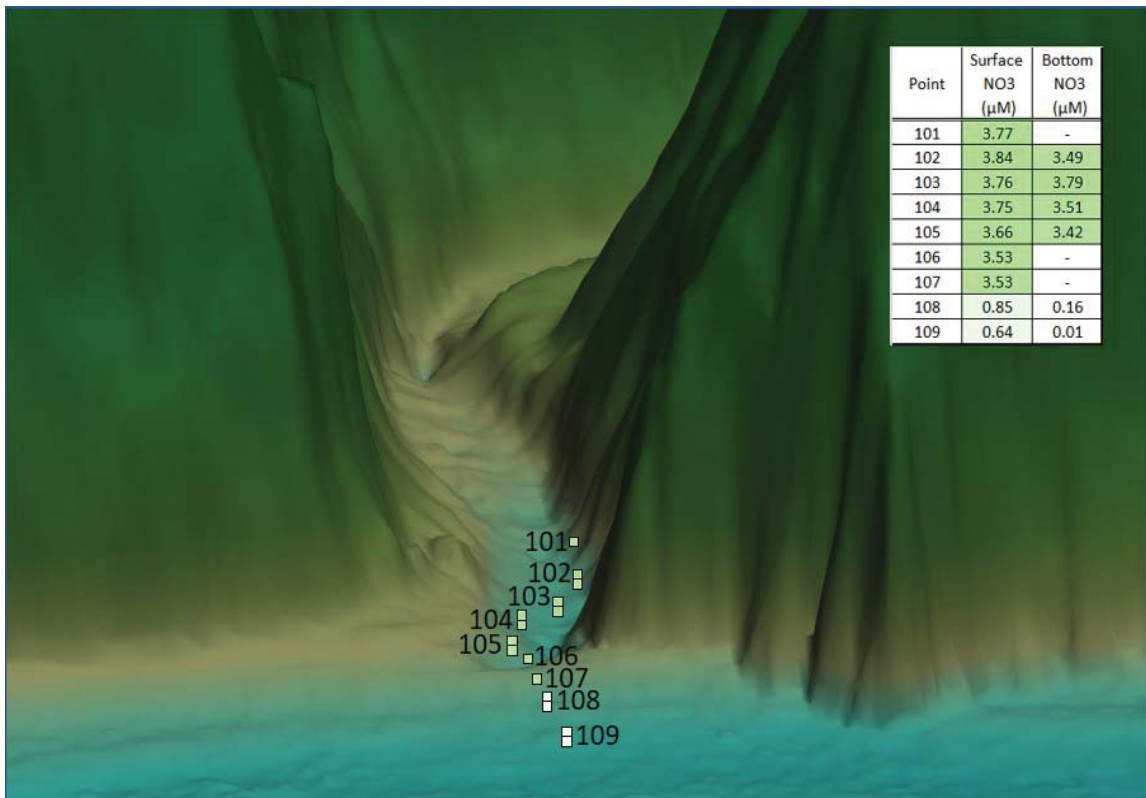


Figure 4-40. Hanawi Nitrate Summer Sample.



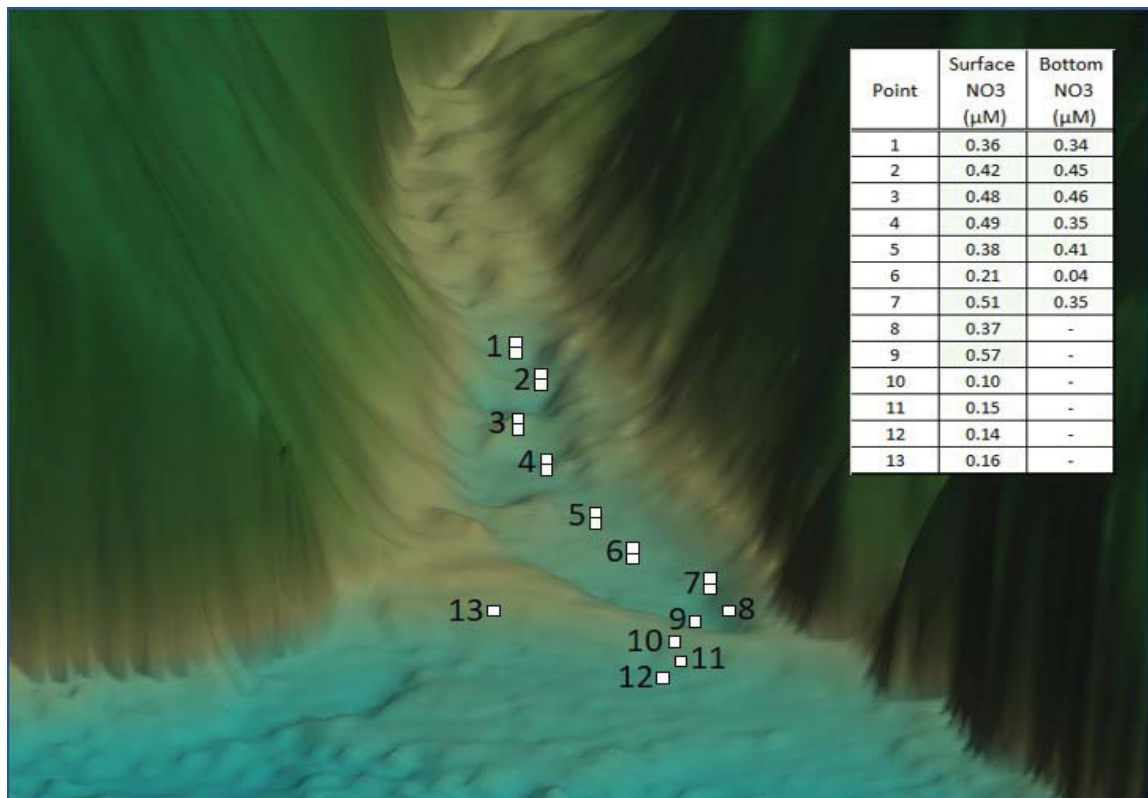


Figure 4-41. Kopiliula Nitrate Winter Sample.

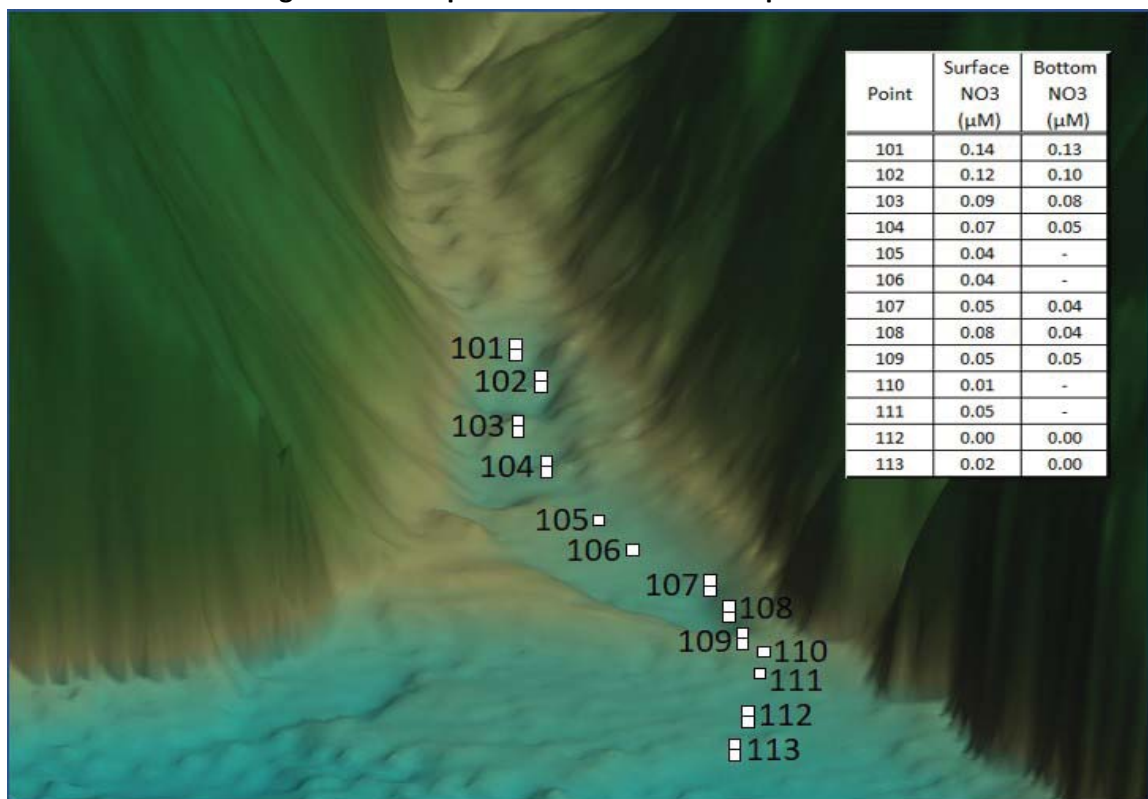


Figure 4-42. Kopiliula Nitrate Summer Sample.

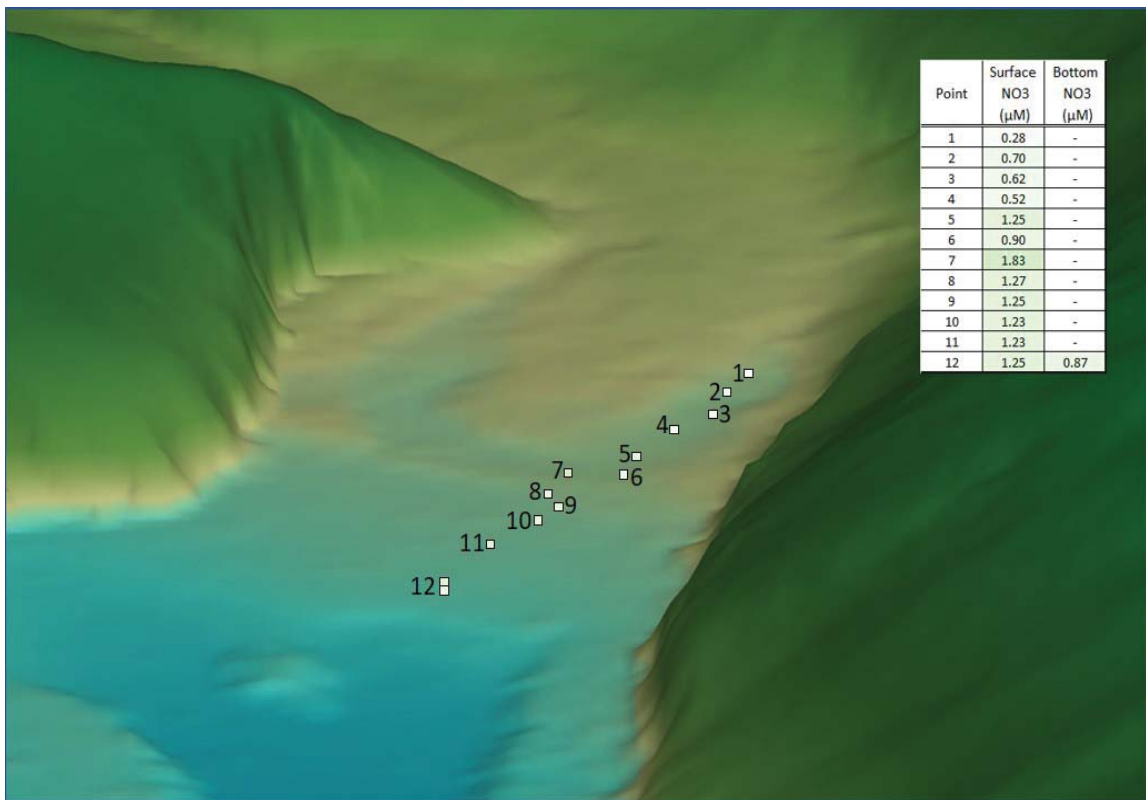


Figure 4-43. Oopuola Nitrate Winter Sample.

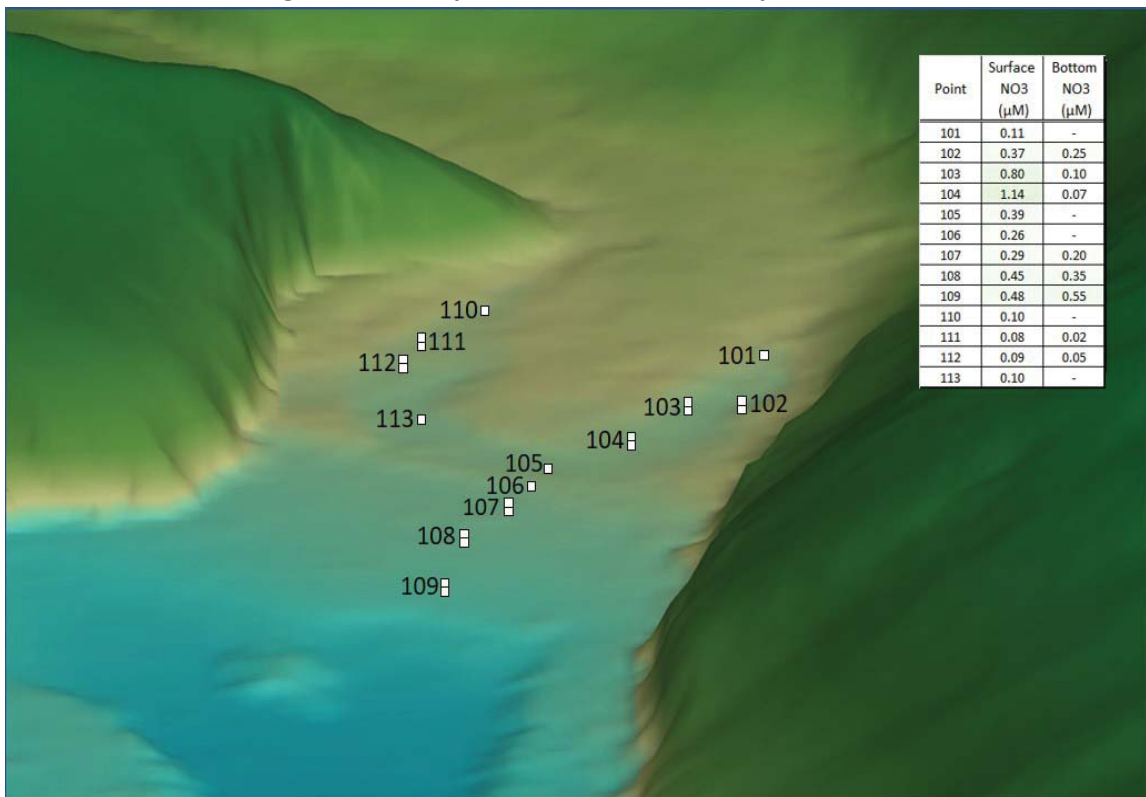


Figure 4-44. Oopuola Nitrate Summer Sample.



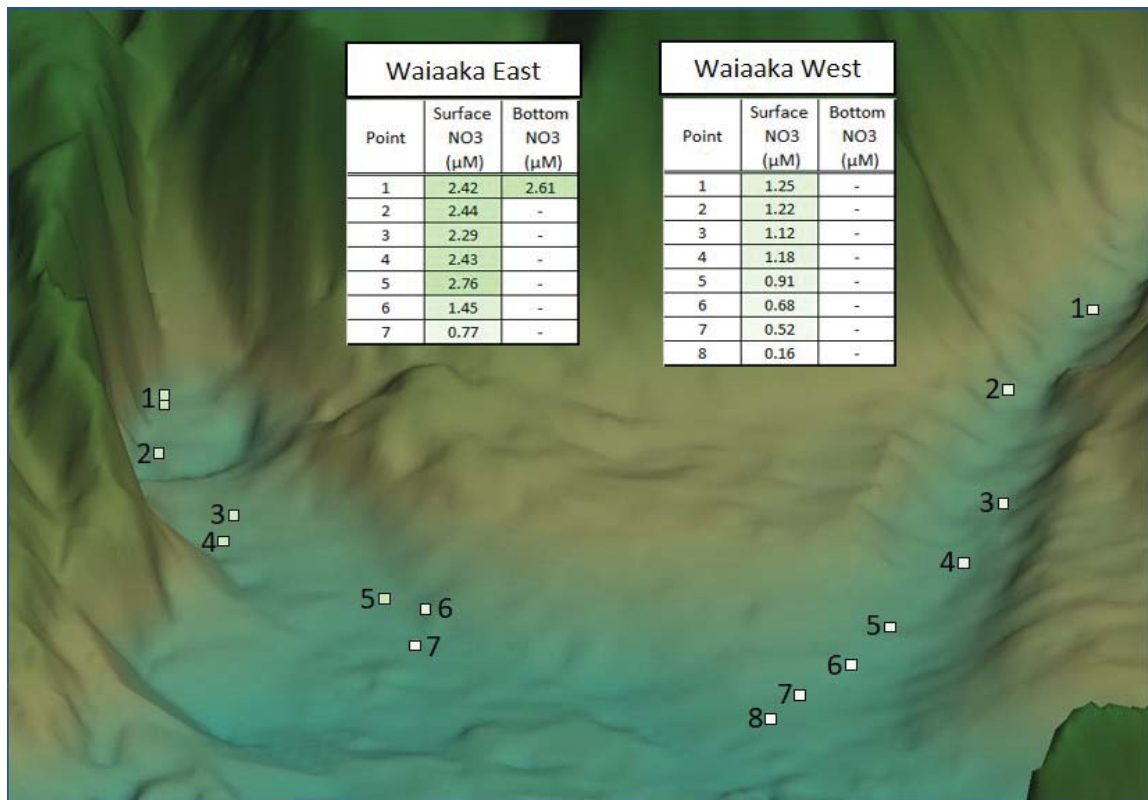


Figure 4-45. Waiaaka Nitrate Winter Sample.

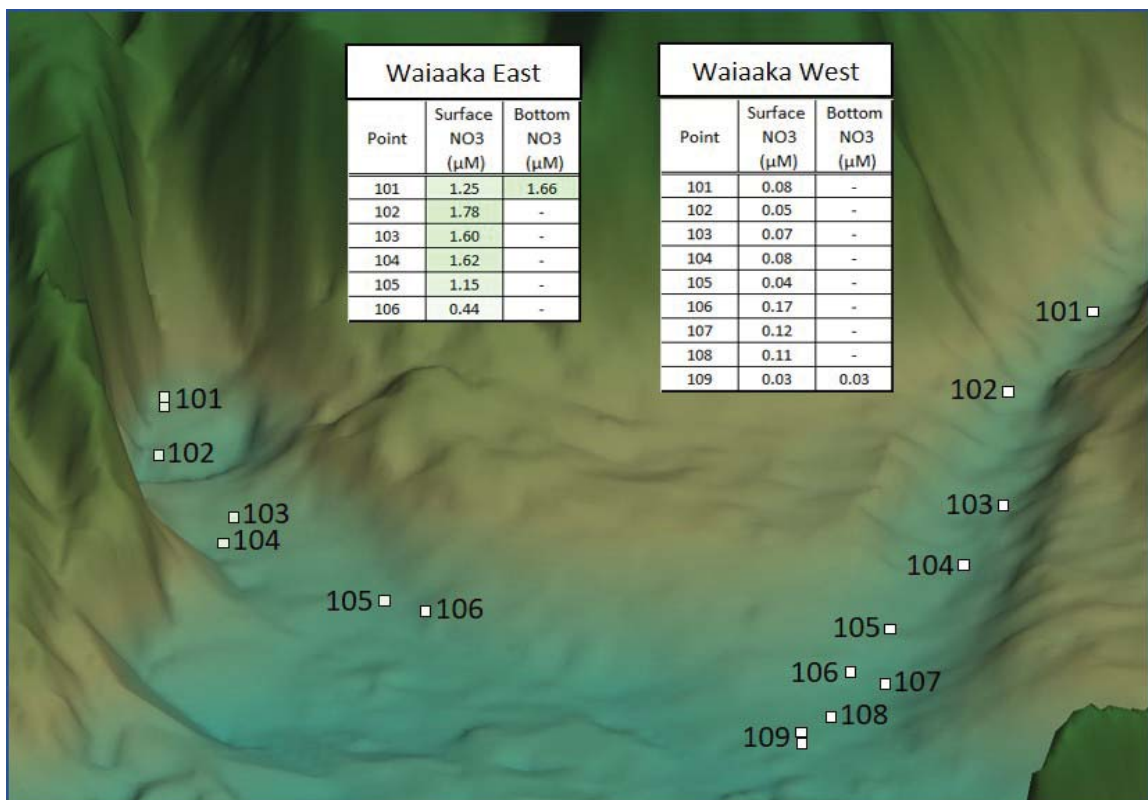
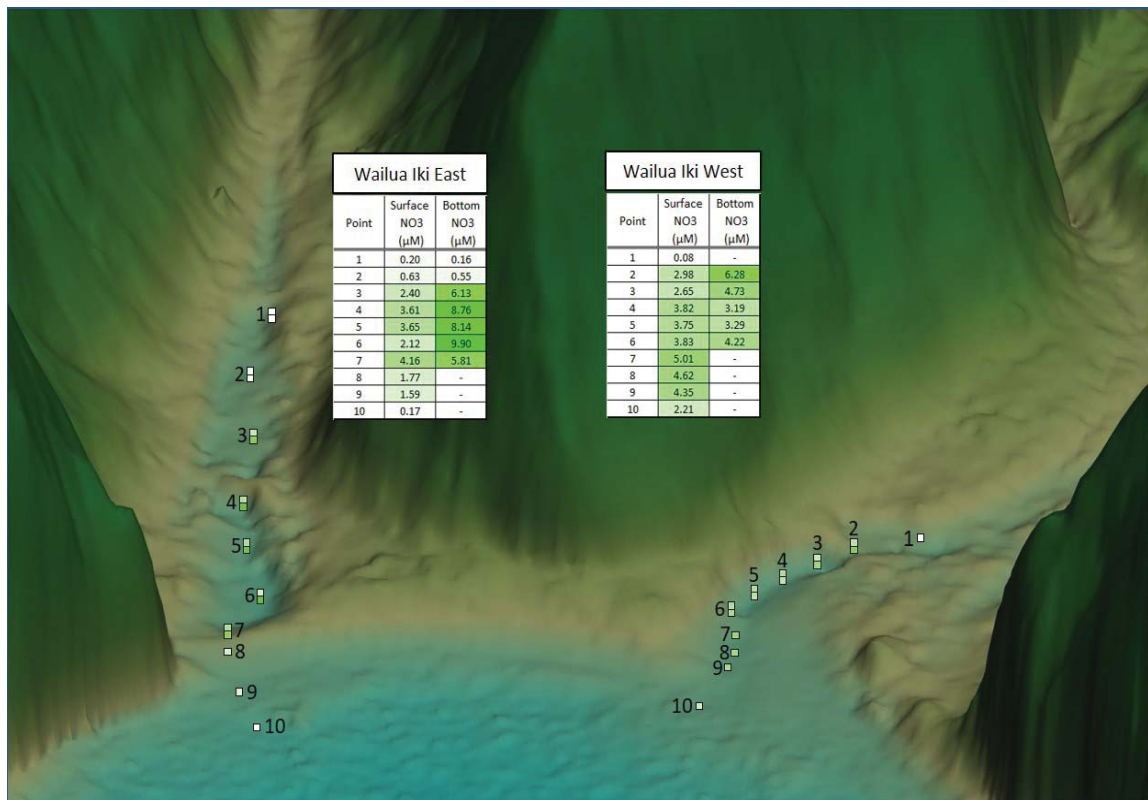
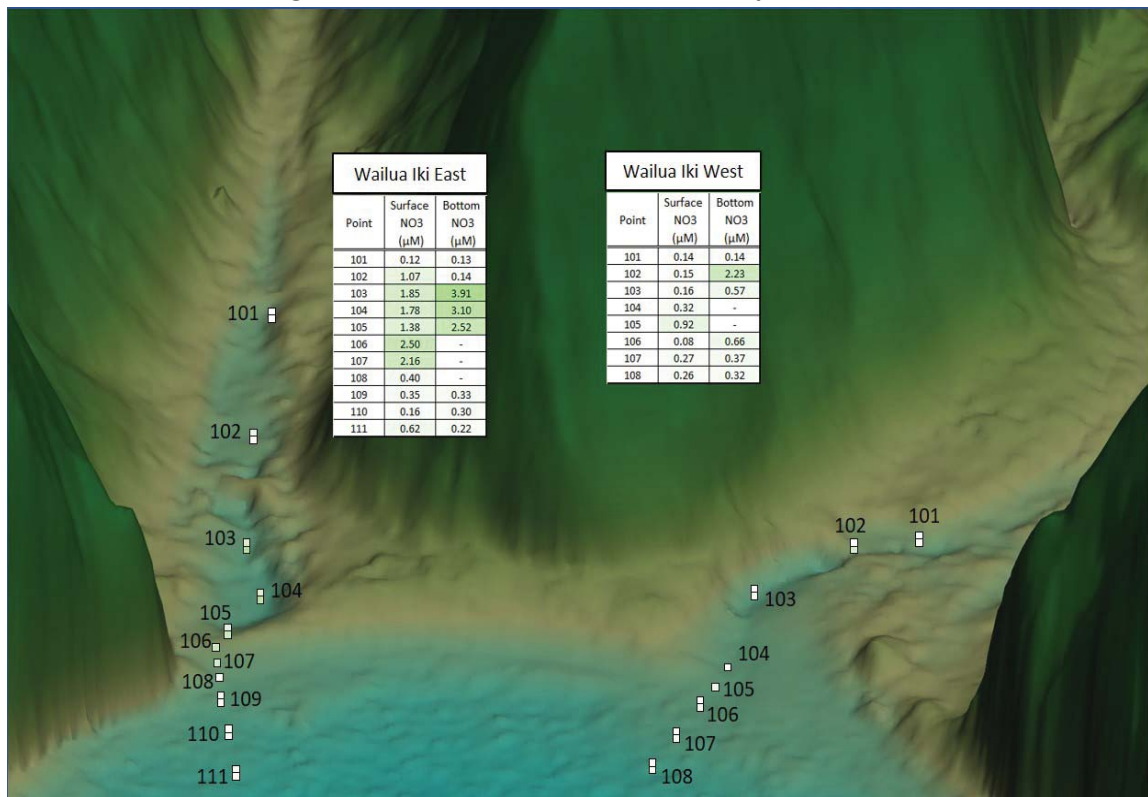


Figure 4-46. Waiaaka Nitrate Summer Sample.



**Figure 4-47. Wailua Nitrate Winter Sample.**



**Figure 4-48. Wailua Nitrate Summer Sample.**

## 5. SUMMARY AND CONCLUSIONS

Six stream complexes within the License Area that were accessible by land or air were surveyed in 2018 in order to determine to the best degree possible the contribution of stream waters to the function of marine systems. Each of the streams and adjacent ocean were surveyed twice, once in the winter (January) and once in the summer (July). Investigators collected water and sediment samples along transects that extended from upstream areas beyond the influence of the ocean, across the stream/ocean boundary, and into the nearshore marine environment. During both seasonal surveys, typical tradewind conditions prevailed, which created significant breaking surf in the nearshore area. These hazardous conditions resulted in restricted sample collection owing to severe surge and limited underwater visibility. As a result only limited observations of the biotic community structure were possible.

Results of the investigation showed that streams along the coast of East Maui show a wide range of geographical/morphological characteristics. Flow in the streams is highly variable and dynamic, with much of the variability resulting from factors in the upland watershed, as well as diversion of stream water. The two sampling events that were completed can only serve to describe the conditions at those points in time. However, results of the surveys provided some important information regarding the interactions of streams and the ocean. Of particular significance is that the effects of stream water on marine waters must be considered minor in these habitats. This result is supported by the physical processes associated with relatively small input of stream water to the vastly larger ocean environment. The prevailing conditions of extreme mixing by physical forces is the most important factor in diminishing the zone of influence of stream water in the marine setting. In all cases where it was possible to sample across the boundary where streams flowed to the ocean, there were sharp gradients reflecting the intense mixing of stream water to background ocean levels. Observations of the habitats in these transition zones indicated that they were composed primarily of sand and barren rock. Owing to continual, intense wave energy, these nearshore areas do not constitute important habitats for coral reef communities and associated marine species. Beyond the narrow transition zone, the influence of stream water is minimal owing to rapid and intense mixing. These processes should not be affected by changes in stream flow related to seasonal variation or diversions.

In summary, while the end result of the present study was intended to be development of a function to associate variation in stream flow rates to marine ecosystem function, the actual environmental conditions at the survey sites prohibited such a theoretical relationship. The field surveys, conducted under difficult logistical and extremely hazardous circumstances, demonstrate why such an objective is not applicable in this particular region. In other habitats that are not subjected to the same range of harsh physical conditions as East Maui, the results of studies aimed at establishing the relationships between stream input are likely to have a far different outcome with respect to linking stream discharge to estuarine function.

Results of the study provided a unique data set that characterizes the physical and chemical composition of streams in East Maui that supply the EMI Aqueduct System. Such a data set can provide an important baseline for any future evaluations of these streams.

## 6. REFERENCES

- Agustin, A.E., 2017. *Northwest Swell Variability at the Hawaiian Islands* (Master's thesis). Retrieved from University of Hawaii at Mānoa Oceanography Department.
- Bromirski, P., Cayan, D., Flick, R., 2005. *Wave spectral energy variability in the northeast pacific*. Journal of Geophysical Research, C03005. doi:10.1029/ 2004JC002398.
- Fletcher, C.H., et al, 2002. *Atlas of Natural Hazards in the Hawaiian Coastal Zone*. Department of the Interior, Geologic Investigations Series I-2761.
- Hawai'i Climate Change Mitigation and Adaptation Commission. 2017. *Hawai'i Sea Level Rise Vulnerability and Adaptation Report*. Prepared by Tetra Tech, Inc. and the State of Hawai'i Department of Land and Natural Resources, Office of Conservation and Coastal Lands, under the State of Hawai'i Department of Land and Natural Resources Contract No: 64064.
- NOAA., 2017. *Relative Sea Level Trend 1615680 Kahului, Hawaii* . Retrieved from [https://tidesandcurrents.noaa.gov/sltrends/sltrends\\_station.shtml?id=1615680](https://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?id=1615680)
- Pérez, J., Méndez, F., Menéndez, M., 2014. *Estela: a method for evaluating the source and travel time of the wave energy reaching a local area*. Ocean Dynamics, 1181–1191. doi:10.1007/s10236-014-0740-7.
- Rapaport, M., 2013. *The Pacific Islands*. University of Hawaii Press.
- Stopa, J.E., Cheung, K.F., Chen, Y.L., 2011. *Assessment of wave energy resources in Hawaii*. Renewable Energy , 554–567doi:10.1016/j.renene.2010.07.014.
- Sweet, W.V., R.E. Kopp, C.P. Weaver, J. Obeysekera, R.M. Horton, E.R. Thieler, and C. Zervas, 2017: *Global and Regional Sea Level Rise Scenarios for the United States*. NOAA Technical Report NOS CO-OPS 083. NOAA/NOS Center for Operational Oceanographic Products and Services.
- Vitousek, S., Fletcher, C., 2008. *Maximum Annually Recurring Wave Heights in Hawai'i*. Pac Sci 62(4): 541-555.
- Wren, J., Kobayashi, D., Jia, Y., Toonen, R., 2016. *Modeled Population Connectivity across the Hawaiian Archipelago*. <https://doi.org/10.1371/journal.pone.0167626>

## **APPENDIX A.**

Water Chemistry Data  
East Maui Streams  
January and July 2018



TABLE A-1. Results of water chemistry sampling conducted on January 2, 2018, at Honomanu Stream in East Maui. "S" indicates surface sample; "B" indicates bottom sample. Nutrient concentrations are shown in micromolar units (μM). Location of sampling station is shown in Chapter 4 of text.

| STREAM   | STATION | DEPTH | LAT         | LON         | PO4<br>(μM) | NO3<br>(μM) | NH4<br>(μM) | Si<br>(μM) | TOP<br>(μM) | TON<br>(μM) | TP<br>(μM) | TN<br>(μM) | TURB<br>(NTU) | SALT<br>(ppt) | pH<br>(rel) | Chl-a<br>(μg/l) | TEMP<br>deg C | DO<br>%sat |
|----------|---------|-------|-------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|------------|------------|---------------|---------------|-------------|-----------------|---------------|------------|
| HONOMANU | 1       | S     | 20.859136   | -156.16755  | 1.18        | 4.70        | 0.46        | 436.70     | 0.17        | 5.60        | 1.35       | 10.76      | 1.52          | 0.33          | 7.352       | 0.132           | 19.10         | 86.09      |
|          | 2       | S     | 20.85945996 | -156.167374 | 1.15        | 5.37        | 0.49        | 446.65     | 0.23        | 5.36        | 1.38       | 11.22      | 2.76          | 0.61          | 7.243       | 0.374           | 19.27         | 88.34      |
|          | 3       | S     | 20.85975903 | -156.167197 | 1.31        | 5.47        | 0.60        | 461.58     | 0.20        | 3.88        | 1.51       | 9.95       | 1.23          | 0.38          | 7.252       | 0.109           | 19.67         | 88.31      |
|          | 3       | B     | 20.85975903 | -156.167197 | 1.06        | 5.12        | 0.98        | 432.32     | 0.03        | 6.48        | 1.09       | 12.58      | 6.25          | 8.80          | 7.138       | 0.358           | 20.61         | 83.00      |
|          | 4       | S     | 20.86011602 | -156.167096 | 1.38        | 5.48        | 0.56        | 471.21     | 0.12        | 4.60        | 1.50       | 10.64      | 1.16          | 0.56          | 7.331       | 0.086           | 19.53         | 86.84      |
|          | 4       | B     | 20.86011602 | -156.167096 | 0.93        | 4.16        | 0.92        | 403.83     | 0.04        | 6.65        | 0.97       | 11.73      | 30.32         | 10.09         | 7.108       | 0.623           | 20.93         | 76.56      |
|          | 5       | S     | 20.86055598 | -156.166999 | 1.20        | 5.15        | 0.62        | 458.14     | 0.14        | 4.07        | 1.33       | 9.84       | 1.48          | 1.43          | 7.261       | 0.132           | 19.81         | 87.08      |
|          | 5       | B     | 20.86055598 | -156.166999 | 0.93        | 4.31        | 1.09        | 418.92     | 0.03        | 6.31        | 0.96       | 11.71      | 12.97         | 8.29          | 7.180       | 1.036           | 21.03         | 84.00      |
|          | 6       | S     | 20.86089302 | -156.167073 | 1.34        | 5.22        | 0.58        | 459.23     | 0.05        | 3.42        | 1.38       | 9.22       | 4.08          | 1.42          | 7.264       | 0.203           | 20.08         | 88.24      |
|          | 6       | B     | 20.86089302 | -156.167073 | 0.98        | 4.55        | 1.00        | 437.43     | 0.02        | 5.66        | 1.00       | 11.21      | 3.48          | 5.37          | 7.135       | 1.020           | 20.37         | 87.50      |
|          | 7       | S     | 20.86114699 | -156.167206 | 1.15        | 4.70        | 0.82        | 446.71     | 0.01        | 4.19        | 1.16       | 9.71       | NA            | 3.30          | 7.217       | 0.662           | 20.48         | 89.66      |
|          | 8       | S     | 20.86132703 | -156.167159 | 1.21        | 4.55        | 0.74        | 451.07     | 0.04        | 5.17        | 1.25       | 10.46      | 3.64          | 3.41          | 7.221       | 0.343           | 20.56         | 87.29      |
|          | 8       | B     | 20.86132703 | -156.167159 | 0.71        | 1.77        | 0.78        | 251.54     | 0.07        | 6.14        | 0.78       | 8.69       | 4.94          | 18.49         | 7.910       | 2.820           | 20.99         | 88.01      |
|          | 9       | S     | 20.86148302 | -156.167056 | 0.79        | 3.89        | 0.74        | 412.20     | 0.03        | 4.79        | 0.81       | 9.42       | 3.27          | 6.86          | 7.397       | 0.771           | 20.79         | 91.56      |
|          | 9       | B     | 20.86148302 | -156.167056 | 0.65        | 1.66        | 0.72        | 242.33     | 0.15        | 6.36        | 0.80       | 8.74       | 35.64         | 19.18         | 7.945       | 1.605           | 23.41         | 96.87      |
|          | 10      | S     | 20.86156701 | -156.166911 | 0.93        | 3.63        | 0.52        | 391.50     | 0.03        | 6.59        | 0.96       | 10.74      | 2.98          | 8.60          | 7.508       | 0.405           | 21.56         | 90.40      |
|          | 10      | B     | 20.86156701 | -156.166911 | 0.50        | 0.95        | 0.79        | 171.95     | 0.22        | 6.50        | 0.72       | 8.24       | 16.61         | 23.97         | 8.049       | 2.726           | 23.56         | 98.14      |
|          | 11      | S     | 20.86149903 | -156.166707 | 1.00        | 3.79        | 0.77        | 401.08     | 0.03        | 6.70        | 1.03       | 11.26      | 2.97          | 7.99          | 7.513       | 0.234           | 22.41         | 94.07      |
|          | 11      | B     | 20.86149903 | -156.166707 | 0.32        | 0.51        | 0.73        | 95.50      | 0.28        | 6.89        | 0.60       | 8.13       | 24.04         | 28.88         | 8.084       | 0.740           | 23.96         | 100.94     |
|          | 12      | S     | 20.86139099 | -156.166555 | 0.82        | 2.91        | 0.58        | 339.00     | 0.05        | 5.00        | 0.87       | 8.49       | 3.72          | 12.74         | 7.796       | 0.288           | 22.69         | 97.16      |
|          | 12      | B     | 20.86139099 | -156.166555 | 0.38        | 0.91        | 0.77        | 113.63     | 0.30        | 5.78        | 0.67       | 7.46       | 7.28          | 27.76         | 8.101       | 0.631           | 24.09         | 100.05     |
|          | 13      | S     | 20.861467   | -156.166435 | 0.25        | 0.44        | 0.78        | 60.75      | 0.33        | 6.09        | 0.58       | 7.31       | 4.26          | 31.50         | 8.081       | 0.358           | 24.31         | 103.57     |
|          | 13      | B     | 20.861467   | -156.166435 | 0.23        | 0.22        | 0.89        | 57.11      | 0.30        | 5.41        | 0.53       | 6.52       | 6.04          | 31.68         | 8.097       | 0.499           | 24.30         | 104.19     |
|          | 14      | S     | 20.861129   | -156.166013 | 0.26        | 0.53        | 0.77        | 68.93      | 0.33        | 5.94        | 0.58       | 7.24       | 8.96          | 30.92         | 8.128       | 0.257           | 24.23         | 102.60     |
|          | 14      | B     | 20.861129   | -156.166013 | 0.25        | 0.31        | 0.82        | 64.89      | 0.30        | 6.23        | 0.55       | 7.36       | 10.09         | 31.18         | 8.131       | 0.530           | 24.23         | 102.69     |
|          | 15      | S     | 20.861252   | -156.165905 | 0.22        | 0.18        | 0.88        | 61.69      | 0.30        | 5.52        | 0.52       | 6.58       | 27.12         | 31.31         | 8.107       | 2.820           | 24.19         | 102.06     |
|          | 15      | B     | 20.861252   | -156.165905 | 0.26        | 0.13        | 1.35        | 60.39      | 0.30        | 6.99        | 0.56       | 8.47       | 38.84         | 31.38         | 8.095       | 5.118           | 24.18         | 101.92     |
|          | 16      | S     | 20.860888   | -156.165653 | 0.26        | 0.21        | 0.85        | 58.40      | 0.31        | 7.48        | 0.57       | 8.54       | 4.71          | 31.54         | 8.117       | 1.589           | 24.26         | 103.57     |
|          | 16      | B     | 20.860888   | -156.165653 | 0.22        | 0.17        | 0.65        | 57.21      | 0.32        | 5.85        | 0.54       | 6.67       | 40.41         | 31.61         | 8.123       | 2.539           | 24.27         | 103.03     |
|          | 17      | S     | 20.861031   | -156.165578 | 0.26        | 0.35        | 0.59        | 66.81      | 0.29        | 5.27        | 0.54       | 6.21       | 9.73          | 31.01         | 8.141       | 0.265           | 24.23         | 103.60     |
|          | 17      | B     | 20.861031   | -156.165578 | 0.15        | 0.15        | 0.64        | 63.57      | 0.34        | 5.94        | 0.49       | 6.73       | 17.17         | 31.19         | 8.137       | 0.467           | 24.24         | 102.98     |

000701

TABLE A-2. Results of water chemistry sampling conducted on January 2, 2018, at Honomanu Stream in East Maui. "S" indicates surface sample; "B" indicates bottom sample. Nutrient concentrations are shown as micrograms per liter (µg/L). Location of sampling station is shown in Chapter 4 of text.

| STREAM   | STATION | DEPTH | LAT         | LONG        | PO4<br>(µg/L) | NO3<br>(µg/L) | NH4<br>(µg/L) | Si<br>(µg/L) | TOP<br>(µg/L) | TON<br>(µg/L) | TP<br>(µg/L) | TN<br>(µg/L) | TURB<br>(NTU) | SALT<br>(ppt) | pH<br>(rel) | Chl-a<br>(µg/L) | TEMP<br>deg C | DO<br>%sat |
|----------|---------|-------|-------------|-------------|---------------|---------------|---------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|-------------|-----------------|---------------|------------|
| HONOMANU | 1       | S     | 20.859136   | -156.16755  | 36.63         | 65.83         | 6.45          | 12228        | 5.31          | 78.39         | 41.94        | 150.67       | 1.52          | 0.33          | 7.352       | 0.132           | 19.10         | 86.09      |
|          | 2       | S     | 20.85945996 | -156.167374 | 35.67         | 75.21         | 6.87          | 12506        | 7.20          | 75.03         | 42.87        | 157.11       | 2.76          | 0.61          | 7.243       | 0.374           | 19.27         | 88.34      |
|          | 3       | S     | 20.85975903 | -156.167197 | 40.66         | 76.61         | 8.41          | 12924        | 6.24          | 54.31         | 46.90        | 139.33       | 1.23          | 0.38          | 7.252       | 0.109           | 19.67         | 88.31      |
|          | 3       | B     | 20.85975903 | -156.167197 | 32.85         | 71.71         | 13.73         | 12105        | 1.04          | 90.71         | 33.88        | 176.15       | 6.25          | 8.80          | 7.138       | 0.358           | 20.61         | 83.00      |
|          | 4       | S     | 20.86011602 | -156.167096 | 42.81         | 76.75         | 7.85          | 13194        | 3.79          | 64.39         | 46.59        | 148.99       | 1.16          | 0.56          | 7.331       | 0.086           | 19.53         | 86.84      |
|          | 4       | B     | 20.86011602 | -156.167096 | 28.97         | 58.27         | 12.89         | 11307        | 1.19          | 93.09         | 30.16        | 164.25       | 30.32         | 10.09         | 7.108       | 0.623           | 20.93         | 76.56      |
|          | 5       | S     | 20.86055598 | -156.166999 | 37.12         | 72.13         | 8.69          | 12828        | 4.20          | 56.97         | 41.32        | 137.79       | 1.48          | 1.43          | 7.261       | 0.132           | 19.81         | 87.08      |
|          | 5       | B     | 20.86055598 | -156.166999 | 28.88         | 60.37         | 15.27         | 11730        | 0.98          | 88.33         | 29.85        | 163.97       | 12.97         | 8.29          | 7.180       | 1.036           | 21.03         | 84.00      |
|          | 6       | S     | 20.86089302 | -156.167073 | 41.47         | 73.11         | 8.13          | 12859        | 1.41          | 47.87         | 42.87        | 129.11       | 4.08          | 1.42          | 7.264       | 0.203           | 20.08         | 88.24      |
|          | 6       | B     | 20.86089302 | -156.167073 | 30.46         | 63.73         | 14.01         | 12248        | 0.63          | 79.23         | 31.09        | 156.97       | 3.48          | 5.37          | 7.135       | 1.020           | 20.37         | 87.50      |
|          | 7       | S     | 20.86114699 | -156.167206 | 35.66         | 65.83         | 11.49         | 12508        | 0.39          | 58.65         | 36.05        | 135.97       | NA            | 3.30          | 7.217       | 0.662           | 20.48         | 89.66      |
|          | 8       | S     | 20.86132703 | -156.167159 | 37.51         | 63.73         | 10.37         | 12630        | 1.33          | 72.37         | 38.84        | 146.47       | 3.64          | 3.41          | 7.221       | 0.343           | 20.56         | 87.29      |
|          | 8       | B     | 20.86132703 | -156.167159 | 22.09         | 24.81         | 10.93         | 7043         | 2.18          | 85.95         | 24.27        | 121.69       | 4.94          | 18.49         | 7.910       | 2.820           | 20.99         | 88.01      |
|          | 9       | S     | 20.86148302 | -156.167056 | 24.39         | 54.49         | 10.37         | 11542        | 0.81          | 67.05         | 25.20        | 131.91       | 3.27          | 6.86          | 7.397       | 0.771           | 20.79         | 91.56      |
|          | 9       | B     | 20.86148302 | -156.167056 | 20.15         | 23.27         | 10.09         | 6785         | 4.74          | 89.03         | 24.89        | 122.39       | 35.64         | 19.18         | 7.945       | 1.605           | 23.41         | 96.87      |
|          | 10      | S     | 20.86156701 | -156.166911 | 28.84         | 50.85         | 7.29          | 10962        | 1.01          | 92.25         | 29.85        | 150.39       | 2.98          | 8.60          | 7.508       | 0.405           | 21.56         | 90.40      |
|          | 10      | B     | 20.86156701 | -156.166911 | 15.56         | 13.33         | 11.07         | 4815         | 6.85          | 90.99         | 22.41        | 115.39       | 16.61         | 23.97         | 8.049       | 2.726           | 23.56         | 98.14      |
|          | 11      | S     | 20.86149903 | -156.166707 | 31.08         | 53.09         | 10.79         | 11230        | 0.94          | 93.79         | 32.02        | 157.67       | 2.97          | 7.99          | 7.513       | 0.234           | 22.41         | 94.07      |
|          | 11      | B     | 20.86149903 | -156.166707 | 10.02         | 7.17          | 10.23         | 2674         | 8.67          | 96.45         | 18.69        | 113.85       | 24.04         | 28.88         | 8.084       | 0.740           | 23.96         | 100.94     |
|          | 12      | S     | 20.86139099 | -156.166555 | 25.56         | 40.77         | 8.13          | 9492         | 1.50          | 69.99         | 27.06        | 118.89       | 3.72          | 12.74         | 7.796       | 0.288           | 22.69         | 97.16      |
|          | 12      | B     | 20.86139099 | -156.166555 | 11.70         | 12.77         | 10.79         | 3182         | 9.16          | 80.91         | 20.86        | 104.47       | 7.28          | 27.76         | 8.101       | 0.631           | 24.09         | 100.05     |
|          | 13      | S     | 20.861467   | -156.166435 | 7.85          | 6.19          | 10.93         | 1701         | 10.22         | 85.25         | 18.07        | 102.37       | 4.26          | 31.50         | 8.081       | 0.358           | 24.31         | 103.57     |
|          | 13      | B     | 20.861467   | -156.166435 | 7.21          | 3.11          | 12.47         | 1599         | 9.31          | 75.73         | 16.52        | 91.31        | 6.04          | 31.68         | 8.097       | 0.499           | 24.30         | 104.19     |
|          | 14      | S     | 20.861129   | -156.166013 | 7.92          | 7.45          | 10.79         | 1930         | 10.15         | 83.15         | 18.07        | 101.39       | 8.96          | 30.92         | 8.128       | 0.257           | 24.23         | 102.60     |
|          | 14      | B     | 20.861129   | -156.166013 | 7.89          | 4.37          | 11.49         | 1817         | 9.25          | 87.21         | 17.14        | 103.07       | 10.09         | 31.18         | 8.131       | 0.530           | 24.23         | 102.69     |
|          | 15      | S     | 20.861252   | -156.165905 | 6.94          | 2.55          | 12.33         | 1727         | 9.27          | 77.27         | 16.21        | 92.15        | 27.12         | 31.31         | 8.107       | 2.820           | 24.19         | 102.06     |
|          | 15      | B     | 20.861252   | -156.165905 | 8.18          | 1.85          | 18.91         | 1691         | 9.28          | 97.85         | 17.45        | 118.61       | 38.84         | 31.38         | 8.095       | 5.118           | 24.18         | 101.92     |
|          | 16      | S     | 20.860888   | -156.165653 | 8.16          | 2.97          | 11.91         | 1635         | 9.61          | 104.71        | 17.76        | 119.59       | 4.71          | 31.54         | 8.117       | 1.589           | 24.26         | 103.57     |
|          | 16      | B     | 20.860888   | -156.165653 | 6.91          | 2.41          | 9.11          | 1602         | 9.92          | 81.89         | 16.83        | 93.41        | 40.41         | 31.61         | 8.123       | 2.539           | 24.27         | 103.03     |
|          | 17      | S     | 20.861031   | -156.165578 | 7.91          | 4.93          | 8.27          | 1871         | 8.92          | 73.77         | 16.83        | 86.97        | 9.73          | 31.01         | 8.141       | 0.265           | 24.23         | 103.60     |
|          | 17      | B     | 20.861031   | -156.165578 | 4.79          | 2.13          | 8.97          | 1780         | 10.49         | 83.15         | 15.28        | 94.25        | 17.17         | 31.19         | 8.137       | 0.467           | 24.24         | 102.98     |

TABLE A-3. Results of water chemistry sampling conducted on January 3, 2018, at Hanawi, Kopiliula, and Waiaka Streams in East Maui. "S" indicates surface sample; "B" indicates bottom sample. "na" indicates lost sample. Nutrient concentrations are shown in micromolar units ( $\mu\text{M}$ ). Locations of sampling stations are shown in Chapter 4 of text.

| STREAM       | STATION | DEPTH | LAT       | LON       | PO4<br>( $\mu\text{M}$ ) | NO3<br>( $\mu\text{M}$ ) | NH4<br>( $\mu\text{M}$ ) | Si<br>( $\mu\text{M}$ ) | TOP<br>( $\mu\text{M}$ ) | TON<br>( $\mu\text{M}$ ) | TP<br>( $\mu\text{M}$ ) | TN<br>( $\mu\text{M}$ ) | TURB<br>(NTU) | SALT<br>(ppt) | pH<br>(rel) | Chl-a<br>( $\mu\text{g/l}$ ) | TEMP<br>deg C | DO<br>%sat |
|--------------|---------|-------|-----------|-----------|--------------------------|--------------------------|--------------------------|-------------------------|--------------------------|--------------------------|-------------------------|-------------------------|---------------|---------------|-------------|------------------------------|---------------|------------|
| HANAWI       | 1       | S     | 20.823663 | -156.1013 | 0.69                     | 6.06                     | 0.23                     | 325.15                  | 0.17                     | 3.16                     | 0.86                    | 9.45                    | 1.07          | 0.00          | 7.911       | 0.101                        | 17.09         | 97.78      |
|              | 1       | B     | 20.823663 | -156.1013 | 0.70                     | 4.81                     | 0.05                     | 327.75                  | 0.22                     | 5.69                     | 0.92                    | 10.55                   | 1.19          | 0.00          | 7.865       | 0.678                        | 17.09         | 96.62      |
|              | 2       | S     | 20.824242 | -156.1013 | 0.74                     | 5.96                     | 0.13                     | 327.69                  | 0.19                     | 2.63                     | 0.93                    | 8.72                    | 1.39          | 0.00          | 7.867       | 0.195                        | 17.11         | 98.05      |
|              | 2       | B     | 20.824242 | -156.1013 | 0.75                     | 6.18                     | 0.06                     | 327.50                  | 0.20                     | 3.26                     | 0.95                    | 9.50                    | 1.38          | 0.00          | 7.845       | 0.148                        | 17.11         | 98.19      |
|              | 3       | S     | 20.824466 | -156.1013 | 0.78                     | 6.22                     | 0.10                     | 327.61                  | 0.16                     | 3.23                     | 0.94                    | 9.55                    | 1.39          | 0.01          | 7.832       | 0.140                        | 17.11         | 97.81      |
|              | 3       | B     | 20.824466 | -156.1013 | 0.72                     | 6.07                     | 0.33                     | 328.18                  | 0.18                     | 1.94                     | 0.90                    | 8.34                    | 1.43          | 0.01          | 7.824       | 0.312                        | 17.11         | 96.07      |
|              | 4       | S     | 20.824702 | -156.1013 | 0.72                     | 6.16                     | 0.35                     | 328.27                  | 0.17                     | 2.64                     | 0.89                    | 9.15                    | 1.11          | 0.01          | 7.835       | 0.234                        | 17.11         | 98.32      |
|              | 4       | B     | 20.824702 | -156.1013 | 0.74                     | 6.16                     | 0.30                     | 329.36                  | 0.16                     | 2.84                     | 0.90                    | 9.30                    | 1.14          | 0.01          | 7.832       | 1.192                        | 17.12         | 98.16      |
|              | 5       | S     | 20.82486  | -156.1011 | 0.72                     | 5.80                     | 0.45                     | 328.28                  | 0.17                     | 3.82                     | 0.89                    | 10.07                   | 1.23          | 0.01          | 7.825       | 0.171                        | 17.11         | 99.19      |
|              | 5       | B     | 20.82486  | -156.1011 | 0.76                     | 6.15                     | 0.30                     | 325.42                  | 0.13                     | 4.66                     | 0.89                    | 11.11                   | 1.10          | 0.39          | 7.776       | 0.335                        | 17.10         | 98.02      |
|              | 6       | S     | 20.824886 | -156.1009 | 0.73                     | 6.05                     | 0.23                     | 329.11                  | 0.12                     | 2.65                     | 0.85                    | 8.93                    | 1.35          | 0.01          | 7.835       | 0.125                        | 17.11         | 98.91      |
|              | 6       | B     | 20.824886 | -156.1009 | 0.70                     | 6.16                     | 0.35                     | 329.64                  | 0.19                     | 3.52                     | 0.89                    | 10.03                   | 1.22          | 0.02          | 7.823       | 0.460                        | 17.23         | 98.03      |
|              | 7       | S     | 20.824988 | -156.1009 | 0.78                     | 6.24                     | 0.20                     | 329.73                  | 0.19                     | 2.14                     | 0.97                    | 8.58                    | 1.23          | 0.01          | 7.825       | 0.164                        | 17.11         | 98.82      |
|              | 7       | B     | 20.824988 | -156.1009 | 0.78                     | 6.35                     | 0.55                     | 329.19                  | 0.16                     | 3.94                     | 0.94                    | 10.84                   | 1.19          | 0.02          | 7.816       | 0.148                        | 17.10         | 98.40      |
|              | 8       | S     | 20.825059 | -156.1009 | 0.77                     | 6.24                     | 0.57                     | 328.12                  | 0.16                     | 3.29                     | 0.93                    | 10.10                   | 1.17          | 0.01          | 7.821       | 0.132                        | 17.10         | 99.05      |
|              | 9       | S     | 20.825059 | -156.1009 | 0.78                     | 6.12                     | 0.52                     | 316.15                  | 0.04                     | 1.42                     | 0.82                    | 8.06                    | 1.95          | 1.56          | 7.854       | 0.125                        | 17.10         | 98.73      |
| KOPIIULA     | 1       | S     | 20.831179 | -156.1187 | 0.18                     | 0.36                     | 0.54                     | 230.09                  | 0.25                     | 3.96                     | 0.43                    | 4.86                    | 2.10          | 0.00          | 7.721       | 0.280                        | 17.38         | 98.10      |
|              | 1       | B     | 20.831179 | -156.1187 | 0.17                     | 0.34                     | 0.46                     | 228.63                  | 0.23                     | 5.64                     | 0.40                    | 6.44                    | 1.69          | 0.00          | 7.687       | 0.343                        | 17.38         | 98.20      |
|              | 2       | S     | 20.831266 | -156.1187 | 0.16                     | 0.42                     | 0.40                     | 227.61                  | 0.26                     | 4.70                     | 0.42                    | 5.52                    | 5.45          | 0.00          | 7.669       | 0.561                        | 17.41         | 98.45      |
|              | 2       | B     | 20.831266 | -156.1187 | 0.22                     | 0.45                     | 0.49                     | 228.18                  | 0.18                     | 4.70                     | 0.40                    | 5.64                    | 4.19          | 0.00          | 7.675       | 1.013                        | 17.41         | 98.09      |
|              | 3       | S     | 20.831399 | -156.1185 | 0.19                     | 0.48                     | 0.68                     | 229.12                  | 0.20                     | 4.30                     | 0.39                    | 5.46                    | 1.90          | 0.00          | 7.655       | 0.335                        | 17.43         | 97.95      |
|              | 3       | B     | 20.831399 | -156.1185 | 0.21                     | 0.46                     | 0.41                     | 228.82                  | 0.16                     | 4.07                     | 0.37                    | 4.94                    | 2.42          | 0.00          | 7.668       | 0.748                        | 17.43         | 97.90      |
|              | 4       | S     | 20.83157  | -156.1185 | 0.21                     | 0.49                     | 0.39                     | 229.28                  | 0.12                     | 3.84                     | 0.33                    | 4.72                    | 1.72          | 0.00          | 7.653       | 0.397                        | 17.51         | 95.87      |
|              | 4       | B     | 20.83157  | -156.1185 | 0.18                     | 0.35                     | 0.65                     | 228.45                  | 0.15                     | 3.65                     | 0.33                    | 4.65                    | 2.70          | 0.00          | 7.660       | 2.142                        | 17.47         | 97.21      |
|              | 5       | S     | 20.831828 | -156.1184 | 0.33                     | 0.38                     | 0.62                     | 227.93                  | 0.11                     | 3.71                     | 0.44                    | 4.71                    | 2.64          | 0.00          | 7.676       | 0.499                        | 17.58         | 98.25      |
|              | 5       | B     | 20.831828 | -156.1184 | 0.18                     | 0.41                     | 0.63                     | 232.50                  | 0.17                     | 3.64                     | 0.35                    | 4.68                    | 2.54          | 0.00          | 7.676       | 0.865                        | 17.57         | 98.43      |
|              | 6       | S     | 20.831973 | -156.1184 | 0.16                     | 0.21                     | 0.56                     | 227.57                  | 0.16                     | 4.05                     | 0.32                    | 4.82                    | 2.70          | 0.00          | 7.689       | 3.015                        | 17.61         | 97.70      |
|              | 6       | B     | 20.831973 | -156.1184 | 0.13                     | 0.04                     | 0.59                     | 226.02                  | 0.18                     | 3.79                     | 0.31                    | 4.42                    | 2.91          | 0.00          | 7.758       | 4.767                        | 17.61         | 98.60      |
|              | 7       | S     | 20.832204 | -156.1184 | 0.22                     | 0.51                     | 0.71                     | 229.08                  | 0.10                     | 3.64                     | 0.32                    | 4.86                    | 2.12          | 0.00          | 7.696       | 0.701                        | 17.72         | 98.62      |
|              | 7       | B     | 20.832204 | -156.1184 | 0.26                     | 0.35                     | 0.56                     | 228.26                  | 0.13                     | 3.25                     | 0.39                    | 4.16                    | 2.71          | 0.00          | 7.726       | 0.312                        | 17.64         | 98.82      |
|              | 8       | S     | 20.83228  | -156.1184 | 0.22                     | 0.37                     | 0.60                     | 228.24                  | 0.17                     | 3.45                     | 0.39                    | 4.42                    | 1.52          | 0.00          | 7.715       | 0.187                        | 17.86         | 98.86      |
|              | 9       | S     | 20.832306 | -156.1183 | 0.40                     | 0.57                     | 1.19                     | 212.56                  | 0.06                     | 6.38                     | 0.46                    | 8.14                    | na            | 2.52          | 8.125       | 1.083                        | 17.87         | 99.44      |
|              | 10      | S     | 20.832352 | -156.1182 | 0.26                     | 0.10                     | 0.99                     | 166.79                  | 0.24                     | 6.29                     | 0.51                    | 7.38                    | na            | 9.94          | 8.210       | 3.949                        | 17.84         | 99.08      |
|              | 11      | S     | 20.832418 | -156.1182 | 0.17                     | 0.15                     | 1.13                     | 43.41                   | 0.37                     | 6.84                     | 0.54                    | 8.12                    | na            | 28.58         | 8.089       | 9.644                        | 19.76         | 98.02      |
|              | 12      | S     | 20.832451 | -156.1181 | 0.15                     | 0.14                     | 1.26                     | 63.00                   | 0.33                     | 5.64                     | 0.48                    | 7.04                    | na            | 25.88         | 8.141       | 6.146                        | na            | na         |
|              | 13      | S     | 20.832086 | -156.118  | 0.14                     | 0.16                     | 1.25                     | 43.35                   | 0.34                     | 6.00                     | 0.48                    | 7.41                    | na            | 29.22         | 8.111       | 5.375                        | 23.42         | 96.30      |
| WAIKAHA WEST | 1       | S     | 20.826257 | -156.1159 | 0.27                     | 1.25                     | 0.47                     | 227.19                  | 0.28                     | 4.73                     | 0.55                    | 6.45                    | 2.19          | 0.30          | 7.647       | 0.125                        | 17.88         | 96.89      |
|              | 2       | S     | 20.82634  | -156.1157 | 0.24                     | 1.22                     | 0.51                     | 227.74                  | 0.17                     | 5.85                     | 0.41                    | 7.58                    | 3.27          | 0.00          | 7.584       | 0.226                        | 17.94         | 98.65      |
|              | 3       | S     | 20.826543 | -156.1156 | 0.24                     | 1.12                     | 0.50                     | 227.68                  | 0.24                     | 4.59                     | 0.48                    | 6.21                    | 5.28          | 0.00          | 7.651       | 0.382                        | 17.97         | 98.49      |
|              | 4       | S     | 20.826633 | -156.1156 | 0.25                     | 1.18                     | 0.55                     | 229.73                  | 0.16                     | 3.53                     | 0.41                    | 5.26                    | 2.90          | 0.00          | 7.594       | 0.514                        | 17.99         | 99.14      |
|              | 5       | S     | 20.826725 | -156.1154 | 0.24                     | 0.91                     | 0.61                     | 229.06                  | 0.31                     | 2.99                     | 0.55                    | 4.51                    | 3.23          | 0.00          | 7.608       | 0.195                        | 18.03         | 99.10      |
|              | 6       | S     | 20.826781 | -156.1154 | 0.24                     | 0.68                     | 1.01                     | 143.81                  | 0.15                     | 4.29                     | 0.40                    | 5.98                    | na            | 14.17         | 8.099       | 0.436                        | 19.85         | 100.12     |
|              | 7       | S     | 20.826817 | -156.1153 | 0.24                     | 0.52                     | 1.14                     | 108.64                  | 0.20                     | 4.06                     | 0.45                    | 5.72                    | na            | 20.79         | 8.114       | 1.114                        | 21.97         | 101.47     |
|              | 8       | S     | 20.826836 | -156.1153 | 0.19                     | 0.16                     | 1.32                     | 65.08                   | 0.28                     | 4.67                     | 0.47                    | 6.15                    | na            | 26.45         | 8.099       | 1.005                        | 21.61         | 100.39     |
| WAIKAHA EAST | 1       | S     | 20.826048 | -156.1149 | 0.52                     | 2.42                     | 0.51                     | 296.11                  | 0.26                     | 2.94                     | 0.78                    | 5.87                    | 1.43          | 0.30          | 7.725       | 0.148                        | 17.68         | 96.49      |
|              | 1       | B     | 20.826048 | -156.1149 | 0.52                     | 2.61                     | 0.31                     | 297.49                  | 0.19                     | 2.99                     | 0.71                    | 5.91                    | 1.30          | 0.00          | 7.704       | 0.234                        | 17.67         | 97.10      |
|              | 2       | S     | 20.826098 | -156.1148 | 0.54                     | 2.44                     | 0.28                     | 301.12                  | 0.20                     | 3.30                     | 0.74                    | 6.02                    | 1.03          | 0.00          | 7.713       | 0.179                        | 17.69         | 97.69      |
|              | 3       | S     | 20.826287 | -156.115  | 0.55                     | 2.29                     | 0.32                     | 310.44                  | 0.20                     | 3.30                     | 0.75                    | 5.91                    | 1.11          | 0.00          | 7.773       | 0.421                        | 17.73         | 98.19      |
|              | 4       | S     | 20.826317 | -156.1149 | 0.59                     | 2.43                     | 0.50                     | 311.88                  | 0.17                     | 2.79                     | 0.76                    | 5.72                    | 1.06          | 0.00          | 7.806       | 0.257                        | 17.85         | 98.46      |
|              | 5       | S     | 20.826492 | -156.115  | 0.58                     | 2.76                     | 0.43                     | 311.34                  | 0.13                     | 2.34                     | 0.71                    | 5.53                    | 1.07          | 0.12          | 7.755       | 0.436                        | 17.82         | 98.33      |
|              | 6       | S     | 20.826518 | -156.1151 | 0.41                     | 1.45                     | 1.03                     | 171.65                  | 0.15                     | 5.39                     | 0.56                    | 7.87                    | 1.11          | 15.68         | 8.053       | 1.496                        | 19.63         | 99.53      |
|              | 7       | S     | 20.826575 | -156.115  | 0.29                     | 0.77                     | 2.74                     | 102.61                  | 0.24                     | 4.81                     | 0.53                    | 8.32                    | na            | 23.62         | 8.079       | 0.569                        | na            | na         |

TABLE A-4. Results of water chemistry sampling conducted on January 3, 2018, at Hanawi, Kopiliula, and Waiaka Streams in East Maui. "S" indicates surface sample; "B" indicates bottom sample. "na" indicates lost sample. Nutrients concentrations are shown in units of micrograms per liter (µg/L). Locations of sampling stations are shown in Chapter 4 of text.

| STREAM     | STATION | DEPTH | LAT         | LON         | PO4<br>(µg/L) | NO3<br>(µg/L) | NH4<br>(µg/L) | SI<br>(µg/L) | TOP<br>(µg/L) | TON<br>(µg/L) | TP<br>(µg/L) | TN<br>(µg/L) | TURB<br>(NTU) | SALT<br>(ppt) | pH<br>(rel) | Chl-a<br>(µg/l) | TEMP<br>deg C | DO<br>%sat |
|------------|---------|-------|-------------|-------------|---------------|---------------|---------------|--------------|---------------|---------------|--------------|--------------|---------------|---------------|-------------|-----------------|---------------|------------|
| HANAWI     | 1       | S     | 20.82366304 | -156.101345 | 21.30         | 84.78         | 3.23          | 9104         | 5.27          | 44.23         | 26.57        | 132.24       | 1.07          | 0.00          | 7.911       | 0.101           | 17.09         | 97.78      |
|            | 1       | B     | 20.82366304 | -156.101345 | 21.61         | 67.28         | 0.71          | 9177         | 6.82          | 79.65         | 28.43        | 147.64       | 1.19          | 0.00          | 7.865       | 0.678           | 17.09         | 96.62      |
|            | 2       | S     | 20.82424197 | -156.101287 | 22.85         | 83.38         | 1.83          | 9175         | 5.89          | 36.81         | 28.74        | 122.02       | 1.39          | 0.00          | 7.867       | 0.195           | 17.11         | 98.05      |
|            | 2       | B     | 20.82424197 | -156.101287 | 23.16         | 86.46         | 0.85          | 9170         | 6.20          | 45.63         | 29.36        | 132.94       | 1.38          | 0.00          | 7.845       | 0.148           | 17.11         | 98.19      |
|            | 3       | S     | 20.82446602 | -156.101327 | 24.09         | 87.02         | 1.41          | 9173         | 4.96          | 45.21         | 29.05        | 133.64       | 1.39          | 0.01          | 7.832       | 0.140           | 17.11         | 97.81      |
|            | 3       | B     | 20.82446602 | -156.101327 | 22.23         | 84.92         | 4.63          | 9189         | 5.58          | 27.15         | 27.81        | 116.70       | 1.43          | 0.01          | 7.824       | 0.312           | 17.11         | 96.07      |
|            | 4       | S     | 20.82470197 | -156.101255 | 22.23         | 86.18         | 4.91          | 9192         | 5.27          | 36.95         | 27.50        | 128.04       | 1.11          | 0.01          | 7.835       | 0.234           | 17.11         | 98.32      |
|            | 4       | B     | 20.82470197 | -156.101255 | 22.85         | 86.18         | 4.21          | 9222         | 4.96          | 39.75         | 27.81        | 130.14       | 1.14          | 0.01          | 7.832       | 1.192           | 17.12         | 98.16      |
|            | 5       | S     | 20.82485997 | -156.101089 | 22.23         | 81.14         | 6.31          | 9192         | 5.27          | 53.47         | 27.50        | 140.92       | 1.23          | 0.01          | 7.825       | 0.171           | 17.11         | 99.19      |
|            | 5       | B     | 20.82485997 | -156.101089 | 23.41         | 86.04         | 4.21          | 9112         | 4.08          | 65.23         | 27.50        | 155.48       | 1.10          | 0.39          | 7.776       | 0.335           | 17.10         | 98.02      |
|            | 6       | S     | 20.82488604 | -156.10093  | 22.54         | 84.64         | 3.23          | 9215         | 3.72          | 37.09         | 26.26        | 124.96       | 1.35          | 0.01          | 7.835       | 0.125           | 17.11         | 98.91      |
|            | 6       | B     | 20.82488604 | -156.10093  | 21.60         | 86.18         | 4.91          | 9230         | 5.89          | 49.27         | 27.50        | 140.36       | 1.22          | 0.02          | 7.823       | 0.460           | 17.23         | 98.03      |
|            | 7       | S     | 20.82498796 | -156.100885 | 24.09         | 87.30         | 2.81          | 9232         | 5.89          | 29.95         | 29.98        | 120.06       | 1.23          | 0.01          | 7.825       | 0.164           | 17.11         | 98.82      |
|            | 7       | B     | 20.82498796 | -156.100885 | 24.08         | 88.84         | 7.71          | 9217         | 4.96          | 55.15         | 29.05        | 151.70       | 1.19          | 0.02          | 7.816       | 0.148           | 17.10         | 98.40      |
|            | 8       | S     | 20.82505904 | -156.100885 | 23.78         | 87.30         | 7.99          | 9187         | 4.96          | 46.05         | 28.74        | 141.34       | 1.17          | 0.01          | 7.821       | 0.132           | 17.10         | 99.05      |
|            | 9       | S     | 20.82505904 | -156.100885 | 24.18         | 85.62         | 7.29          | 8852         | 1.15          | 19.87         | 25.33        | 112.78       | 1.95          | 1.56          | 7.854       | 0.125           | 17.10         | 98.73      |
| KOPILIULA  | 1       | S     | 20.831179   | -156.118693 | 5.49          | 4.98          | 7.57          | 6442         | 7.75          | 55.43         | 13.24        | 67.98        | 2.10          | 0.00          | 7.721       | 0.280           | 17.38         | 98.10      |
|            | 1       | B     | 20.831179   | -156.118693 | 5.18          | 4.70          | 6.45          | 6402         | 7.13          | 78.95         | 12.31        | 90.10        | 1.69          | 0.00          | 7.687       | 0.343           | 17.38         | 98.20      |
|            | 2       | S     | 20.83126601 | -156.118672 | 4.87          | 5.82          | 5.61          | 6373         | 8.06          | 65.79         | 12.93        | 77.22        | 5.45          | 0.00          | 7.669       | 0.561           | 17.41         | 98.45      |
|            | 2       | B     | 20.83126601 | -156.118672 | 6.73          | 6.24          | 6.87          | 6389         | 5.58          | 65.79         | 12.31        | 78.90        | 4.19          | 0.00          | 7.675       | 1.013           | 17.41         | 98.09      |
|            | 3       | S     | 20.83139903 | -156.11854  | 5.80          | 6.66          | 9.53          | 6415         | 6.20          | 60.19         | 12.00        | 76.38        | 1.90          | 0.00          | 7.655       | 0.335           | 17.43         | 97.95      |
|            | 3       | B     | 20.83139903 | -156.11854  | 6.42          | 6.38          | 5.75          | 6407         | 4.96          | 56.97         | 11.38        | 69.10        | 2.42          | 0.00          | 7.668       | 0.748           | 17.43         | 97.90      |
|            | 4       | S     | 20.83157002 | -156.118481 | 6.42          | 6.80          | 5.47          | 6420         | 3.72          | 53.75         | 10.14        | 66.02        | 1.72          | 0.00          | 7.653       | 0.397           | 17.51         | 95.87      |
|            | 4       | B     | 20.83157002 | -156.118481 | 5.49          | 4.84          | 9.11          | 6397         | 4.65          | 51.09         | 10.14        | 65.04        | 2.70          | 0.00          | 7.660       | 2.142           | 17.47         | 97.21      |
|            | 5       | S     | 20.83182801 | -156.118409 | 10.14         | 5.26          | 8.69          | 6382         | 3.41          | 51.93         | 13.55        | 65.88        | 2.64          | 0.00          | 7.676       | 0.499           | 17.58         | 98.25      |
|            | 5       | B     | 20.83182801 | -156.118409 | 5.49          | 5.68          | 8.83          | 6510         | 5.27          | 50.95         | 10.76        | 65.46        | 2.54          | 0.00          | 7.676       | 0.865           | 17.57         | 98.43      |
|            | 6       | S     | 20.83197302 | -156.118373 | 4.87          | 2.88          | 7.85          | 6372         | 4.96          | 56.69         | 9.83         | 67.42        | 2.70          | 0.00          | 7.689       | 3.015           | 17.61         | 97.70      |
|            | 6       | B     | 20.83197302 | -156.118373 | 3.94          | 0.50          | 8.27          | 6329         | 5.58          | 53.05         | 9.52         | 61.82        | 2.91          | 0.00          | 7.758       | 4.767           | 17.61         | 98.60      |
|            | 7       | S     | 20.83220403 | -156.118383 | 6.73          | 7.08          | 9.95          | 6414         | 3.10          | 50.95         | 9.83         | 67.98        | 2.12          | 0.00          | 7.696       | 0.701           | 17.72         | 98.62      |
|            | 7       | B     | 20.83220403 | -156.118383 | 7.97          | 4.84          | 7.85          | 6391         | 4.03          | 45.49         | 12.00        | 58.18        | 2.71          | 0.00          | 7.726       | 0.312           | 17.64         | 98.82      |
|            | 8       | S     | 20.83227997 | -156.118362 | 6.73          | 5.12          | 8.41          | 6391         | 5.27          | 48.29         | 12.00        | 61.82        | 1.52          | 0.00          | 7.715       | 0.187           | 17.86         | 98.86      |
|            | 9       | S     | 20.83230603 | -156.118274 | 12.27         | 7.92          | 16.67         | 5952         | 1.90          | 89.31         | 14.17        | 113.90       | na            | 2.52          | 8.125       | 1.083           | 17.87         | 99.44      |
|            | 10      | S     | 20.83235197 | -156.11821  | 8.13          | 1.34          | 13.87         | 4670         | 7.58          | 88.05         | 15.72        | 103.26       | na            | 9.94          | 8.210       | 3.949           | 17.84         | 99.08      |
|            | 11      | S     | 20.83241802 | -156.118164 | 5.23          | 2.04          | 15.83         | 1215         | 11.41         | 95.75         | 16.65        | 113.62       | na            | 28.58         | 8.089       | 9.644           | 19.76         | 98.02      |
|            | 12      | S     | 20.832451   | -156.11811  | 4.68          | 1.90          | 17.65         | 1764         | 10.11         | 78.95         | 14.79        | 98.50        | na            | 25.88         | 8.141       | 6.146           | na            | na         |
|            | 13      | S     | 20.83208601 | -156.118012 | 4.21          | 2.18          | 17.51         | 1214         | 10.57         | 83.99         | 14.79        | 103.68       | na            | 29.22         | 8.111       | 5.375           | 23.42         | 96.30      |
| WAIKA WEST | 1       | S     | 20.82625698 | -156.1159   | 8.24          | 17.44         | 6.59          | 6361         | 8.72          | 66.21         | 16.96        | 90.24        | 2.19          | 0.30          | 7.647       | 0.125           | 17.88         | 96.89      |
|            | 2       | S     | 20.82633996 | -156.115739 | 7.35          | 17.02         | 7.15          | 6377         | 5.27          | 81.89         | 12.62        | 106.06       | 3.27          | 0.00          | 7.584       | 0.226           | 17.94         | 98.65      |
|            | 3       | S     | 20.82654297 | -156.115641 | 7.35          | 15.62         | 7.01          | 6375         | 7.44          | 64.25         | 14.79        | 86.88        | 5.28          | 0.00          | 7.651       | 0.382           | 17.97         | 98.49      |
|            | 4       | S     | 20.826633   | -156.115556 | 7.66          | 16.46         | 7.71          | 6432         | 4.96          | 49.41         | 12.62        | 73.58        | 2.90          | 0.00          | 7.594       | 0.514           | 17.99         | 99.14      |
|            | 5       | S     | 20.82672503 | -156.115439 | 7.35          | 12.68         | 8.55          | 6414         | 9.61          | 41.85         | 16.96        | 63.08        | 3.23          | 0.00          | 7.608       | 0.195           | 18.03         | 99.10      |
|            | 6       | S     | 20.82678102 | -156.115371 | 7.55          | 9.46          | 14.15         | 4027         | 4.76          | 60.05         | 12.31        | 83.66        | na            | 14.17         | 8.099       | 0.436           | 19.85         | 100.12     |
|            | 7       | S     | 20.826817   | -156.115303 | 7.56          | 7.22          | 15.97         | 3042         | 6.30          | 56.83         | 13.86        | 80.02        | na            | 20.79         | 8.114       | 1.114           | 21.97         | 101.47     |
|            | 8       | S     | 20.826836   | -156.115265 | 5.84          | 2.18          | 18.49         | 1822         | 8.64          | 65.37         | 14.48        | 86.04        | na            | 26.45         | 8.099       | 1.005           | 21.61         | 100.39     |
| WAIKA EAST | 1       | S     | 20.82604802 | -156.114927 | 15.99         | 33.82         | 7.15          | 8291         | 8.10          | 41.15         | 24.09        | 82.12        | 1.43          | 0.30          | 7.725       | 0.148           | 17.68         | 96.49      |
|            | 1       | B     | 20.82604802 | -156.114927 | 16.03         | 36.48         | 4.35          | 8330         | 5.89          | 41.85         | 21.92        | 82.68        | 1.30          | 0.00          | 7.704       | 0.234           | 17.67         | 97.10      |
|            | 2       | S     | 20.82609798 | -156.114823 | 16.65         | 34.10         | 3.93          | 8431         | 6.20          | 46.19         | 22.85        | 84.22        | 1.03          | 0.00          | 7.713       | 0.179           | 17.69         | 97.69      |
|            | 3       | S     | 20.82628699 | -156.114969 | 16.96         | 32.00         | 4.49          | 8692         | 6.20          | 46.19         | 23.16        | 82.68        | 1.11          | 0.00          | 7.773       | 0.421           | 17.73         | 98.19      |
|            | 4       | S     | 20.826317   | -156.114938 | 18.20         | 33.96         | 7.01          | 8733         | 5.27          | 39.05         | 23.47        | 80.02        | 1.06          | 0.00          | 7.806       | 0.257           | 17.85         | 98.46      |
|            | 5       | S     | 20.82649201 | -156.115027 | 17.87         | 38.58         | 6.03          | 8717         | 4.05          | 32.75         | 21.92        | 77.36        | 1.07          | 0.12          | 7.755       | 0.436           | 17.82         | 98.33      |
|            | 6       | S     | 20.826518   | -156.115057 | 12.61         | 20.24         | 14.43         | 4806         | 4.66          | 75.45         | 17.27        | 110.12       | 1.11          | 15.68         | 8.053       | 1.496           | 19.63         | 99.53      |
|            | 7       | S     | 20.826575   | -156.11502  | 9.02          | 10.72         | 38.37         | 2873         | 7.31          | 67.33         | 16.34        | 116.42       | na            | 23.62         | 8.079       | 0.569           | na            | na         |

000704

TABLE A-5. Results of water chemistry sampling conducted on January 5, 2018, at Wailua Nui, Wailua Iki, and Oopuola Streams in East Maui. "S" indicates surface sample; "B" indicates bottom sample. Nutrients concentrations are shown in micromolar units ( $\mu\text{M}$ ). Locations of sampling stations are shown in Chapter 4 of text.

| STREAM          | Station | DEPTH | LAT        | LON         | PO4<br>( $\mu\text{M}$ ) | NO3<br>( $\mu\text{M}$ ) | NH4<br>( $\mu\text{M}$ ) | Si<br>( $\mu\text{M}$ ) | TOP<br>( $\mu\text{M}$ ) | TON<br>( $\mu\text{M}$ ) | TP<br>( $\mu\text{M}$ ) | TN<br>( $\mu\text{M}$ ) | TURB<br>(ntu) | SALT<br>(ppt) | pH<br>(rel) | Chl-a<br>( $\mu\text{g/l}$ ) | TEMP<br>deg C | DO<br>%sat |
|-----------------|---------|-------|------------|-------------|--------------------------|--------------------------|--------------------------|-------------------------|--------------------------|--------------------------|-------------------------|-------------------------|---------------|---------------|-------------|------------------------------|---------------|------------|
| WAILUA NUI EAST | 1       | B     | 20.83491   | -156.12458  | 0.05                     | 0.20                     | 0.12                     | 251.54                  | 0.16                     | 4.26                     | 0.21                    | 4.58                    | 1.49          | 0.00          | 7.557       | 0.140                        | 17.35         | 97.58      |
|                 | 1       | S     | 20.83491   | -156.12458  | 0.04                     | 0.16                     | 0.27                     | 253.90                  | 0.17                     | 5.92                     | 0.21                    | 6.35                    | 1.24          | 0.00          | 7.573       | 0.241                        | 17.37         | 97.34      |
|                 | 2       | S     | 20.835239  | -156.12461  | 0.08                     | 0.63                     | 0.38                     | 263.07                  | 0.16                     | 4.49                     | 0.24                    | 5.50                    | 2.87          | 0.00          | 7.554       | 0.312                        | 17.36         | 97.89      |
|                 | 2       | B     | 20.835239  | -156.12461  | 0.07                     | 0.55                     | 0.29                     | 265.81                  | 0.17                     | 4.05                     | 0.24                    | 4.89                    | 2.90          | 0.00          | 7.565       | 0.771                        | 17.36         | 97.31      |
|                 | 3       | S     | 20.835485  | -156.12449  | 0.43                     | 2.40                     | 0.16                     | 326.96                  | 0.21                     | 5.36                     | 0.64                    | 7.92                    | 1.53          | 0.00          | 7.514       | 0.491                        | 17.39         | 97.14      |
|                 | 3       | B     | 20.835485  | -156.12449  | 1.16                     | 6.13                     | 0.15                     | 419.75                  | 0.16                     | 3.02                     | 1.32                    | 9.30                    | 1.93          | 0.03          | 7.476       | 0.179                        | 17.41         | 96.42      |
|                 | 4       | S     | 20.835744  | -156.12435  | 0.64                     | 3.61                     | 0.19                     | 352.93                  | 0.19                     | 4.10                     | 0.83                    | 7.91                    | 1.01          | 0.00          | 7.478       | 0.117                        | 17.34         | 93.30      |
|                 | 4       | B     | 20.835744  | -156.12435  | 2.00                     | 8.76                     | 0.18                     | 513.44                  | 0.23                     | 3.39                     | 2.23                    | 12.33                   | 1.05          | 0.17          | 7.419       | 0.857                        | 17.24         | 90.54      |
|                 | 5       | S     | 20.835969  | -156.12437  | 0.71                     | 3.65                     | 0.18                     | 354.89                  | 0.16                     | 6.79                     | 0.87                    | 10.63                   | 2.24          | 0.01          | 7.410       | 0.187                        | 17.44         | 91.51      |
|                 | 5       | B     | 20.835969  | -156.12437  | 1.84                     | 8.14                     | 0.16                     | 498.75                  | 0.21                     | 4.41                     | 2.05                    | 12.71                   | NA            | 0.16          | 7.373       | 0.312                        | 17.34         | 91.97      |
|                 | 6       | S     | 20.836194  | -156.12409  | 0.30                     | 2.12                     | 0.17                     | 309.29                  | 0.22                     | 5.98                     | 0.52                    | 8.28                    | 1.32          | 0.00          | 7.405       | 0.148                        | 17.44         | 86.41      |
|                 | 6       | B     | 20.836194  | -156.12409  | 2.41                     | 9.90                     | 0.20                     | 540.47                  | 0.20                     | 4.55                     | 2.62                    | 14.65                   | 1.53          | 0.25          | 7.325       | 0.662                        | 17.42         | 85.23      |
|                 | 7       | S     | 20.836328  | -156.12394  | 0.80                     | 4.16                     | 0.19                     | 371.96                  | 0.12                     | 4.36                     | 0.92                    | 8.72                    | 1.18          | 0.02          | 7.348       | 0.203                        | 17.47         | 91.25      |
|                 | 7       | B     | 20.836328  | -156.12394  | 1.15                     | 5.81                     | 0.14                     | 420.61                  | 0.23                     | 4.91                     | 1.38                    | 10.87                   | 1.14          | 0.06          | 7.323       | 0.249                        | 17.42         | 91.28      |
|                 | 8       | S     | 20.83642   | -156.1239   | 0.44                     | 1.77                     | 0.25                     | 150.82                  | 0.25                     | 7.00                     | 0.70                    | 9.02                    | NA            | 22.91         | 8.086       | 0.428                        | 21.30         | 99.62      |
|                 | 9       | S     | 20.836602  | -156.12388  | 0.18                     | 1.59                     | 0.33                     | 32.63                   | 0.41                     | 5.93                     | 0.59                    | 7.86                    | 11.98         | 33.46         | 8.088       | 1.464                        | 24.17         | 98.60      |
|                 | 10      | S     | 20.836783  | -156.12386  | 0.16                     | 0.17                     | 0.33                     | 30.53                   | 0.40                     | 8.34                     | 0.56                    | 8.84                    | 10.47         | 33.57         | 8.120       | 1.986                        | 24.20         | 96.96      |
| WAILUA IKI WEST | 1       | S     | 20.83651   | -156.12599  | 0.16                     | 0.08                     | 0.26                     | 215.91                  | 0.18                     | 6.20                     | 0.34                    | 6.54                    | 3.54          | 0.00          | 7.506       | 0.257                        | 17.85         | 96.45      |
|                 | 2       | S     | 20.836493  | -156.1258   | 0.88                     | 2.98                     | 0.28                     | 340.03                  | 0.15                     | 6.88                     | 1.03                    | 10.14                   | 3.15          | 0.02          | 7.351       | 0.319                        | 17.83         | 92.26      |
|                 | 2       | B     | 20.836493  | -156.1258   | 1.88                     | 6.28                     | 0.25                     | 445.48                  | 0.19                     | 4.26                     | 2.07                    | 10.80                   | 4.15          | 0.09          | 7.280       | 0.319                        | 17.69         | 93.78      |
|                 | 3       | S     | 20.836518  | -156.12568  | 0.78                     | 2.65                     | 0.32                     | 325.84                  | 0.11                     | 4.71                     | 0.89                    | 7.69                    | 4.65          | 0.04          | 7.296       | 0.249                        | 17.72         | 94.82      |
|                 | 3       | B     | 20.836518  | -156.12568  | 1.33                     | 4.73                     | 0.34                     | 387.01                  | 0.21                     | 4.45                     | 1.54                    | 9.52                    | 5.70          | 0.13          | 7.279       | 0.413                        | 17.63         | 93.29      |
|                 | 4       | S     | 20.836564  | -156.12555  | 1.13                     | 3.82                     | 0.33                     | 357.70                  | 0.22                     | 4.49                     | 1.35                    | 8.64                    | 2.17          | 0.12          | 7.281       | 0.460                        | 17.72         | 93.68      |
|                 | 4       | B     | 20.836564  | -156.12555  | 0.83                     | 3.19                     | 0.33                     | 351.39                  | 0.08                     | 4.77                     | 0.91                    | 8.30                    | 2.30          | 0.13          | 7.288       | 0.241                        | 17.71         | 93.34      |
|                 | 5       | S     | 20.836603  | -156.12545  | 1.07                     | 3.75                     | 0.30                     | 351.62                  | 0.25                     | 4.83                     | 1.32                    | 8.89                    | 4.81          | 0.15          | 7.316       | 0.210                        | 17.74         | 93.31      |
|                 | 5       | B     | 20.836603  | -156.12545  | 1.03                     | 3.29                     | 0.30                     | 345.77                  | 0.01                     | 4.63                     | 1.04                    | 8.23                    | 4.63          | 0.12          | 7.318       | 0.280                        | 17.75         | 94.28      |
|                 | 6       | S     | 20.836674  | -156.12536  | 1.02                     | 3.83                     | 0.34                     | 357.91                  | 0.20                     | 5.73                     | 1.22                    | 9.91                    | 3.79          | 0.14          | 7.320       | 0.280                        | 17.73         | 93.41      |
|                 | 6       | B     | 20.836674  | -156.12536  | 1.11                     | 4.22                     | 0.33                     | 363.43                  | 0.26                     | 4.93                     | 1.37                    | 9.48                    | 3.74          | 0.16          | 7.311       | 0.343                        | 17.71         | 93.07      |
|                 | 7       | S     | 20.836785  | -156.12533  | 1.56                     | 5.01                     | 1.23                     | 389.94                  | 0.17                     | 8.77                     | 1.73                    | 15.01                   | 4.72          | 0.18          | 7.412       | 0.608                        | 17.68         | 93.99      |
|                 | 8       | S     | 20.836866  | -156.12529  | 1.23                     | 4.62                     | 0.25                     | 381.41                  | 0.17                     | 6.52                     | 1.40                    | 11.39                   | 3.89          | 0.13          | 7.355       | 0.312                        | 17.69         | 94.99      |
|                 | 9       | S     | 20.836927  | -156.12526  | 1.24                     | 4.35                     | 0.19                     | 368.55                  | 0.07                     | 3.59                     | 1.32                    | 8.13                    | 7.27          | 3.26          | 7.578       | 0.319                        | 18.84         | 97.08      |
|                 | 10      | S     | 20.83707   | -156.12511  | 0.74                     | 2.21                     | 0.27                     | 197.02                  | 0.15                     | 5.71                     | 0.89                    | 8.19                    | NA            | 20.24         | 8.115       | 0.343                        | 19.32         | 98.77      |
| OOPUOLA         | 1       | S     | 20.888981° | -156.196642 | 0.07                     | 0.28                     | 0.35                     | 233.43                  | 0.17                     | 4.68                     | 0.24                    | 5.31                    | 2.44          | 3.84          | 6.193       | 0.078                        | 21.23         | 22.99      |
|                 | 2       | S     | 20.889016° | -156.196580 | 0.15                     | 0.70                     | 4.82                     | 100.61                  | 0.31                     | 8.32                     | 0.47                    | 13.85                   | 8.24          | 27.58         | 6.675       | 0.070                        | 23.11         | 27.41      |
|                 | 3       | S     | 20.889068° | -156.196523 | 0.10                     | 0.62                     | 3.94                     | 108.18                  | 0.35                     | 6.71                     | 0.46                    | 11.28                   | NA            | 27.29         | 6.595       | 0.070                        | 23.18         | 16.14      |
|                 | 4       | S     | 20.889098° | -156.196435 | 0.15                     | 0.52                     | 6.49                     | 134.40                  | 0.24                     | 6.55                     | 0.40                    | 13.57                   | NA            | 23.34         | 6.555       | 0.156                        | 23.03         | 19.12      |
|                 | 5       | S     | 20.889143° | -156.196341 | 0.08                     | 1.25                     | 4.12                     | 154.85                  | 0.29                     | 7.19                     | 0.37                    | 12.57                   | 6.86          | 21.54         | 6.627       | 0.047                        | 22.95         | 29.42      |
|                 | 6       | S     | 20.889191° | -156.196283 | 0.12                     | 0.90                     | 7.45                     | 184.36                  | 0.27                     | 5.75                     | 0.40                    | 14.11                   | 6.24          | 16.81         | 6.538       | 0.055                        | 22.62         | 27.79      |
|                 | 7       | S     | 20.889156  | -156.19621  | 0.35                     | 1.83                     | 0.26                     | 90.60                   | 0.22                     | 5.97                     | 0.57                    | 8.06                    | NA            | 26.25         | 7.802       | 0.335                        | 23.95         | 100.86     |
|                 | 8       | S     | 20.889205  | -156.19615  | 0.31                     | 1.27                     | 0.73                     | 42.02                   | 0.30                     | 7.69                     | 0.62                    | 9.69                    | 5.06          | 32.12         | 8.087       | 0.374                        | 23.91         | 101.09     |
|                 | 9       | S     | 20.889236  | -156.19614  | 0.32                     | 1.25                     | 0.88                     | 41.05                   | 0.25                     | 7.06                     | 0.58                    | 9.19                    | 7.59          | 32.30         | 8.090       | 0.514                        | 23.87         | 100.72     |
|                 | 10      | S     | 20.889266  | -156.19609  | 0.31                     | 1.23                     | 0.48                     | 43.05                   | 0.30                     | 5.82                     | 0.62                    | 7.53                    | 3.63          | 32.14         | 8.095       | 0.397                        | 23.88         | 100.82     |
|                 | 11      | S     | 20.889304  | -156.19598  | 0.32                     | 1.23                     | 0.91                     | 38.22                   | 0.29                     | 5.42                     | 0.62                    | 7.56                    | 3.53          | 32.52         | 8.088       | 0.335                        | 23.63         | 98.60      |
|                 | 12      | S     | 20.889408  | -156.19583  | 0.30                     | 1.25                     | 0.79                     | 39.30                   | 0.32                     | 5.62                     | 0.62                    | 7.66                    | 3.84          | 32.55         | 8.081       | 0.226                        | 23.60         | 100.08     |
|                 | 12      | B     | 20.889408  | -156.19583  | 0.25                     | 0.87                     | 0.79                     | 12.41                   | 0.32                     | 7.27                     | 0.58                    | 8.93                    | 2.59          | 34.47         | 8.069       | 0.288                        | 24.05         | 93.86      |



TABLE A-6. Results of water chemistry sampling conducted on January 5, 2018, at Wailua Nui, Wailua Iki, and Oopuola streams in East Maui. "S" indicates surface sample; "B" indicates bottom sample. Nutrient concentrations are shown as micrograms per liter (µg/L). Locations of sampling stations are shown in Chapter 4 of text.

| STREAM          | Station | DEPTH | LAT        | LON         | PO4<br>(µM) | NO3<br>(µM) | NH4<br>(µM) | Si<br>(µM) | TOP<br>(µM) | TON<br>(µM) | TP<br>(µM) | TN<br>(µM) | TURB<br>(ntu) | SALT<br>(ppt) | pH<br>(rel) | Chl-a<br>(µg/l) | TEMP<br>deg C | DO<br>%sat |
|-----------------|---------|-------|------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|------------|------------|---------------|---------------|-------------|-----------------|---------------|------------|
| WAILUA NUI EAST | 1       | B     | 20.83491   | -156.12458  | 1.43        | 2.79        | 1.68        | 7043       | 4.96        | 59.57       | 6.39       | 64.05      | 1.49          | 0.00          | 7.557       | 0.140           | 17.35         | 97.58      |
|                 | 1       | S     | 20.83491   | -156.12458  | 1.12        | 2.23        | 3.78        | 7109       | 5.27        | 82.82       | 6.39       | 88.83      | 1.24          | 0.00          | 7.573       | 0.241           | 17.37         | 97.34      |
|                 | 2       | S     | 20.835239  | -156.12461  | 2.36        | 8.81        | 5.31        | 7366       | 4.96        | 62.81       | 7.32       | 76.93      | 2.87          | 0.00          | 7.554       | 0.312           | 17.36         | 97.89      |
|                 | 2       | B     | 20.835239  | -156.12461  | 2.05        | 7.69        | 4.02        | 7443       | 5.27        | 56.68       | 7.32       | 68.39      | 2.90          | 0.00          | 7.565       | 0.771           | 17.36         | 97.31      |
|                 | 3       | S     | 20.835485  | -156.12449  | 13.21       | 33.59       | 2.22        | 9155       | 6.51        | 75.00       | 19.72      | 110.81     | 1.53          | 0.00          | 7.514       | 0.491           | 17.39         | 97.14      |
|                 | 3       | B     | 20.835485  | -156.12449  | 35.83       | 85.82       | 2.10        | 11753      | 4.96        | 42.21       | 40.80      | 130.13     | 1.93          | 0.03          | 7.476       | 0.179           | 17.41         | 96.42      |
|                 | 4       | S     | 20.835744  | -156.12435  | 19.72       | 50.54       | 2.67        | 9882       | 5.89        | 57.47       | 25.61      | 110.67     | 1.01          | 0.00          | 7.478       | 0.117           | 17.34         | 93.30      |
|                 | 4       | B     | 20.835744  | -156.12435  | 61.85       | 122.64      | 2.47        | 14376      | 7.15        | 47.44       | 69.01      | 172.55     | 1.05          | 0.17          | 7.419       | 0.857           | 17.24         | 90.54      |
|                 | 5       | S     | 20.835969  | -156.12437  | 21.88       | 51.10       | 2.52        | 9937       | 4.96        | 95.13       | 26.85      | 148.75     | 2.24          | 0.01          | 7.410       | 0.187           | 17.44         | 91.51      |
|                 | 5       | B     | 20.835969  | -156.12437  | 56.89       | 113.96      | 2.23        | 13965      | 6.53        | 61.68       | 63.43      | 177.87     | NA            | 0.16          | 7.373       | 0.312           | 17.34         | 91.97      |
|                 | 6       | S     | 20.836194  | -156.12409  | 9.18        | 29.68       | 2.38        | 8660       | 6.82        | 83.79       | 16.00      | 115.85     | 1.32          | 0.00          | 7.405       | 0.148           | 17.44         | 86.41      |
|                 | 6       | B     | 20.836194  | -156.12409  | 74.86       | 138.61      | 2.77        | 15133      | 6.23        | 63.66       | 81.10      | 205.03     | 1.53          | 0.25          | 7.325       | 0.662           | 17.42         | 85.23      |
|                 | 7       | S     | 20.836328  | -156.12394  | 24.67       | 58.25       | 2.66        | 10415      | 3.72        | 61.11       | 28.40      | 122.01     | 1.18          | 0.02          | 7.348       | 0.203           | 17.47         | 91.25      |
|                 | 7       | B     | 20.836328  | -156.12394  | 35.52       | 81.35       | 1.96        | 11777      | 7.14        | 68.81       | 42.66      | 152.11     | 1.14          | 0.06          | 7.323       | 0.249           | 17.42         | 91.28      |
|                 | 8       | S     | 20.83642   | -156.1239   | 13.76       | 24.74       | 3.48        | 4223       | 7.82        | 97.99       | 21.58      | 126.21     | NA            | 22.91         | 8.086       | 0.428           | 21.30         | 99.62      |
|                 | 9       | S     | 20.836602  | -156.12388  | 5.48        | 22.22       | 4.67        | 914        | 12.68       | 83.09       | 18.17      | 109.97     | 11.98         | 33.46         | 8.088       | 1.464           | 24.17         | 98.60      |
|                 | 10      | S     | 20.836783  | -156.12386  | 4.85        | 2.33        | 4.63        | 855        | 12.39       | 116.73      | 17.24      | 123.69     | 10.47         | 33.57         | 8.120       | 1.986           | 24.20         | 96.96      |
| WAILUA IKI WEST | 1       | S     | 20.83651   | -156.12599  | 4.84        | 1.11        | 3.64        | 6045       | 5.58        | 86.74       | 10.42      | 91.49      | 3.54          | 0.00          | 7.506       | 0.257           | 17.85         | 96.45      |
|                 | 2       | S     | 20.836493  | -156.1258   | 27.15       | 41.72       | 3.91        | 9521       | 4.65        | 96.25       | 31.81      | 141.89     | 3.15          | 0.02          | 7.351       | 0.319           | 17.83         | 92.26      |
|                 | 2       | B     | 20.836493  | -156.1258   | 58.14       | 87.93       | 3.49        | 12473      | 5.90        | 59.71       | 64.05      | 151.13     | 4.15          | 0.09          | 7.280       | 0.319           | 17.69         | 93.78      |
|                 | 3       | S     | 20.836518  | -156.12568  | 24.05       | 37.11       | 4.48        | 9123       | 3.42        | 66.01       | 27.47      | 107.59     | 4.65          | 0.04          | 7.296       | 0.249           | 17.72         | 94.82      |
|                 | 3       | B     | 20.836518  | -156.12568  | 41.09       | 66.23       | 4.74        | 10836      | 6.53        | 62.24       | 47.62      | 133.21     | 5.70          | 0.13          | 7.279       | 0.413           | 17.63         | 93.29      |
|                 | 4       | S     | 20.836564  | -156.12555  | 34.89       | 53.49       | 4.60        | 10016      | 6.84        | 62.80       | 41.73      | 120.89     | 2.17          | 0.12          | 7.281       | 0.460           | 17.72         | 93.68      |
|                 | 4       | B     | 20.836564  | -156.12555  | 25.59       | 44.67       | 4.62        | 9839       | 2.50        | 66.84       | 28.09      | 116.13     | 2.30          | 0.13          | 7.288       | 0.241           | 17.71         | 93.34      |
|                 | 5       | S     | 20.836603  | -156.12545  | 33.03       | 52.51       | 4.20        | 9845       | 7.77        | 67.68       | 40.80      | 124.39     | 4.81          | 0.15          | 7.316       | 0.210           | 17.74         | 93.31      |
|                 | 5       | B     | 20.836603  | -156.12545  | 31.79       | 46.07       | 4.19        | 9682       | 0.33        | 64.89       | 32.12      | 115.15     | 4.63          | 0.12          | 7.318       | 0.280           | 17.75         | 94.28      |
|                 | 6       | S     | 20.836674  | -156.12536  | 31.48       | 53.63       | 4.75        | 10021      | 6.22        | 80.29       | 37.70      | 138.67     | 3.79          | 0.14          | 7.320       | 0.280           | 17.73         | 93.41      |
|                 | 6       | B     | 20.836674  | -156.12536  | 34.26       | 59.09       | 4.61        | 10176      | 8.08        | 68.95       | 42.35      | 132.65     | 3.74          | 0.16          | 7.311       | 0.343           | 17.71         | 93.07      |
|                 | 7       | S     | 20.836785  | -156.12533  | 48.21       | 70.14       | 17.19       | 10918      | 5.29        | 122.74      | 53.51      | 210.07     | 4.72          | 0.18          | 7.412       | 0.608           | 17.68         | 93.99      |
|                 | 8       | S     | 20.836866  | -156.12529  | 37.99       | 64.68       | 3.49        | 10679      | 5.29        | 91.21       | 43.28      | 159.39     | 3.89          | 0.13          | 7.355       | 0.312           | 17.69         | 94.99      |
|                 | 9       | S     | 20.836927  | -156.12526  | 38.49       | 60.89       | 2.65        | 10319      | 2.31        | 50.21       | 40.80      | 113.75     | 7.27          | 3.26          | 7.578       | 0.319           | 18.84         | 97.08      |
|                 | 10      | S     | 20.83707   | -156.12511  | 22.81       | 30.89       | 3.77        | 5517       | 4.66        | 79.93       | 27.47      | 114.59     | NA            | 20.24         | 8.115       | 0.343           | 19.32         | 98.77      |
| OOPUOLA         | 1       | S     | 20.888981° | -156.196642 | 2.14        | 3.86        | 4.91        | 6536       | 5.18        | 65.50       | 7.32       | 74.27      | 2.44          | 3.84          | 6.193       | 0.078           | 21.23         | 22.99      |
|                 | 2       | S     | 20.889016° | -156.196580 | 4.75        | 9.85        | 67.49       | 2817       | 9.70        | 116.49      | 14.45      | 193.83     | 8.24          | 27.58         | 6.675       | 0.070           | 23.11         | 27.41      |
|                 | 3       | S     | 20.889068° | -156.196523 | 3.24        | 8.73        | 55.17       | 3029       | 10.90       | 93.95       | 14.14      | 157.85     | NA            | 27.29         | 6.595       | 0.070           | 23.18         | 16.14      |
|                 | 4       | S     | 20.889098° | -156.196435 | 4.71        | 7.34        | 90.86       | 3763       | 7.56        | 91.71       | 12.28      | 189.91     | NA            | 23.34         | 6.555       | 0.156           | 23.03         | 19.12      |
|                 | 5       | S     | 20.889143° | -156.196341 | 2.48        | 17.55       | 57.69       | 4336       | 8.87        | 100.67      | 11.35      | 175.91     | 6.86          | 21.54         | 6.627       | 0.047           | 22.95         | 29.42      |
|                 | 6       | S     | 20.889191° | -156.196283 | 3.75        | 12.66       | 104.31      | 5162       | 8.52        | 80.50       | 12.28      | 197.47     | 6.24          | 16.81         | 6.538       | 0.055           | 22.62         | 27.79      |
|                 | 7       | S     | 20.889156  | -156.19621  | 10.82       | 25.60       | 3.63        | 2537       | 6.73        | 83.55       | 17.55      | 112.77     | NA            | 26.25         | 7.802       | 0.335           | 23.95         | 100.86     |
|                 | 8       | S     | 20.889205  | -156.19615  | 9.70        | 17.74       | 10.21       | 1177       | 9.40        | 107.65      | 19.10      | 135.59     | 5.06          | 32.12         | 8.087       | 0.374           | 23.91         | 101.09     |
|                 | 9       | S     | 20.889236  | -156.19614  | 9.98        | 17.46       | 12.30       | 1149       | 7.87        | 98.84       | 17.86      | 128.59     | 7.59          | 32.30         | 8.090       | 0.514           | 23.87         | 100.72     |
|                 | 10      | S     | 20.889266  | -156.19609  | 9.70        | 17.18       | 6.71        | 1205       | 9.40        | 81.47       | 19.10      | 105.35     | 3.63          | 32.14         | 8.095       | 0.397           | 23.88         | 100.82     |
|                 | 11      | S     | 20.889304  | -156.19598  | 9.95        | 17.18       | 12.73       | 1070       | 9.14        | 75.86       | 19.10      | 105.77     | 3.53          | 32.52         | 8.088       | 0.335           | 23.63         | 98.60      |
|                 | 12      | S     | 20.889408  | -156.19583  | 9.33        | 17.46       | 11.06       | 1100       | 9.77        | 78.66       | 19.10      | 107.17     | 3.84          | 32.55         | 8.081       | 0.226           | 23.60         | 100.08     |
|                 | 12      | B     | 20.889408  | -156.19583  | 7.82        | 12.14       | 11.05       | 347        | 10.03       | 101.76      | 17.86      | 124.95     | 2.59          | 34.47         | 8.069       | 0.288           | 24.05         | 93.86      |

TABLE A-7. Results of water chemistry sampling conducted on July 19, 2018, at Honomanu Stream in East Maui. "S" indicates surface sample; "B" indicates bottom sample. Nutrient concentrations are shown in micromolar units (μM). Location of sampling station is shown in Chapter 4 of text.

| STREAM   | STATION | DEPTH | LAT      | LON        | PO4<br>(μM) | NO3<br>(μM) | NH4<br>(μM) | Si<br>(μM) | TOP<br>(μM) | TON<br>(μM) | TP<br>(μM) | TN<br>(μM) | TURB<br>NTU | SALT<br>‰ | pH    | Chl-a<br>(μg/L) | TEMP<br>deg C | DO<br>%sat |
|----------|---------|-------|----------|------------|-------------|-------------|-------------|------------|-------------|-------------|------------|------------|-------------|-----------|-------|-----------------|---------------|------------|
| HONOMANU | 101     | S     | 20.85930 | -156.16746 | 0.56        | 1.74        | 0.50        | 272        | 0.61        | 5.32        | 1.17       | 7.56       | 3.01        | 0.00      | 7.259 | 0.358           | 23.83         | 103.9      |
|          | 102     | S     | 20.85976 | -156.16720 | 0.67        | 2.38        | 0.50        | 297        | 0.54        | 5.66        | 1.21       | 8.54       | 3.05        | 0.00      | 7.248 | 0.709           | 24.01         | 103.17     |
|          | 102     | B     | 20.85976 | -156.16720 | 0.81        | 2.44        | 0.50        | 337        | 0.48        | 4.67        | 1.29       | 7.61       | 3.41        | 0.00      | 7.272 | 1.020           | 23.87         | 103.07     |
|          | 103     | S     | 20.86012 | -156.16710 | 0.75        | 2.67        | 0.53        | 314        | 0.55        | 6.47        | 1.30       | 9.67       | 3.54        | 0.00      | 7.237 | 0.857           | 23.87         | 107.04     |
|          | 103     | B     | 20.86012 | -156.16710 | 0.90        | 2.80        | 0.57        | 343        | 0.46        | 4.91        | 1.36       | 8.28       | 5.16        | 0.00      | 7.247 | 4.074           | 23.35         | 102.46     |
|          | 104     | S     | 20.86056 | -156.16700 | 0.77        | 2.69        | 0.43        | 331        | 0.49        | 6.02        | 1.26       | 9.14       | 3.96        | 0.00      | 7.228 | 0.654           | 23.79         | 103.25     |
|          | 104     | B     | 20.86056 | -156.16700 | 0.79        | 2.75        | 0.48        | 335        | 0.45        | 4.84        | 1.24       | 8.07       | 4.48        | 0.00      | 7.224 | 1.137           | 23.37         | 101.50     |
|          | 105     | S     | 20.86089 | -156.16707 | 0.79        | 2.62        | 0.51        | 331        | 0.51        | 7.16        | 1.30       | 10.29      | 7.96        | 0.01      | 7.221 | 0.966           | 23.80         | 102.29     |
|          | 106     | S     | 20.86115 | -156.16721 | 0.89        | 1.63        | 0.83        | 376        | 0.32        | 6.12        | 1.21       | 8.58       | 4.62        | 0.01      | 7.209 | 0.506           | 27.53         | 111.33     |
|          | 107     | S     | 20.86133 | -156.16716 | 0.80        | 2.46        | 0.67        | 339        | 0.41        | 6.18        | 1.21       | 9.31       | 4.85        | 0.00      | 7.233 | 0.592           | 24.12         | 103.79     |
|          | 107     | B     | 20.86133 | -156.16716 | 0.56        | 1.27        | 0.73        | 188        | 0.16        | 5.46        | 0.72       | 7.46       | 4.82        | 16.14     | 8.044 | 0.405           | 24.25         | 104.23     |
|          | 108     | S     | 20.86148 | -156.16706 | 0.71        | 2.54        | 0.50        | 328        | 0.45        | 5.41        | 1.16       | 8.45       | 4.49        | 0.58      | 7.342 | 0.280           | 24.55         | 103.25     |
|          | 108     | B     | 20.86148 | -156.16706 | 0.44        | 0.57        | 0.44        | 122        | 0.11        | 5.41        | 0.55       | 6.42       | 12.55       | 22.74     | 8.154 | 0.452           | 25.95         | 104.71     |
|          | 109     | S     | 20.86157 | -156.16691 | 0.72        | 2.30        | 0.47        | 309        | 0.41        | 5.70        | 1.13       | 8.47       | 4.49        | 3.31      | 7.402 | 0.413           | 24.55         | 102.46     |
|          | 109     | B     | 20.86157 | -156.16691 | 0.37        | 0.40        | 0.45        | 101        | 0.11        | 6.15        | 0.48       | 7.00       | 6.89        | 24.82     | 8.173 | 0.374           | 26.22         | 107.90     |
|          | 110     | S     | 20.86150 | -156.16671 | 0.70        | 1.99        | 0.49        | 293        | 0.43        | 8.07        | 1.13       | 10.55      | 4.41        | 4.85      | 7.526 | 0.475           | 24.66         | 104.84     |
| 000707   | 110     | B     | 20.86150 | -156.16671 | 0.36        | 0.29        | 0.50        | 78         | 0.13        | 6.24        | 0.49       | 7.03       | 4.54        | 27.37     | 8.181 | 0.343           | 26.32         | 109.73     |
|          | 111     | S     | 20.86139 | -156.16656 | 0.65        | 1.85        | 0.57        | 248        | 0.39        | 5.34        | 1.04       | 7.76       | 5.50        | 9.82      | 7.924 | 0.358           | 22.69         | 105.07     |
|          | 111     | B     | 20.86139 | -156.16656 | 0.39        | 0.43        | 0.48        | 91         | 0.10        | 7.51        | 0.49       | 8.42       | 6.07        | 25.78     | 8.193 | 0.374           | 26.19         | 109.45     |
|          | 112     | B     | 20.86084 | -156.16629 | 0.30        | 0.06        | 0.36        | 56         | 0.27        | 6.74        | 0.57       | 7.16       | 16.11       | 29.25     | 8.182 | 1.472           | 26.44         | 113.21     |
|          | 113     | S     | 20.86068 | -156.16589 | 0.20        | 0.02        | 0.30        | 69         | 0.24        | 7.70        | 0.44       | 8.02       | 6.05        | 28.26     | 8.200 | 1.098           | 26.46         | 106.1      |
|          | 113     | B     | 20.86068 | -156.16589 | 0.30        | 0.09        | 0.37        | 66         | 0.15        | 6.69        | 0.45       | 7.15       | 8.38        | 28.50     | 8.202 | 1.091           | 26.47         | 111.45     |
|          | 114     | S     | 20.86105 | -156.16563 | 0.30        | 0.18        | 0.38        | 64         | 0.15        | 6.74        | 0.45       | 7.30       | 7.94        | 28.87     | 8.195 | 1.262           | 26.56         | 110.19     |
|          | 114     | B     | 20.86105 | -156.16563 | 0.38        | 0.02        | 0.49        | 35         | 0.19        | 11.45       | 0.57       | 11.96      | 110.86      | 30.14     | 8.171 | 14.614          | 26.12         | 112.36     |
|          | 115     | S     | 20.86121 | -156.16600 | 0.48        | 0.29        | 0.44        | 70         | 0.02        | 9.17        | 0.50       | 9.90       | 14.57       | 28.03     | 8.211 | 0.849           | 26.41         | 107.77     |
|          | 115     | B     | 20.86121 | -156.16600 | 0.40        | 0.00        | 0.26        | 30         | 0.02        | 5.57        | 0.42       | 5.83       | 98.44       | 31.30     | 8.184 | 8.919           | 26.16         | 114.19     |
|          | 116     | S     | 20.86164 | -156.16613 | 0.39        | 0.39        | 0.36        | 82         | 0.09        | 6.44        | 0.48       | 7.19       | 2.25        | 27.52     | 8.213 | 0.436           | 26.51         | 105.02     |
|          | 116     | B     | 20.86164 | -156.16613 | 0.41        | 0.06        | 0.31        | 24         | 0.02        | 7.20        | 0.43       | 7.57       | 20.65       | 32.88     | 8.196 | 0.826           | 26.08         | 115.90     |

TABLE A-8. Results of water chemistry sampling conducted on July 19, 2018, at Honomanu Stream in East Maui. "S" indicates surface sample; "B" indicates bottom sample. Nutrient concentrations are shown as micrograms per liter (µg/L). Location of sampling station is shown in Chapter 4 of text.

| STREAM   | STATION | DEPTH | LAT      | LON        | PO4<br>(µg/L) | NO3<br>(µg/L) | NH4<br>(µg/L) | Si<br>(µg/L) | TOP<br>(µg/L) | TON<br>(µg/L) | TP<br>(µg/L) | TN<br>(µg/L) | TURB<br>NTU | SALT<br>‰ | pH    | Chl-a<br>(µg/L) | TEMP<br>deg C | DO<br>%sat |
|----------|---------|-------|----------|------------|---------------|---------------|---------------|--------------|---------------|---------------|--------------|--------------|-------------|-----------|-------|-----------------|---------------|------------|
| HONOMANU | 101     | S     | 20.85930 | -156.16746 | 17.36         | 24.36         | 7.00          | 7627         | 18.91         | 74.48         | 36.27        | 105.84       | 3.01        | 0.00      | 7.259 | 0.358           | 23.83         | 103.9      |
|          | 102     | S     | 20.85976 | -156.16720 | 20.77         | 33.32         | 7.00          | 8304         | 16.74         | 79.24         | 37.51        | 119.56       | 3.05        | 0.00      | 7.248 | 0.709           | 24.01         | 103.17     |
|          | 102     | B     | 20.85976 | -156.16720 | 25.11         | 34.16         | 7.00          | 9432         | 14.88         | 65.38         | 39.99        | 106.54       | 3.41        | 0.00      | 7.272 | 1.020           | 23.87         | 103.07     |
|          | 103     | S     | 20.86012 | -156.16710 | 23.25         | 37.38         | 7.42          | 8793         | 17.05         | 90.58         | 40.30        | 135.38       | 3.54        | 0.00      | 7.237 | 0.857           | 23.87         | 107.04     |
|          | 103     | B     | 20.86012 | -156.16710 | 27.90         | 39.20         | 7.98          | 9611         | 14.26         | 68.74         | 42.16        | 115.92       | 5.16        | 0.00      | 7.247 | 4.074           | 23.35         | 102.46     |
|          | 104     | S     | 20.86056 | -156.16700 | 23.87         | 37.66         | 6.02          | 9270         | 15.19         | 84.28         | 39.06        | 127.96       | 3.96        | 0.00      | 7.228 | 0.654           | 23.79         | 103.25     |
|          | 104     | B     | 20.86056 | -156.16700 | 24.49         | 38.50         | 6.72          | 9370         | 13.95         | 67.76         | 38.44        | 112.98       | 4.48        | 0.00      | 7.224 | 1.137           | 23.37         | 101.50     |
|          | 105     | S     | 20.86089 | -156.16707 | 24.49         | 36.68         | 7.14          | 9279         | 15.81         | 100.24        | 40.30        | 144.06       | 7.96        | 0.01      | 7.221 | 0.966           | 23.80         | 102.29     |
|          | 106     | S     | 20.86115 | -156.16721 | 27.59         | 22.82         | 11.62         | 10537        | 9.92          | 85.68         | 37.51        | 120.12       | 4.62        | 0.01      | 7.209 | 0.506           | 27.53         | 111.33     |
|          | 107     | S     | 20.86133 | -156.16716 | 24.80         | 34.44         | 9.38          | 9503         | 12.71         | 86.52         | 37.51        | 130.34       | 4.85        | 0.00      | 7.233 | 0.592           | 24.12         | 103.79     |
|          | 107     | B     | 20.86133 | -156.16716 | 17.34         | 17.75         | 10.24         | 5254         | 4.96          | 76.42         | 22.30        | 104.41       | 4.82        | 16.14     | 8.044 | 0.405           | 24.25         | 104.23     |
|          | 108     | S     | 20.86148 | -156.16706 | 21.95         | 35.51         | 6.93          | 9193         | 13.95         | 75.81         | 35.90        | 118.25       | 4.49        | 0.58      | 7.342 | 0.280           | 24.55         | 103.25     |
|          | 108     | B     | 20.86148 | -156.16706 | 13.59         | 7.98          | 6.09          | 3420         | 3.41          | 75.81         | 17.00        | 89.88        | 12.55       | 22.74     | 8.154 | 0.452           | 25.95         | 104.71     |
|          | 109     | S     | 20.86157 | -156.16691 | 22.31         | 32.22         | 6.60          | 8659         | 12.71         | 79.78         | 35.02        | 118.60       | 4.49        | 3.31      | 7.402 | 0.413           | 24.55         | 102.46     |
|          | 109     | B     | 20.86157 | -156.16691 | 11.53         | 5.57          | 6.26          | 2820         | 3.41          | 86.14         | 14.94        | 97.97        | 6.89        | 24.82     | 8.173 | 0.374           | 26.22         | 107.90     |
|          | 110     | S     | 20.86150 | -156.16671 | 21.85         | 27.89         | 6.84          | 8202         | 13.33         | 113.00        | 35.18        | 147.73       | 4.41        | 4.85      | 7.526 | 0.475           | 24.66         | 104.84     |
|          | 110     | B     | 20.86150 | -156.16671 | 11.28         | 4.11          | 6.94          | 2192         | 4.03          | 87.42         | 15.31        | 98.47        | 4.54        | 27.37     | 8.181 | 0.343           | 26.32         | 109.73     |
| 000708   | 111     | S     | 20.86139 | -156.16656 | 20.12         | 25.95         | 7.92          | 6946         | 12.09         | 74.82         | 32.21        | 108.69       | 5.50        | 9.82      | 7.924 | 0.358           | 22.69         | 105.07     |
|          | 111     | B     | 20.86139 | -156.16656 | 12.06         | 6.06          | 6.71          | 2545         | 3.10          | 105.15        | 15.16        | 117.92       | 6.07        | 25.78     | 8.193 | 0.374           | 26.19         | 109.45     |
|          | 112     | B     | 20.86084 | -156.16629 | 9.24          | 0.88          | 5.03          | 1573         | 8.37          | 94.37         | 17.61        | 100.28       | 16.11       | 29.25     | 8.182 | 1.472           | 26.44         | 113.21     |
|          | 113     | S     | 20.86068 | -156.16589 | 6.24          | 0.26          | 4.17          | 1928         | 7.44          | 107.83        | 13.68        | 112.26       | 6.05        | 28.26     | 8.200 | 1.098           | 26.46         | 106.1      |
|          | 113     | B     | 20.86068 | -156.16589 | 9.31          | 1.22          | 5.12          | 1856         | 4.65          | 93.72         | 13.96        | 100.06       | 8.38        | 28.50     | 8.202 | 1.091           | 26.47         | 111.45     |
|          | 114     | S     | 20.86105 | -156.16563 | 9.28          | 2.45          | 5.36          | 1780         | 4.65          | 94.32         | 13.93        | 102.13       | 7.94        | 28.87     | 8.195 | 1.262           | 26.56         | 110.19     |
|          | 114     | B     | 20.86105 | -156.16563 | 11.63         | 0.25          | 6.88          | 982          | 5.89          | 160.28        | 17.52        | 167.41       | 110.86      | 30.14     | 8.171 | 14.614          | 26.12         | 112.36     |
|          | 115     | S     | 20.86121 | -156.16600 | 14.94         | 4.06          | 6.16          | 1952         | 0.62          | 128.38        | 15.56        | 138.60       | 14.57       | 28.03     | 8.211 | 0.849           | 26.41         | 107.77     |
|          | 115     | B     | 20.86121 | -156.16600 | 12.45         | 0.02          | 3.66          | 852          | 0.62          | 77.96         | 13.07        | 81.64        | 98.44       | 31.30     | 8.184 | 8.919           | 26.16         | 114.19     |
|          | 116     | S     | 20.86164 | -156.16613 | 12.20         | 5.50          | 5.10          | 2294         | 2.79          | 90.10         | 14.99        | 100.70       | 2.25        | 27.52     | 8.213 | 0.436           | 26.51         | 105.02     |
|          | 116     | B     | 20.86164 | -156.16613 | 12.61         | 0.87          | 4.31          | 674          | 0.62          | 100.83        | 13.23        | 106.01       | 20.65       | 32.88     | 8.196 | 0.826           | 26.08         | 115.90     |

TABLE A-9. Results of water chemistry sampling conducted on July 20, 2018, at Hanawi, Waiaka, and Kopiliula Streams in East Maui. "S" indicates surface sample; "B" indicates bottom sample. "na" indicates lost sample. Nutrient concentrations are shown in micromolar units ( $\mu\text{M}$ ). Locations of sampling stations are shown in Chapter 4 of text.

| STREAM     | STATION | DEPTH | LAT      | LON        | PO4<br>( $\mu\text{M}$ ) | NO3<br>( $\mu\text{M}$ ) | NH4<br>( $\mu\text{M}$ ) | Si<br>( $\mu\text{M}$ ) | TOP<br>( $\mu\text{M}$ ) | TON<br>( $\mu\text{M}$ ) | TP<br>( $\mu\text{M}$ ) | TN<br>( $\mu\text{M}$ ) | TURB<br>NTU | SALT<br>% | pH    | Chl-a<br>( $\mu\text{g/L}$ ) | TEMP<br>deg C | DO<br>%sat |
|------------|---------|-------|----------|------------|--------------------------|--------------------------|--------------------------|-------------------------|--------------------------|--------------------------|-------------------------|-------------------------|-------------|-----------|-------|------------------------------|---------------|------------|
| HONOMANU   | 101     | S     | 20.82447 | -156.10133 | 0.72                     | 3.77                     | 0.47                     | 296                     | 0.19                     | 4.97                     | 0.91                    | 9.21                    | 1.89        | 0.00      | 8.069 | 1.200                        | 19.83         | 110.78     |
|            | 102     | S     | 20.82470 | -156.10126 | 0.79                     | 3.84                     | 0.39                     | 297                     | 0.13                     | 3.44                     | 0.92                    | 7.67                    | 1.24        | 0.00      | 8.043 | 0.530                        | 19.83         | 112.34     |
|            | 102     | B     | 20.82470 | -156.10126 | 0.79                     | 3.49                     | 0.35                     | 298                     | 0.13                     | 3.84                     | 0.92                    | 7.68                    | 1.44        | 0.00      | 8.018 | 0.491                        | 19.83         | 113.25     |
|            | 103     | S     | 20.82486 | -156.10109 | 0.82                     | 3.76                     | 0.33                     | 298                     | 0.15                     | 5.30                     | 0.97                    | 9.39                    | 1.33        | 0.00      | 8.005 | 1.799                        | 19.85         | 113.60     |
|            | 103     | B     | 20.82486 | -156.10109 | 0.83                     | 3.79                     | 0.35                     | 297                     | 0.10                     | 3.73                     | 0.93                    | 7.87                    | 1.27        | 0.00      | 8.004 | 0.724                        | 19.84         | 114.00     |
|            | 104     | S     | 20.82489 | -156.10093 | 0.80                     | 3.75                     | 0.32                     | 297                     | 0.08                     | 2.42                     | 0.88                    | 6.49                    | 1.90        | 0.00      | 7.989 | 0.779                        | 19.88         | 113.58     |
|            | 104     | B     | 20.82489 | -156.10093 | 0.79                     | 3.51                     | 0.31                     | 297                     | 0.05                     | 3.32                     | 0.84                    | 7.14                    | 1.46        | 0.00      | 7.981 | 0.600                        | 19.87         | 113.92     |
|            | 105     | S     | 20.82499 | -156.10089 | 0.85                     | 3.66                     | 0.31                     | 297                     | 0.15                     | 2.98                     | 1.00                    | 6.95                    | 1.40        | 0.00      | 7.983 | 0.467                        | 19.89         | 112.07     |
|            | 105     | B     | 20.82499 | -156.10089 | 0.77                     | 3.42                     | 0.30                     | 297                     | 0.12                     | 3.26                     | 0.89                    | 6.98                    | 1.75        | 0.00      | 7.973 | 0.732                        | 19.88         | 113.33     |
|            | 106     | S     | 20.82506 | -156.10089 | 0.77                     | 3.53                     | 0.35                     | 298                     | 0.02                     | 2.88                     | 0.79                    | 6.76                    | -           | 0.00      | 7.971 | 0.678                        | 19.91         | 108.20     |
|            | 107     | S     | 20.82518 | -156.10083 | 0.62                     | 3.53                     | 0.30                     | 299                     | 0.07                     | 1.87                     | 0.69                    | 5.70                    | -           | 0.00      | 7.977 | 0.537                        | 19.90         | 110.00     |
|            | 108     | S     | 20.82525 | -156.10081 | 0.35                     | 0.85                     | 0.23                     | 72                      | 0.02                     | 5.30                     | 0.37                    | 6.38                    | -           | 26.79     | 8.114 | 0.335                        | 24.34         | 114.95     |
|            | 108     | B     | 20.82525 | -156.10081 | 0.31                     | 0.16                     | 0.21                     | 17                      | 0.03                     | 4.98                     | 0.34                    | 5.35                    | -           | 33.43     | 8.122 | 0.499                        | 25.46         | 117.25     |
|            | 109     | S     | 20.82546 | -156.10073 | 0.36                     | 0.64                     | 0.20                     | 74                      | 0.03                     | 5.14                     | 0.39                    | 5.98                    | -           | 26.80     | 8.153 | 0.273                        | 23.75         | 111.34     |
|            | 109     | B     | 20.82546 | -156.10073 | 0.31                     | 0.01                     | 0.19                     | 7                       | 0.02                     | 6.31                     | 0.33                    | 6.51                    | -           | 34.49     | 8.134 | 0.195                        | 25.44         | 116.34     |
| WAIKA EAST | 101     | S     | 20.82626 | -156.11590 | 0.15                     | 0.08                     | 0.28                     | 193                     | 0.31                     | 4.45                     | 0.46                    | 4.81                    | 2.57        | 0.00      | 7.831 | 1.387                        | 21.33         | 112.34     |
|            | 102     | S     | 20.82634 | -156.11574 | 0.17                     | 0.05                     | 0.21                     | 190                     | 0.19                     | 3.81                     | 0.36                    | 4.07                    | 2.72        | 0.00      | 7.863 | 1.052                        | 21.42         | 113.43     |
|            | 103     | S     | 20.82654 | -156.11564 | 0.16                     | 0.07                     | 0.21                     | 189                     | 0.20                     | 3.62                     | 0.36                    | 3.90                    | 3.07        | 0.00      | 7.844 | 1.379                        | 21.47         | 114.52     |
|            | 104     | S     | 20.82663 | -156.11556 | 0.12                     | 0.08                     | 0.20                     | 189                     | 0.30                     | 3.38                     | 0.42                    | 3.66                    | 3.32        | 0.00      | 7.822 | 1.106                        | 21.56         | 115.62     |
|            | 105     | S     | 20.82673 | -156.11544 | 0.18                     | 0.04                     | 0.13                     | 188                     | 0.24                     | 3.10                     | 0.42                    | 3.27                    | 3.10        | 0.00      | 7.855 | 0.779                        | 21.62         | 116.09     |
|            | 106     | S     | 20.82678 | -156.11537 | 0.18                     | 0.17                     | 0.17                     | 167                     | 0.18                     | 3.05                     | 0.36                    | 3.39                    | 2.04        | 4.37      | 8.146 | 1.075                        | 22.48         | 115.52     |
|            | 107     | S     | 20.82683 | -156.11542 | 0.21                     | 0.12                     | 0.19                     | 110                     | 0.31                     | 4.07                     | 0.52                    | 4.38                    | 6.37        | 15.73     | 8.218 | 0.748                        | 23.62         | 115.98     |
|            | 108     | S     | 20.82688 | -156.11535 | 0.15                     | 0.11                     | 0.15                     | 110                     | 0.23                     | 3.80                     | 0.38                    | 4.06                    | 15.09       | 15.68     | 8.228 | 0.779                        | 25.14         | 115.71     |
|            | 109     | S     | 20.82692 | -156.11529 | 0.16                     | 0.03                     | 0.13                     | 35                      | 0.19                     | 5.17                     | 0.35                    | 5.33                    | 25.87       | 29.82     | 8.132 | 0.483                        | 24.83         | 111.47     |
|            | 109     | B     | 20.82692 | -156.11529 | 0.17                     | 0.03                     | 0.12                     | 37                      | 0.16                     | 6.73                     | 0.33                    | 6.88                    | 65.97       | 29.68     | 8.141 | 0.444                        | 25.14         | 115.19     |
| WAIKA WEST | 101     | S     | 20.82605 | -156.11493 | 0.17                     | 1.25                     | 0.25                     | 254                     | 0.32                     | 5.41                     | 0.49                    | 6.91                    | 27.22       | 0.00      | 7.874 | 0.405                        | 20.53         | 110.09     |
|            | 101     | B     | 20.82605 | -156.11493 | 0.27                     | 1.66                     | 0.20                     | 257                     | 0.29                     | 5.58                     | 0.56                    | 7.44                    | 26.32       | 0.00      | 7.746 | 0.241                        | 20.49         | 111.66     |
|            | 102     | S     | 20.82610 | -156.11482 | 0.36                     | 1.78                     | 0.30                     | 255                     | 0.24                     | 5.96                     | 0.60                    | 8.04                    | 1.45        | 0.00      | 7.831 | 0.280                        | 20.54         | 112.61     |
|            | 103     | S     | 20.82629 | -156.11497 | 0.31                     | 1.60                     | 0.31                     | 255                     | 0.22                     | 5.56                     | 0.53                    | 7.47                    | 2.59        | 0.00      | 7.832 | 0.296                        | 20.55         | 110.68     |
|            | 104     | S     | 20.82632 | -156.11494 | 0.34                     | 1.62                     | 0.21                     | 256                     | 0.25                     | 6.25                     | 0.59                    | 8.08                    | 2.12        | 0.00      | 7.839 | 0.382                        | 20.58         | 113.27     |
|            | 105     | S     | 20.82649 | -156.11503 | 0.33                     | 1.15                     | 0.55                     | 187                     | 0.44                     | 8.54                     | 0.77                    | 10.24                   | 9.01        | 9.43      | 8.134 | 0.701                        | 22.05         | 112.32     |
|            | 106     | S     | 20.82652 | -156.11506 | 0.23                     | 0.44                     | 0.27                     | 120                     | 0.30                     | 7.46                     | 0.53                    | 8.17                    | 8.26        | 18.80     | 8.172 | 0.421                        | 23.66         | 115.73     |
| KOPIIULA   | 101     | S     | 20.83118 | -156.11869 | 0.01                     | 0.14                     | 0.29                     | 141                     | 0.39                     | 8.13                     | 0.40                    | 8.56                    | 4.38        | 0.00      | 7.881 | 1.231                        | 23.51         | 112.58     |
|            | 101     | B     | 20.83118 | -156.11869 | 0.02                     | 0.13                     | 0.32                     | 142                     | 0.29                     | 8.53                     | 0.31                    | 8.98                    | 4.14        | 0.00      | 8.165 | 1.091                        | 23.48         | 117.68     |
|            | 102     | S     | 20.83127 | -156.11867 | 0.02                     | 0.12                     | 0.28                     | 140                     | 0.62                     | 8.65                     | 0.64                    | 9.05                    | 4.09        | 0.00      | 8.221 | 1.901                        | 23.61         | 116.59     |
|            | 102     | B     | 20.83127 | -156.11867 | 0.01                     | 0.10                     | 0.26                     | 140                     | 0.32                     | 7.39                     | 0.33                    | 7.75                    | 4.35        | 0.00      | 8.230 | 1.675                        | 23.60         | 118.04     |
|            | 103     | S     | 20.83140 | -156.11854 | 0.04                     | 0.09                     | 0.27                     | 142                     | 0.53                     | 8.09                     | 0.57                    | 8.45                    | 5.03        | 0.00      | 8.157 | 1.254                        | 23.65         | 113.01     |
|            | 103     | B     | 20.83140 | -156.11854 | 0.05                     | 0.08                     | 0.25                     | 142                     | 0.61                     | 7.73                     | 0.66                    | 8.06                    | 4.74        | 0.00      | 8.202 | 1.083                        | 23.66         | 118.65     |
|            | 104     | S     | 20.83157 | -156.11848 | 0.05                     | 0.07                     | 0.38                     | 141                     | 0.63                     | 8.67                     | 0.68                    | 9.12                    | 6.31        | 0.00      | 8.205 | 2.189                        | 23.72         | 111.60     |
|            | 104     | B     | 20.83157 | -156.11848 | 0.03                     | 0.05                     | 0.34                     | 141                     | 0.56                     | 7.08                     | 0.59                    | 7.47                    | 6.59        | 0.00      | 8.201 | 2.649                        | 23.74         | 118.77     |
|            | 105     | S     | 20.83183 | -156.11841 | 0.03                     | 0.04                     | 0.29                     | 142                     | 0.57                     | 7.12                     | 0.60                    | 7.45                    | 8.82        | 0.00      | 8.167 | 1.566                        | 23.92         | 120.43     |
|            | 106     | S     | 20.83197 | -156.11837 | 0.02                     | 0.04                     | 0.30                     | 141                     | 0.75                     | 7.83                     | 0.77                    | 8.17                    | 3.84        | 0.00      | 8.065 | 1.192                        | 23.94         | 119.79     |
|            | 107     | S     | 20.83220 | -156.11838 | 0.01                     | 0.05                     | 0.15                     | 141                     | 0.43                     | 7.13                     | 0.44                    | 7.33                    | 5.21        | 0.00      | 8.055 | 1.176                        | 23.13         | 113.54     |
|            | 107     | B     | 20.83220 | -156.11838 | 0.00                     | 0.04                     | 0.12                     | 141                     | 0.45                     | 8.52                     | 0.45                    | 8.68                    | 6.13        | 0.00      | 8.189 | 2.041                        | 24.21         | 119.37     |
|            | 108     | S     | 20.83228 | -156.11836 | 0.03                     | 0.08                     | 1.07                     | 141                     | 0.42                     | 8.93                     | 0.45                    | 10.08                   | 4.52        | 0.00      | 8.320 | 1.870                        | 24.03         | 120.56     |
|            | 108     | B     | 20.83228 | -156.11836 | 0.03                     | 0.04                     | 0.13                     | 141                     | 0.53                     | 8.54                     | 0.56                    | 8.71                    | 4.79        | 0.00      | 8.387 | 2.649                        | 24.07         | 120.76     |
|            | 109     | S     | 20.83237 | -156.11836 | 0.02                     | 0.05                     | 0.13                     | 142                     | 0.38                     | 8.03                     | 0.40                    | 8.21                    | 3.97        | 0.00      | 8.306 | 1.098                        | 24.08         | 122.26     |
|            | 109     | B     | 20.83237 | -156.11836 | 0.02                     | 0.05                     | 0.10                     | 144                     | 0.38                     | 7.10                     | 0.40                    | 7.25                    | 4.09        | 0.00      | 8.301 | 1.285                        | 24.06         | 122.62     |
|            | 110     | S     | 20.83243 | -156.11836 | 0.03                     | 0.01                     | 0.11                     | 145                     | 0.41                     | 7.47                     | 0.44                    | 7.59                    | 12.97       | 0.03      | 8.269 | 1.122                        | 24.11         | 116.46     |
|            | 111     | S     | 20.83247 | -156.11828 | 0.00                     | 0.05                     | 0.19                     | 123                     | 0.29                     | 6.21                     | 0.29                    | 6.45                    | 30.41       | 6.02      | 8.331 | 0.997                        | 24.32         | 115.43     |
|            | 112     | S     | 20.83254 | -156.11817 | 0.15                     | 0.00                     | 0.18                     | 17                      | 0.27                     | 7.94                     | 0.42                    | 8.12                    | 15.72       | 33.01     | 8.135 | 0.826                        | 25.54         | 114.48     |
|            | 112     | B     | 20.83254 | -156.11817 | 0.14                     | 0.00                     | 0.23                     | 20                      | 0.27                     | 8.65                     | 0.41                    | 8.88                    | 34.24       | 32.58     | 8.153 | 0.639                        | 25.69         | 122.63     |
|            | 113     | S     | 20.83263 | -156.11805 | 0.15                     | 0.02                     | 0.15                     | 21                      | 0.28                     | 8.02                     | 0.43                    | 8.19                    | 4.86        | 33.08     | 8.158 | 0.647                        | 25.68         | 113.50     |
|            | 113     | B     | 20.83263 | -156.11805 | 0.17                     | 0.00                     | 0.51                     | 15                      | 0.38                     | 10.73                    | 0.55                    | 11.24                   | 53.66       | 33.84     | 8.164 | 3.225                        | 25.68         | 123.42     |

000709

TABLE A-10. Results of water chemistry sampling conducted on July 20, 2018, at Hanawi, Waiaaka, and Kopiliula Streams in East Maui. "S" indicates surface sample; "B" indicates bottom sample. "na" indicates lost sample. Nutrient concentrations are shown as micrograms per liter (µg/L). Locations of sampling stations are shown in Chapter 4 of text.

| STREAM       | STATION | DEPTH | LAT      | LONG       | PO4<br>(µg/L) | NO3<br>(µg/L) | NH4<br>(µg/L) | Si<br>(µg/L) | TOP<br>(µg/L) | TON<br>(µg/L) | TP<br>(µg/L) | TN<br>(µg/L) | TURB<br>NTU | SALT<br>‰ | pH    | Chl-a<br>(µg/L) | TEMP<br>deg C | DO<br>%sat |
|--------------|---------|-------|----------|------------|---------------|---------------|---------------|--------------|---------------|---------------|--------------|--------------|-------------|-----------|-------|-----------------|---------------|------------|
| HONOMANU     | 101     | S     | 20.82447 | -156.10133 | 22.32         | 52.78         | 6.58          | 8300         | 5.89          | 69.58         | 28.21        | 128.94       | 1.89        | 0.00      | 8.069 | 1.200           | 19.83         | 110.78     |
|              | 102     | S     | 20.82470 | -156.10126 | 24.49         | 53.76         | 5.46          | 8307         | 4.03          | 48.16         | 28.52        | 107.38       | 1.24        | 0.00      | 8.043 | 0.530           | 19.83         | 112.34     |
|              | 102     | B     | 20.82470 | -156.10126 | 24.49         | 48.86         | 4.90          | 8343         | 4.03          | 53.76         | 28.52        | 107.52       | 1.44        | 0.00      | 8.018 | 0.491           | 19.83         | 113.25     |
|              | 103     | S     | 20.82486 | -156.10109 | 25.42         | 52.64         | 4.62          | 8340         | 4.65          | 74.20         | 30.07        | 131.46       | 1.33        | 0.00      | 8.005 | 1.799           | 19.85         | 113.60     |
|              | 103     | B     | 20.82486 | -156.10109 | 25.73         | 53.06         | 4.90          | 8326         | 3.10          | 52.22         | 28.83        | 110.18       | 1.27        | 0.00      | 8.004 | 0.724           | 19.84         | 114.00     |
|              | 104     | S     | 20.82489 | -156.10093 | 24.80         | 52.50         | 4.48          | 8320         | 2.48          | 33.88         | 27.28        | 90.86        | 1.90        | 0.00      | 7.989 | 0.779           | 19.88         | 113.58     |
|              | 104     | B     | 20.82489 | -156.10093 | 24.49         | 49.14         | 4.34          | 8319         | 1.55          | 46.48         | 26.04        | 99.96        | 1.46        | 0.00      | 7.981 | 0.600           | 19.87         | 113.92     |
|              | 105     | S     | 20.82499 | -156.10089 | 26.35         | 51.24         | 4.34          | 8305         | 4.65          | 41.72         | 31.00        | 97.30        | 1.40        | 0.00      | 7.983 | 0.467           | 19.89         | 112.07     |
|              | 105     | B     | 20.82499 | -156.10089 | 23.87         | 47.88         | 4.20          | 8326         | 3.72          | 45.64         | 27.59        | 97.72        | 1.75        | 0.00      | 7.973 | 0.732           | 19.88         | 113.33     |
|              | 106     | S     | 20.82506 | -156.10089 | 23.87         | 49.42         | 4.90          | 8343         | 0.62          | 40.32         | 24.49        | 94.64        | -           | 0.00      | 7.971 | 0.678           | 19.91         | 108.20     |
|              | 107     | S     | 20.82518 | -156.10083 | 19.22         | 49.42         | 4.20          | 8364         | 2.17          | 26.18         | 21.39        | 79.80        | -           | 0.00      | 7.977 | 0.537           | 19.90         | 110.00     |
|              | 108     | S     | 20.82525 | -156.10081 | 10.72         | 11.86         | 3.23          | 2006         | 0.62          | 74.19         | 11.34        | 89.28        | -           | 26.79     | 8.114 | 0.335           | 24.34         | 114.95     |
|              | 108     | B     | 20.82525 | -156.10081 | 9.76          | 2.23          | 2.99          | 462          | 0.93          | 69.67         | 10.69        | 74.89        | -           | 33.43     | 8.122 | 0.499           | 25.46         | 117.25     |
|              | 109     | S     | 20.82546 | -156.10073 | 11.03         | 8.92          | 2.80          | 2084         | 0.93          | 71.96         | 11.96        | 83.68        | -           | 26.80     | 8.153 | 0.273           | 23.75         | 111.34     |
|              | 109     | B     | 20.82546 | -156.10073 | 9.66          | 0.18          | 2.72          | 187          | 0.62          | 88.28         | 10.28        | 91.18        | -           | 34.49     | 8.134 | 0.195           | 25.44         | 116.34     |
| WAIKAKA EAST | 101     | S     | 20.82626 | -156.11590 | 4.65          | 1.12          | 3.92          | 5405         | 9.61          | 62.30         | 14.26        | 67.34        | 2.57        | 0.00      | 7.831 | 1.387           | 21.33         | 112.34     |
|              | 102     | S     | 20.82634 | -156.11574 | 5.27          | 0.70          | 2.94          | 5332         | 5.89          | 53.34         | 11.16        | 56.98        | 2.72        | 0.00      | 7.863 | 1.052           | 21.42         | 113.43     |
|              | 103     | S     | 20.82654 | -156.11564 | 4.96          | 0.98          | 2.94          | 5292         | 6.20          | 50.68         | 11.16        | 54.60        | 3.07        | 0.00      | 7.844 | 1.379           | 21.47         | 114.52     |
|              | 104     | S     | 20.82663 | -156.11556 | 3.72          | 1.12          | 2.80          | 5291         | 9.30          | 47.32         | 13.02        | 51.24        | 3.32        | 0.00      | 7.822 | 1.106           | 21.56         | 115.62     |
|              | 105     | S     | 20.82673 | -156.11544 | 5.58          | 0.56          | 1.82          | 5274         | 7.44          | 43.40         | 13.02        | 45.78        | 3.10        | 0.00      | 7.855 | 0.779           | 21.62         | 116.09     |
|              | 106     | S     | 20.82678 | -156.11537 | 5.46          | 2.31          | 2.42          | 4683         | 5.58          | 42.66         | 11.04        | 47.39        | 2.04        | 4.37      | 8.146 | 1.075           | 22.48         | 115.52     |
|              | 107     | S     | 20.82683 | -156.11542 | 6.53          | 1.68          | 2.59          | 3067         | 9.61          | 57.05         | 16.14        | 61.32        | 6.37        | 15.73     | 8.218 | 0.748           | 23.62         | 115.98     |
|              | 108     | S     | 20.82688 | -156.11535 | 4.67          | 1.55          | 2.04          | 3085         | 7.13          | 53.26         | 11.80        | 56.85        | 15.09       | 15.68     | 8.228 | 0.779           | 25.14         | 115.71     |
|              | 109     | S     | 20.82692 | -156.11529 | 4.84          | 0.41          | 1.88          | 991          | 5.89          | 72.32         | 10.73        | 74.61        | 25.87       | 29.82     | 8.132 | 0.483           | 24.83         | 111.47     |
|              | 109     | B     | 20.82692 | -156.11529 | 5.17          | 0.43          | 1.62          | 1033         | 4.96          | 94.28         | 10.13        | 96.33        | 65.97       | 29.68     | 8.141 | 0.444           | 25.14         | 115.19     |
| WAIKAKA WEST | 101     | S     | 20.82605 | -156.11493 | 5.27          | 17.50         | 3.50          | 7113         | 9.92          | 75.74         | 15.19        | 96.74        | 27.22       | 0.00      | 7.874 | 0.405           | 20.53         | 110.09     |
|              | 101     | B     | 20.82605 | -156.11493 | 8.37          | 23.24         | 2.80          | 7192         | 8.99          | 78.12         | 17.36        | 104.16       | 26.32       | 0.00      | 7.746 | 0.241           | 20.49         | 111.66     |
|              | 102     | S     | 20.82610 | -156.11482 | 11.16         | 24.92         | 4.20          | 7142         | 7.44          | 83.44         | 18.60        | 112.56       | 1.45        | 0.00      | 7.831 | 0.280           | 20.54         | 112.61     |
|              | 103     | S     | 20.82629 | -156.11497 | 9.61          | 22.40         | 4.34          | 7148         | 6.82          | 77.84         | 16.43        | 104.58       | 2.59        | 0.00      | 7.832 | 0.296           | 20.55         | 110.68     |
|              | 104     | S     | 20.82632 | -156.11494 | 10.54         | 22.68         | 2.94          | 7166         | 7.75          | 87.50         | 18.29        | 113.12       | 2.12        | 0.00      | 7.839 | 0.382           | 20.58         | 113.27     |
|              | 105     | S     | 20.82649 | -156.11503 | 10.24         | 16.05         | 7.69          | 5239         | 13.64         | 119.57        | 23.88        | 143.31       | 9.01        | 9.43      | 8.134 | 0.701           | 22.05         | 112.32     |
|              | 106     | S     | 20.82652 | -156.11506 | 7.16          | 6.20          | 3.76          | 3361         | 9.30          | 104.46        | 16.46        | 114.42       | 8.26        | 18.80     | 8.172 | 0.421           | 23.66         | 115.73     |
| KOPIILULA    | 101     | S     | 20.83118 | -156.11869 | 0.31          | 1.96          | 4.06          | 3957         | 12.09         | 113.82        | 12.40        | 119.84       | 4.38        | 0.00      | 7.881 | 1.231           | 23.51         | 112.58     |
|              | 101     | B     | 20.83118 | -156.11869 | 0.62          | 1.82          | 4.48          | 3983         | 8.99          | 119.42        | 9.61         | 125.72       | 4.14        | 0.00      | 8.165 | 1.091           | 23.48         | 117.68     |
|              | 102     | S     | 20.83127 | -156.11867 | 0.62          | 1.68          | 3.92          | 3910         | 19.22         | 121.10        | 19.84        | 126.70       | 4.09        | 0.00      | 8.221 | 1.901           | 23.61         | 116.59     |
|              | 102     | B     | 20.83127 | -156.11867 | 0.31          | 1.40          | 3.64          | 3921         | 9.92          | 103.46        | 10.23        | 108.50       | 4.35        | 0.00      | 8.230 | 1.675           | 23.60         | 118.04     |
|              | 103     | S     | 20.83140 | -156.11854 | 1.24          | 1.26          | 3.78          | 3978         | 16.43         | 113.26        | 17.67        | 118.30       | 5.03        | 0.00      | 8.157 | 1.254           | 23.65         | 113.01     |
|              | 103     | B     | 20.83140 | -156.11854 | 1.55          | 1.12          | 3.50          | 3965         | 18.91         | 108.22        | 20.46        | 112.84       | 4.74        | 0.00      | 8.202 | 1.083           | 23.66         | 118.65     |
|              | 104     | S     | 20.83157 | -156.11848 | 1.55          | 0.98          | 5.32          | 3952         | 19.53         | 121.38        | 21.08        | 127.68       | 6.31        | 0.00      | 8.205 | 2.189           | 23.72         | 111.60     |
|              | 104     | B     | 20.83157 | -156.11848 | 0.93          | 0.70          | 4.76          | 3952         | 17.36         | 99.12         | 18.29        | 104.58       | 6.59        | 0.00      | 8.201 | 2.649           | 23.74         | 118.77     |
|              | 105     | S     | 20.83183 | -156.11841 | 0.93          | 0.56          | 4.06          | 3963         | 17.67         | 99.68         | 18.60        | 104.30       | 8.82        | 0.00      | 8.167 | 1.566           | 23.92         | 120.43     |
|              | 106     | S     | 20.83197 | -156.11837 | 0.62          | 0.56          | 4.20          | 3950         | 23.25         | 109.62        | 23.87        | 114.38       | 3.84        | 0.00      | 8.065 | 1.192           | 23.94         | 119.79     |
|              | 107     | S     | 20.83220 | -156.11838 | 0.31          | 0.70          | 2.10          | 3955         | 13.33         | 99.82         | 13.64        | 102.62       | 5.21        | 0.00      | 8.055 | 1.176           | 23.13         | 113.54     |
|              | 107     | B     | 20.83220 | -156.11838 | 0.00          | 0.56          | 1.68          | 3937         | 13.95         | 119.28        | 13.95        | 121.52       | 6.13        | 0.00      | 8.189 | 2.041           | 24.21         | 119.37     |
|              | 108     | S     | 20.83228 | -156.11836 | 0.93          | 1.12          | 14.98         | 3947         | 13.02         | 125.02        | 13.95        | 141.12       | 4.52        | 0.00      | 8.320 | 1.870           | 24.03         | 120.56     |
|              | 108     | B     | 20.83228 | -156.11836 | 0.93          | 0.56          | 1.82          | 3952         | 16.43         | 119.56        | 17.36        | 121.94       | 4.79        | 0.00      | 8.387 | 2.649           | 24.07         | 120.76     |
|              | 109     | S     | 20.83237 | -156.11836 | 0.62          | 0.70          | 1.82          | 3968         | 11.78         | 112.42        | 12.40        | 114.94       | 3.97        | 0.00      | 8.306 | 1.098           | 24.08         | 122.26     |
|              | 109     | B     | 20.83237 | -156.11836 | 0.62          | 0.70          | 1.40          | 4033         | 11.78         | 99.40         | 12.40        | 101.50       | 4.09        | 0.00      | 8.301 | 1.285           | 24.06         | 122.62     |
|              | 110     | S     | 20.83243 | -156.11836 | 0.93          | 0.14          | 1.54          | 4054         | 12.71         | 104.58        | 13.64        | 106.26       | 12.97       | 0.03      | 8.269 | 1.122           | 24.11         | 116.46     |
|              | 111     | S     | 20.83247 | -156.11828 | 0.03          | 0.74          | 2.64          | 3454         | 8.99          | 86.96         | 9.02         | 90.34        | 30.41       | 6.02      | 8.331 | 0.997           | 24.32         | 115.43     |
|              | 112     | S     | 20.83254 | -156.11817 | 4.53          | -0.06         | 2.48          | 486          | 8.37          | 111.20        | 12.90        | 113.62       | 15.72       | 33.01     | 8.135 | 0.826           | 25.54         | 114.48     |
|              | 112     | B     | 20.83254 | -156.11817 | 4.27          | -0.01         | 3.23          | 572          | 8.37          | 121.06        | 12.64        | 124.28       | 34.24       | 32.58     | 8.153 | 0.639           | 25.69         | 122.63     |
|              | 113     | S     | 20.83263 | -156.11805 | 4.53          | 0.22          | 2.05          | 600          | 8.68          | 112.33        | 13.21        | 114.60       | 4.86        | 33.08     | 8.158 | 0.647           | 25.68         | 113.50     |
|              | 113     | B     | 20.83263 | -156.11805 | 5.38          | -0.01         | 7.14          | 410          | 11.78         | 150.28        | 17.16        | 157.41       | 53.66       | 33.84     | 8.164 | 3.225           | 25.68         | 123.42     |



TABLE A-11. Results of water chemistry sampling conducted on July 23, 2018, at Oopuola, Oopuola East, Wailua Iki East, and Wailua Iki West Streams on East Maui. "S" indicates surface sample; "B" indicates bottom sample. Nutrient concentrations are shown in micromolar units ( $\mu\text{M}$ ). Locations of sampling stations are shown in Chapter 4 of text.

| STREAM          | STATION | DEPTH | LAT      | LON        | PO4<br>( $\mu\text{M}$ ) | NO3<br>( $\mu\text{M}$ ) | NH4<br>( $\mu\text{M}$ ) | Si<br>( $\mu\text{M}$ ) | TOP<br>( $\mu\text{M}$ ) | TON<br>( $\mu\text{M}$ ) | TP<br>( $\mu\text{M}$ ) | TN<br>( $\mu\text{M}$ ) | TURB<br>TURB | SALT<br>SALT | pH<br>pH | Chl-a<br>Chl-a | TEMP<br>deg C | DO<br>%sat |
|-----------------|---------|-------|----------|------------|--------------------------|--------------------------|--------------------------|-------------------------|--------------------------|--------------------------|-------------------------|-------------------------|--------------|--------------|----------|----------------|---------------|------------|
| OOPUOLA         | 101     | S     | 20.88911 | -156.19634 | 1.11                     | 1.14                     | 2.18                     | 270.13                  | 0.31                     | 8.34                     | 1.42                    | 11.66                   | 17.05        | 2.13         | 6.634    | 0.156          | 23.52         | 30.81      |
|                 | 101     | B     | 20.88911 | -156.19634 | 0.25                     | 0.07                     | 4.41                     | 184.50                  | 0.45                     | 7.28                     | 0.70                    | 11.76                   | 37.42        | 13.57        | 6.548    | 0.265          | 24.29         | 30.18      |
|                 | 102     | S     | 20.88902 | -156.19648 | 0.82                     | 0.80                     | 0.46                     | 261.61                  | 0.28                     | 4.70                     | 1.10                    | 5.96                    | 26.86        | 0.54         | 6.685    | 0.171          | 23.72         | 69.22      |
|                 | 102     | B     | 20.88902 | -156.19648 | 0.49                     | 0.10                     | 0.79                     | 216.59                  | 0.63                     | 7.15                     | 1.12                    | 8.04                    | 64.34        | 8.25         | 6.564    | 0.140          | 23.92         | 39.27      |
|                 | 103     | S     | 20.88905 | -156.19664 | 0.48                     | 0.37                     | 0.39                     | 247.31                  | 0.43                     | 5.42                     | 0.91                    | 6.18                    | 38.14        | 0.27         | 6.451    | 0.140          | 23.84         | 65.14      |
|                 | 103     | B     | 20.88905 | -156.19664 | 0.42                     | 0.25                     | 7.87                     | 226.47                  | 0.34                     | 6.74                     | 0.76                    | 14.86                   | 110.91       | 8.81         | 6.596    | 0.249          | 23.37         | 53.74      |
|                 | 104     | S     | 20.88897 | -156.19672 | 0.14                     | 0.11                     | 0.42                     | 230.60                  | 0.26                     | 5.38                     | 0.40                    | 5.91                    | 5.06         | 0.02         | 6.268    | 0.140          | 22.85         | 46.50      |
|                 | 105     | S     | 20.88914 | -156.19614 | 0.27                     | 0.39                     | 0.81                     | 31.76                   | 0.20                     | 7.51                     | 0.47                    | 8.71                    | 27.80        | 30.61        | 8.091    | 0.093          | 26.86         | 110.47     |
|                 | 106     | S     | 20.88917 | -156.19610 | 0.28                     | 0.26                     | 0.91                     | 49.41                   | 0.23                     | 8.17                     | 0.51                    | 9.34                    | 14.02        | 31.01        | 8.125    | 0.156          | 26.90         | 112.42     |
|                 | 107     | S     | 20.88920 | -156.19607 | 0.23                     | 0.29                     | 0.57                     | 40.92                   | 0.27                     | 6.32                     | 0.50                    | 7.18                    | 8.75         | 31.09        | 8.141    | 0.125          | 26.87         | 111.35     |
|                 | 107     | B     | 20.88920 | -156.19607 | 0.25                     | 0.20                     | 0.81                     | 32.13                   | 0.27                     | 6.23                     | 0.52                    | 7.24                    | 10.28        | 31.70        | 8.163    | 0.125          | 26.82         | 115.03     |
|                 | 108     | S     | 20.88926 | -156.19595 | 0.25                     | 0.45                     | 0.81                     | 50.17                   | 0.25                     | 9.19                     | 0.50                    | 10.45                   | 5.83         | 31.36        | 8.151    | 0.093          | 26.87         | 121.31     |
|                 | 108     | B     | 20.88926 | -156.19595 | 0.23                     | 0.35                     | 0.93                     | 37.61                   | 0.26                     | 7.61                     | 0.49                    | 8.89                    | 7.20         | 32.72        | 8.159    | 0.109          | 26.61         | 119.29     |
|                 | 109     | S     | 20.88943 | -156.19577 | 0.24                     | 0.48                     | 0.73                     | 37.58                   | 0.26                     | 10.47                    | 0.50                    | 11.68                   | 3.68         | 31.29        | 8.137    | 0.125          | 26.67         | 107.34     |
|                 | 109     | B     | 20.88943 | -156.19577 | 0.21                     | 0.55                     | 0.92                     | 42.57                   | 0.28                     | 8.61                     | 0.49                    | 10.08                   | 2.82         | 32.86        | 8.156    | 0.093          | 26.35         | 107.67     |
| OOPUOLA EAST    | 110     | S     | 20.88896 | -156.19617 | 0.11                     | 0.10                     | 0.99                     | 89.49                   | 0.31                     | 6.72                     | 0.42                    | 7.81                    | 23.97        | 12.81        | 8.080    | 0.109          | 26.57         | 101.73     |
|                 | 111     | S     | 20.88884 | -156.19620 | 0.09                     | 0.09                     | 1.11                     | 105.92                  | 0.29                     | 9.21                     | 0.38                    | 10.41                   | 7.00         | 6.43         | 7.805    | 0.109          | 25.93         | 99.02      |
|                 | 111     | B     | 20.88884 | -156.19620 | 0.22                     | 0.05                     | 0.97                     | 77.91                   | 0.32                     | 10.57                    | 0.54                    | 11.59                   | 10.30        | 18.10        | 8.133    | 0.125          | 26.54         | 101.99     |
|                 | 112     | S     | 20.88878 | -156.19623 | 0.13                     | 0.08                     | 1.00                     | 112.72                  | 0.28                     | 8.51                     | 0.41                    | 9.59                    | 7.34         | 5.06         | 7.621    | 0.125          | 25.78         | 99.97      |
|                 | 112     | B     | 20.88878 | -156.19623 | 0.17                     | 0.02                     | 0.97                     | 80.76                   | 0.28                     | 6.61                     | 0.45                    | 7.60                    | 9.76         | 16.81        | 8.096    | 0.280          | 26.44         | 104.85     |
|                 | 113     | S     | 20.88868 | -156.19639 | 0.02                     | 0.10                     | 0.88                     | 127.24                  | 0.40                     | 23.21                    | 0.42                    | 24.19                   | no data      | 0.15         | 7.075    | 0.171          | 26.45         | 100.5      |
| WAILUA IKI EAST | 101     | S     | 20.83491 | -156.12458 | 0.03                     | 0.12                     | 0.82                     | 113.54                  | 0.26                     | 9.69                     | 0.29                    | 10.63                   | 15.30        | 0.00         | 7.383    | 0.265          | 22.84         | 102.34     |
|                 | 101     | B     | 20.83491 | -156.12458 | 0.02                     | 0.13                     | 0.82                     | 112.49                  | 0.31                     | 9.47                     | 0.33                    | 10.42                   | 13.77        | 0.00         | 7.388    | 0.327          | 22.85         | 102.15     |
|                 | 102     | S     | 20.83549 | -156.12449 | 0.05                     | 1.07                     | 0.78                     | 187.61                  | 0.35                     | 8.87                     | 0.40                    | 10.72                   | 19.69        | 0.00         | 7.492    | 0.405          | 22.38         | 103.21     |
|                 | 102     | B     | 20.83549 | -156.12449 | 0.00                     | 0.14                     | 0.71                     | 204.48                  | 0.56                     | 11.12                    | 0.56                    | 11.97                   | 15.89        | 0.00         | 7.716    | 0.763          | 22.27         | 103.24     |
|                 | 103     | S     | 20.83597 | -156.12437 | 0.25                     | 1.85                     | 0.73                     | 217.22                  | 0.37                     | 9.68                     | 0.62                    | 12.26                   | 9.59         | 0.00         | 7.503    | 0.374          | 22.03         | 103.84     |
|                 | 103     | B     | 20.83597 | -156.12437 | 0.53                     | 3.91                     | 2.58                     | 282.93                  | 0.34                     | 9.56                     | 0.87                    | 16.05                   | 9.76         | 0.03         | 7.414    | 0.483          | 21.36         | 101.13     |
|                 | 104     | S     | 20.83619 | -156.12409 | 0.29                     | 1.78                     | 0.64                     | 238.41                  | 0.50                     | 10.84                    | 0.79                    | 13.26                   | 13.60        | 0.00         | 7.504    | 0.872          | 22.24         | 104.03     |
|                 | 104     | B     | 20.83619 | -156.12409 | 0.30                     | 3.10                     | 29.72                    | 267.10                  | 0.84                     | 8.42                     | 1.14                    | 41.24                   | 14.31        | 0.02         | 7.381    | 0.904          | 21.35         | 101.87     |
|                 | 105     | S     | 20.83633 | -156.12394 | 0.25                     | 1.38                     | 0.69                     | 211.29                  | 0.53                     | 7.67                     | 0.78                    | 9.74                    | 13.72        | 0.00         | 7.495    | 0.249          | 22.00         | 102.64     |
|                 | 105     | B     | 20.83633 | -156.12394 | 0.34                     | 2.52                     | 1.08                     | 243.75                  | 0.38                     | 7.97                     | 0.72                    | 11.57                   | 14.51        | 0.00         | 7.474    | 1.651          | 21.63         | 101.88     |
|                 | 106     | S     | 20.83638 | -156.12383 | 0.17                     | 2.50                     | 1.10                     | 214.83                  | 0.23                     | 8.63                     | 0.40                    | 12.23                   | 13.16        | 2.67         | 7.431    | 0.343          | 21.82         | 96.61      |
|                 | 107     | S     | 20.83642 | -156.12382 | 0.39                     | 2.16                     | 0.65                     | 205.76                  | 0.20                     | 6.21                     | 0.59                    | 9.02                    | 110.85       | 3.76         | 7.592    | 0.327          | 22.74         | 102.58     |
|                 | 108     | S     | 20.83647 | -156.12381 | 0.21                     | 0.40                     | 0.68                     | 55.28                   | 0.23                     | 9.04                     | 0.44                    | 10.12                   | 2.05         | 32.52        | 8.033    | 0.203          | 25.54         | 103.84     |
|                 | 109     | S     | 20.83661 | -156.12379 | 0.21                     | 0.35                     | 0.60                     | 33.68                   | 0.26                     | 7.70                     | 0.47                    | 8.65                    | 2.12         | 33.08        | 8.062    | 0.343          | 25.63         | 104.61     |
|                 | 109     | S     | 20.83661 | -156.12379 | 0.22                     | 0.33                     | 0.61                     | 62.11                   | 0.23                     | 7.99                     | 0.45                    | 8.93                    | 2.25         | 33.28        | 8.083    | 0.218          | 25.61         | 103.84     |
|                 | 110     | S     | 20.83683 | -156.12375 | 0.19                     | 0.16                     | 0.52                     | 35.17                   | 0.24                     | 8.25                     | 0.43                    | 8.93                    | 1.53         | 32.53        | 8.093    | 0.203          | 25.66         | 99.85      |
|                 | 110     | S     | 20.83683 | -156.12375 | 0.21                     | 0.30                     | 0.76                     | 33.90                   | 0.23                     | 8.50                     | 0.44                    | 9.56                    | 1.14         | 33.58        | 8.099    | 0.171          | 25.72         | 100.82     |
|                 | 111     | S     | 20.83709 | -156.12371 | 0.34                     | 0.62                     | 1.24                     | 45.97                   | 0.16                     | 6.74                     | 0.50                    | 8.60                    | 0.92         | 32.13        | 8.113    | 0.187          | 25.53         | 100.82     |
|                 | 111     | S     | 20.83709 | -156.12371 | 0.19                     | 0.22                     | 0.53                     | 30.34                   | 0.24                     | 7.23                     | 0.43                    | 7.98                    | 0.88         | 33.79        | 8.116    | 0.171          | 25.75         | 101.62     |
| WAILUA IKI WEST | 101     | S     | 20.83693 | -156.12526 | 0.38                     | 0.32                     | 1.39                     | 79.30                   | 0.17                     | 7.45                     | 0.55                    | 9.16                    | 13.75        | 4.65         | 7.711    | 0.530          | 23.76         | 101.50     |
|                 | 101     | B     | 20.83702 | -156.12521 | 0.39                     | 0.92                     | 0.16                     | 147.92                  | 0.33                     | 7.40                     | 0.72                    | 8.48                    | 19.02        | 11.64        | 8.074    | 0.171          | 23.75         | 101.69     |
|                 | 102     | S     | 20.83711 | -156.12512 | 0.33                     | 0.08                     | 0.10                     | 100.01                  | 0.38                     | 9.99                     | 0.71                    | 10.17                   | 15.20        | 20.46        | 8.158    | 0.086          | 24.36         | 98.79      |
|                 | 102     | B     | 20.83711 | -156.12512 | 0.39                     | 0.66                     | 0.22                     | 87.56                   | 0.21                     | 10.60                    | 0.60                    | 11.48                   | 10.90        | 23.75        | 8.166    | 0.171          | 24.67         | 103.39     |
|                 | 103     | S     | 20.83729 | -156.12496 | 0.33                     | 0.27                     | 0.30                     | 90.45                   | 0.24                     | 6.90                     | 0.57                    | 7.47                    | 5.33         | 23.33        | 8.178    | 0.109          | 25.17         | 104.70     |
|                 | 103     | B     | 20.83729 | -156.12496 | 0.25                     | 0.37                     | 0.74                     | 44.07                   | 0.20                     | 7.58                     | 0.45                    | 8.69                    | 4.24         | 31.92        | 8.133    | 0.171          | 25.73         | 107.37     |
|                 | 104     | S     | 20.83766 | -156.12466 | 0.26                     | 0.26                     | 0.52                     | 62.06                   | 0.21                     | 8.56                     | 0.47                    | 9.34                    | 2.75         | 30.29        | 8.146    | 0.109          | 25.67         | 107.19     |
|                 | 105     | S     | 20.83766 | -156.12466 | 0.22                     | 0.32                     | 0.44                     | 45.24                   | 0.22                     | 7.85                     | 0.44                    | 8.61                    | 5.30         | 32.82        | 8.141    | 0.156          | 25.86         | 108.28     |
|                 | 106     | S     | 20.83660 | -156.12545 | 0.04                     | 0.16                     | 0.54                     | 146.66                  | 0.45                     | 6.94                     | 0.49                    | 7.64                    | 13.14        | 0.18         | 7.385    | 0.312          | 22.82         | 101.16     |
|                 | 106     | B     | 20.83660 | -156.12545 | 0.15                     | 0.57                     | 0.56                     | 155.47                  | 0.43                     | 8.00                     | 0.58                    | 9.13                    | 10.14        | 0.45         | 7.317    | 0.187          | 23.13         | 101.72     |
|                 | 107     | S     | 20.83649 | -156.12580 | 0.03                     | 0.15                     | 0.89                     | 114.18                  | 0.35                     | 9.08                     | 0.38                    | 10.12                   | 9.88         | 0.00         | 7.421    | 0.187          | 23.22         | 102.62     |
|                 | 107     | B     | 20.83649 | -156.12580 | 0.81                     | 2.23                     | 9.96                     | 281.88                  | 0.38                     | 2.64                     | 1.19                    | 14.83                   | 8.54         | 0.01         | 7.352    | 0.576          | 21.88         | 100.55     |
|                 | 108     | S     | 20.83651 | -156.12599 | 0.04                     | 0.14                     | 0.92                     | 106.06                  | 0.32                     | 7.03                     | 0.36                    | 8.09                    | 11.60        | 0.00         | 7.355    | 0.249          | 23.35         | 102.67     |
|                 | 108     | B     | 20.83651 | -156.12599 | 0.02                     | 0.14                     | 0.56                     | 112.08                  | 0.52                     | 6.93                     | 0.54                    | 7.63                    | 11.30        | 0.00         | 7.283    | 0.187          | 23.22         | 102.60     |

TABLE A-12. Results of water chemistry sampling conducted on July 23, 2018, at Oopuola, Oopuola East, Wailua Iki East, and Wailua Iki West Streams on East Maui. "S" indicates surface sample; "B" indicates bottom sample. Nutrient concentrations are shown as micrograms per liter (µg/L). Locations of sampling stations are shown in Chapter 4 of text.

| STREAM          | STATION | DEPTH | LAT      | LONG       | PO4<br>(µM) | NO3<br>(µM) | NH4<br>(µM) | Si<br>(µM) | TOP<br>(µM) | TON<br>(µM) | TP<br>(µM) | TN<br>(µM) | TURB<br>TURB | SALT<br>SALT | pH<br>pH | Chl-a<br>Chl-a | TEMP<br>deg C | DO<br>%sat |
|-----------------|---------|-------|----------|------------|-------------|-------------|-------------|------------|-------------|-------------|------------|------------|--------------|--------------|----------|----------------|---------------|------------|
| OOPUOLA         | 101     | S     | 20.88911 | -156.19634 | 34.51       | 15.93       | 30.54       | 7564       | 9.61        | 116.74      | 44.12      | 163.21     | 17.05        | 2.13         | 6.634    | 0.156          | 23.52         | 30.81      |
|                 | 101     | B     | 20.88911 | -156.19634 | 7.67        | 1.01        | 61.79       | 5166       | 13.95       | 101.87      | 21.62      | 164.67     | 37.42        | 13.57        | 6.548    | 0.265          | 24.29         | 30.18      |
|                 | 102     | S     | 20.88902 | -156.19648 | 25.37       | 11.16       | 6.38        | 7325       | 8.68        | 65.86       | 34.05      | 83.40      | 26.86        | 0.54         | 6.685    | 0.171          | 23.72         | 69.22      |
|                 | 102     | B     | 20.88902 | -156.19648 | 15.32       | 1.44        | 11.05       | 6065       | 19.53       | 100.11      | 34.85      | 112.60     | 64.34        | 8.25         | 6.564    | 0.140          | 23.92         | 39.27      |
|                 | 103     | S     | 20.88905 | -156.19664 | 14.85       | 5.16        | 5.43        | 6925       | 13.33       | 75.91       | 28.18      | 86.50      | 38.14        | 0.27         | 6.451    | 0.140          | 23.84         | 65.14      |
|                 | 103     | B     | 20.88905 | -156.19664 | 13.09       | 3.50        | 110.24      | 6341       | 10.54       | 94.30       | 23.63      | 208.04     | 110.91       | 8.81         | 6.596    | 0.249          | 23.37         | 53.74      |
|                 | 104     | S     | 20.88897 | -156.19672 | 4.34        | 1.54        | 5.88        | 6457       | 8.06        | 75.32       | 12.40      | 82.74      | 5.06         | 0.02         | 6.268    | 0.140          | 22.85         | 46.50      |
|                 | 105     | S     | 20.88914 | -156.19614 | 8.49        | 5.39        | 11.31       | 889        | 6.20        | 105.17      | 14.69      | 121.87     | 27.80        | 30.61        | 8.091    | 0.093          | 26.86         | 110.47     |
|                 | 106     | S     | 20.88917 | -156.19610 | 8.76        | 3.68        | 12.80       | 1384       | 7.13        | 114.32      | 15.89      | 130.80     | 14.02        | 31.01        | 8.125    | 0.156          | 26.90         | 112.42     |
|                 | 107     | S     | 20.88920 | -156.19607 | 7.20        | 4.09        | 8.03        | 1146       | 8.37        | 88.43       | 15.57      | 100.55     | 8.75         | 31.09        | 8.141    | 0.125          | 26.87         | 111.35     |
|                 | 107     | B     | 20.88920 | -156.19607 | 7.76        | 2.78        | 11.32       | 900        | 8.37        | 87.24       | 16.13      | 101.34     | 10.28        | 31.70        | 8.163    | 0.125          | 26.82         | 115.03     |
|                 | 108     | S     | 20.88926 | -156.19595 | 7.79        | 6.31        | 11.36       | 1405       | 7.75        | 128.64      | 15.54      | 146.31     | 5.83         | 31.36        | 8.151    | 0.093          | 26.87         | 121.31     |
|                 | 108     | B     | 20.88926 | -156.19595 | 7.04        | 4.94        | 13.01       | 1053       | 8.06        | 106.55      | 15.10      | 124.50     | 7.20         | 32.72        | 8.159    | 0.109          | 26.61         | 119.29     |
|                 | 109     | S     | 20.88943 | -156.19577 | 7.49        | 6.74        | 10.25       | 1052       | 8.06        | 146.55      | 15.55      | 163.54     | 3.68         | 31.29        | 8.137    | 0.125          | 26.67         | 107.34     |
|                 | 109     | B     | 20.88943 | -156.19577 | 6.41        | 7.73        | 12.86       | 1192       | 8.68        | 120.56      | 15.09      | 141.15     | 2.82         | 32.86        | 8.156    | 0.093          | 26.35         | 107.67     |
| OOPUOLA EAST    | 110     | S     | 20.88896 | -156.19617 | 3.40        | 1.36        | 13.86       | 2506       | 9.61        | 94.08       | 13.01      | 109.30     | 23.97        | 12.81        | 8.080    | 0.109          | 26.57         | 101.73     |
|                 | 111     | S     | 20.88884 | -156.19620 | 2.78        | 1.31        | 15.61       | 2966       | 8.99        | 128.87      | 11.77      | 145.79     | 7.00         | 6.43         | 7.805    | 0.109          | 25.93         | 99.02      |
|                 | 111     | B     | 20.88884 | -156.19620 | 6.92        | 0.65        | 13.65       | 2182       | 9.92        | 147.91      | 16.84      | 162.21     | 10.30        | 18.10        | 8.133    | 0.125          | 26.54         | 101.99     |
|                 | 112     | S     | 20.88878 | -156.19623 | 4.16        | 1.14        | 13.95       | 3156       | 8.68        | 119.19      | 12.84      | 134.28     | 7.34         | 5.06         | 7.621    | 0.125          | 25.78         | 99.97      |
|                 | 112     | B     | 20.88878 | -156.19623 | 5.18        | 0.34        | 13.52       | 2261       | 8.68        | 92.60       | 13.86      | 106.46     | 9.76         | 16.81        | 8.096    | 0.280          | 26.44         | 104.85     |
| WAILUA IKI EAST | 101     | S     | 20.83491 | -156.12458 | 0.93        | 1.68        | 11.48       | 3179       | 8.06        | 135.66      | 8.99       | 148.82     | 15.30        | 0.00         | 7.383    | 0.265          | 22.84         | 102.34     |
|                 | 101     | B     | 20.83491 | -156.12458 | 0.62        | 1.82        | 11.48       | 3150       | 9.61        | 132.58      | 10.23      | 145.88     | 13.77        | 0.00         | 7.388    | 0.327          | 22.85         | 102.15     |
|                 | 102     | S     | 20.83549 | -156.12449 | 1.55        | 14.98       | 10.92       | 5253       | 10.85       | 124.18      | 12.40      | 150.08     | 19.69        | 0.00         | 7.492    | 0.405          | 22.38         | 103.21     |
|                 | 102     | B     | 20.83549 | -156.12449 | 0.00        | 1.96        | 9.94        | 5725       | 17.36       | 155.68      | 17.36      | 167.58     | 15.89        | 0.00         | 7.716    | 0.763          | 22.27         | 103.24     |
|                 | 103     | S     | 20.83597 | -156.12437 | 7.75        | 25.90       | 10.22       | 6082       | 11.47       | 135.52      | 19.22      | 171.64     | 9.59         | 0.00         | 7.503    | 0.374          | 22.03         | 103.84     |
|                 | 103     | B     | 20.83597 | -156.12437 | 16.43       | 54.74       | 36.12       | 7922       | 10.54       | 133.84      | 26.97      | 224.70     | 9.76         | 0.03         | 7.414    | 0.483          | 21.36         | 101.13     |
|                 | 104     | S     | 20.83619 | -156.12409 | 8.99        | 24.92       | 8.96        | 6675       | 15.50       | 151.76      | 24.49      | 185.64     | 13.60        | 0.00         | 7.504    | 0.872          | 22.24         | 104.03     |
|                 | 104     | B     | 20.83619 | -156.12409 | 9.30        | 43.40       | 416.08      | 7479       | 26.04       | 117.88      | 35.34      | 577.36     | 14.31        | 0.02         | 7.381    | 0.904          | 21.35         | 101.87     |
|                 | 105     | S     | 20.83633 | -156.12394 | 7.75        | 19.32       | 9.66        | 5916       | 16.43       | 107.38      | 24.18      | 136.36     | 13.72        | 0.00         | 7.495    | 0.249          | 22.00         | 102.64     |
|                 | 105     | B     | 20.83633 | -156.12394 | 10.54       | 35.28       | 15.12       | 6825       | 11.78       | 111.58      | 22.32      | 161.98     | 14.51        | 0.00         | 7.474    | 1.651          | 21.63         | 101.88     |
|                 | 106     | S     | 20.83638 | -156.12383 | 5.32        | 35.07       | 15.36       | 6015       | 7.13        | 120.86      | 12.45      | 171.29     | 13.16        | 2.67         | 7.431    | 0.343          | 21.82         | 96.61      |
|                 | 107     | S     | 20.83642 | -156.12382 | 12.03       | 30.22       | 9.07        | 5761       | 6.20        | 86.97       | 18.23      | 126.26     | 110.85       | 3.76         | 7.592    | 0.327          | 22.74         | 102.58     |
|                 | 108     | S     | 20.83647 | -156.12381 | 6.44        | 5.66        | 9.54        | 1548       | 7.13        | 126.54      | 13.57      | 141.74     | 2.05         | 32.52        | 8.033    | 0.203          | 25.54         | 103.84     |
|                 | 109     | S     | 20.83661 | -156.12379 | 6.39        | 4.91        | 8.35        | 943        | 8.06        | 107.85      | 14.45      | 121.11     | 2.12         | 33.08        | 8.062    | 0.343          | 25.63         | 104.61     |
|                 | 109     | S     | 20.83661 | -156.12379 | 6.68        | 4.62        | 8.61        | 1739       | 7.13        | 111.79      | 13.81      | 125.02     | 2.25         | 33.28        | 8.083    | 0.218          | 25.61         | 103.84     |
|                 | 110     | S     | 20.83683 | -156.12375 | 5.82        | 2.30        | 7.30        | 985        | 7.44        | 115.48      | 13.26      | 125.08     | 1.53         | 32.53        | 8.093    | 0.203          | 25.66         | 99.85      |
|                 | 110     | S     | 20.83683 | -156.12375 | 6.65        | 4.17        | 10.67       | 949        | 7.13        | 118.97      | 13.78      | 133.81     | 1.14         | 33.58        | 8.099    | 0.171          | 25.72         | 100.82     |
|                 | 111     | S     | 20.83709 | -156.12371 | 10.51       | 8.63        | 17.42       | 1287       | 4.96        | 94.30       | 15.47      | 120.35     | 0.92         | 32.13        | 8.113    | 0.187          | 25.53         | 100.82     |
|                 | 111     | S     | 20.83709 | -156.12371 | 6.01        | 3.04        | 7.43        | 850        | 7.44        | 101.21      | 13.45      | 111.68     | 0.88         | 33.79        | 8.116    | 0.171          | 25.75         | 101.62     |
| WAILUA IKI WEST | 101     | S     | 20.83693 | -156.12526 | 11.64       | 4.53        | 19.46       | 2220       | 5.27        | 104.30      | 16.91      | 128.29     | 13.75        | 4.65         | 7.711    | 0.530          | 23.76         | 101.50     |
|                 | 101     | B     | 20.83702 | -156.12521 | 12.20       | 12.93       | 2.24        | 4142       | 10.23       | 103.60      | 22.43      | 118.77     | 19.02        | 11.64        | 8.074    | 0.171          | 23.75         | 101.69     |
|                 | 102     | S     | 20.83711 | -156.12512 | 10.10       | 1.16        | 1.46        | 2800       | 11.78       | 139.80      | 21.88      | 142.42     | 15.20        | 20.46        | 8.158    | 0.086          | 24.36         | 98.79      |
|                 | 102     | B     | 20.83711 | -156.12512 | 11.95       | 9.30        | 3.03        | 2452       | 6.51        | 148.45      | 18.46      | 160.78     | 10.90        | 23.75        | 8.166    | 0.171          | 24.67         | 103.39     |
|                 | 103     | S     | 20.83729 | -156.12496 | 10.13       | 3.73        | 4.20        | 2533       | 7.44        | 96.60       | 17.57      | 104.53     | 5.33         | 23.33        | 8.178    | 0.109          | 25.17         | 104.70     |
|                 | 103     | B     | 20.83729 | -156.12496 | 7.74        | 5.15        | 10.31       | 1234       | 6.20        | 106.17      | 13.94      | 121.63     | 4.24         | 31.92        | 8.133    | 0.171          | 25.73         | 107.37     |
|                 | 104     | S     | 20.83766 | -156.12466 | 8.21        | 3.60        | 7.29        | 1738       | 6.51        | 119.83      | 14.72      | 130.72     | 2.75         | 30.29        | 8.146    | 0.109          | 25.67         | 107.19     |
|                 | 105     | S     | 20.83766 | -156.12466 | 6.72        | 4.51        | 6.14        | 1267       | 6.82        | 109.92      | 13.54      | 120.57     | 5.30         | 32.82        | 8.141    | 0.156          | 25.86         | 108.28     |
|                 | 106     | S     | 20.83660 | -156.12545 | 1.22        | 2.23        | 7.54        | 4107       | 13.95       | 97.18       | 15.17      | 106.95     | 13.14        | 0.18         | 7.385    | 0.312          | 22.82         | 101.16     |
|                 | 106     | B     | 20.83660 | -156.12545 | 4.61        | 7.94        | 7.79        | 4353       | 13.33       | 112.05      | 17.94      | 127.78     | 10.14        | 0.45         | 7.317    | 0.187          | 23.13         | 101.72     |
|                 | 107     | S     | 20.83649 | -156.12580 | 0.93        | 2.10        | 12.46       | 3197       | 10.85       | 127.12      | 11.78      | 141.68     | 9.88         | 0.00         | 7.421    | 0.187          | 23.22         | 102.62     |
|                 | 107     | B     | 20.83649 | -156.12580 | 25.11       | 31.22       | 139.44      | 7893       | 11.78       | 36.96       | 36.89      | 207.62     | 8.54         | 0.01         | 7.352    | 0.576          | 21.88         | 100.55     |
|                 | 108     | S     | 20.83651 | -156.12599 | 1.24        | 1.96        | 12.88       | 2970       | 9.92        | 98.42       | 11.16      | 113.26     | 11.60        | 0.00         | 7.355    | 0.249          | 23.35         | 102.67     |
|                 | 108     | B     | 20.83651 | -156.12599 | 0.62        | 1.96        | 7.84        | 3138       | 16.12       | 97.02       | 16.74      | 106.82     | 11.30        | 0.00         | 7.283    | 0.187          | 23.22         | 102.60     |



---

# **APPENDIX C:**

Terrestrial Flora and Fauna Technical  
Report for the Proposed East Maui Water  
Lease

SWCA Environmental Consultants







# Terrestrial Flora and Fauna Technical Report for the Proposed East Maui Water Lease

APRIL 2019

PREPARED FOR  
**Wilson Okamoto Corporation**

PREPARED BY  
**SWCA Environmental Consultants**



# **TERRESTRIAL FLORA AND FAUNA TECHNICAL REPORT FOR THE PROPOSED EAST MAUI WATER LEASE**

Prepared for

**Wilson Okamoto Corporation**  
1907 South Beretania Street, Suite 400  
Honolulu, Hawai'i 96826

Prepared by

**SWCA Environmental Consultants**  
307a Kamani Street  
Honolulu, Hawai'i 96813  
(808) 548-7899  
[www.swca.com](http://www.swca.com)

SWCA Project No. 43742

April 25, 2019





## **EXECUTIVE SUMMARY**

In May 2001, Alexander & Baldwin, Inc. (A&B) and its subsidiary, East Maui Irrigation Company, Limited (EMI) (also collectively referred to as A&B), filed an application for the Sale of Lease (Water License) at Public Auction (Water Lease Application) with the Board of Land and Natural Resources (BLNR) seeking a long-term (30-year) lease for the right, privilege, and authority to enter and go upon the License Area (Figure A-1, Appendix A) for the purpose of developing, diverting, transporting, and using government-owned water (Water Lease). The long-term lease has yet to be awarded due to court challenges and petitions.

An environmental impact statement (EIS) is being prepared by Wilson Okamoto Corporation (WOC) in support of the Water Lease Application. SWCA Environmental Consultants (SWCA) was contracted by WOC to assess terrestrial flora and fauna resources, including the potential for presence of state or federally listed threatened, endangered, proposed, or candidate species or rare species (hereafter referred to as special-status species). For well over a hundred years, the EMI Aqueduct System has diverted water collected within an approximately 50,000-acre area (Collection Area) that is comprised of the License Area, and approximately 17,000 acres of privately owned land.

The Proposed Action constitutes the issuance of a long-term Water Lease for the continued “right, privilege, and authority to enter and go upon” the License Area for the “purpose of developing, diverting, transporting, and using government owned waters” through the existing EMI Aqueduct System to deliver water to the County Of Maui Department of Water Supply (MDWS) for domestic and agricultural water needs in Upcountry Maui, including agricultural users at the Kula Agricultural Park (KAP) and the 262-acre KAP expansion, as well as a portion of the Nāhiku community. It will also allow for the continued provision of water to approximately 30,000 acres of agricultural lands (formerly in sugarcane) in Central Maui.

The maximum amount of water that can be awarded through the Water Lease will be determined by a recent related, but independent, action taken by the Commission on Water Resource Management (CWRM). On June 20, 2018, CWRM issued a decision and order setting Interim Instream Flow Standards (IIFS) for many of the stream within the License Area. The CWRM decision ordered full stream restoration for 10 streams<sup>1</sup> and some flow restoration on additional streams. Compliance with the CWRM decision is required independent of the Water Lease Application.

The assessment of flora and fauna resources includes the License Area in East Maui and the former sugarcane fields of Central Maui (collectively, the Study Area). The assessment of the License Area considers the amount of water restored to streams by the IIFS. The assessment of the former sugarcane fields in Central Maui pertains to the impacts of using the water made available through the Water Lease for diversified agriculture relative to the former sugarcane monocrop and the current mostly unirrigated fallow condition. The areas in Upcountry Maui and Nāhiku served by the MDWS using water obtained through the EMI Aqueduct System are not assessed in this report. These areas are highly altered urban and agricultural environments maintained by imported water. The Proposed Action is not anticipated to significantly reduce the amount of water currently available for these areas, although future growth may be limited. Under a more restricted availability of water, new sources of water may need to be developed. If not, the frequency and duration of historic restrictions on water usage during drought conditions may increase. Such changes are not anticipated to affect terrestrial flora and fauna resources.

---

<sup>1</sup> Puolua (also known as Huelo) Stream, is a tributary to Hanehoi Stream, and per the June 20, 2018, CWRM IIFS Decision and Order, was ordered to be fully restored and is included in the count of “fully restored streams.”



The flora and fauna surveys were conducted by the SWCA botanist and wildlife biologist from November 28, 2017, to December 1 (ground surveys), 2017, and on January 5, 2018 (aerial surveys). Ground (automotive and pedestrian) and aerial (helicopter) surveys were conducted to determine whether vegetation types and species found during previous surveys and mapping efforts are still present in the Study Area and to record any notable changes. Fauna surveys consisted of both ground and aerial surveys and consisted of visual observations (aided by 10 × 42–millimeter (mm) binoculars) and auditory vocalization identifications. All birds, mammals, reptiles, amphibians, fish, and invertebrate species seen or heard and any sign (scat or tracks) were noted. The survey focused on approximately 33,000 acres of East Maui (License Area) and approximately 30,000 acres of Central Maui (Service Area). Collectively, the License and Service Areas make up the Study Area for this study.

Both ground and aerial flora surveys determined that the Hawai‘i Gap Analysis Program vegetation data layer produced by Gon et al. (2006) was highly representative of the vegetation found in the Study Area. The License Area comprises primarily open and closed ‘ōhi‘a (*Metrosideros polymorpha*) forest, and the Service Area comprises primarily agriculture. No special-status plant species were found during ground surveys of the License Area or Service Area. However, critical habitat for 18 special-status species is located in the License Area *mauka* (upslope) of the EMI Aqueduct System, and portions of the EMI Aqueduct System transect wet cliffs and other suitable habitat for these species. For this reason, a biological monitor is recommended to be on-site when maintenance activities are conducted in areas where special-status species are likely to be encountered.

Three endemic (native) avifauna—‘apapane (*Himatione sanguinea*), Hawai‘i ‘amakihi (*Chlorodrepanis virens wilsoni*), and ‘i‘iwi (*Drepanis coccinea*)—were found during ground surveys of the License Area in East Maui, one of which, the ‘i‘iwi, is federally listed as threatened. Ground surveys of the Service Area found 13 bird species that are protected by the Migratory Bird Treaty Act, three of which are federally and state listed. In addition to species seen during the surveys, 12 special-status species could occur in the Study Area: crested honeycreeper (*Palmeria dolei*), Maui parrotbill (*Pseudonestor xanthophrys*), Hawaiian duck (*Anas wyvilliana*), Hawaiian goose (*Branta sandvicensis*), Hawaiian petrel (*Pterodroma sandwichensis*), Newell’s shearwater (*Puffinus auricularis newelli*), band-rumped storm-petrel (*Oceanodroma castro*), Hawaiian hoary bat (*Lasiurus cinereus semotus*), Blackburn’s sphinx moth (*Manduca blackburni*), flying earwig Hawaiian damselfly (*Megalagrion nesiotes*), Pacific Hawaiian damselfly (*Megalagrion pacificum*), and orangeblack Hawaiian damselfly (*Megalagrion xanthomelas*). Recommendations to avoid and minimize impacts to these species are provided in this report.

# CONTENTS

|          |  |           |
|----------|--|-----------|
| <b>1</b> | <b>Introduction .....</b>                        | <b>1</b>  |
| 1.1      | Proposed Action .....                            | 1         |
| 1.2      | No Action Alternative .....                      | 3         |
| 1.3      | Water Lease Volume Alternative.....              | 3         |
| 1.4      | Water Lease Term Alternative .....               | 3         |
| 1.5      | Management Alternative .....                     | 3         |
| 1.6      | Greater Public Access Alternative .....          | 4         |
| <b>2</b> | <b>Regulatory Environment.....</b>               | <b>4</b>  |
| 2.1      | Endangered Species Act.....                      | 4         |
| 2.2      | Migratory Bird Treaty Act .....                  | 4         |
| 2.3      | Hawai'i Revised Statutes Chapter 195D.....       | 5         |
| <b>3</b> | <b>Literature Review.....</b>                    | <b>5</b>  |
| <b>4</b> | <b>Field Methods .....</b>                       | <b>6</b>  |
| 4.1      | Flora.....                                       | 6         |
| 4.1.1    | Vegetation Map Verification: Aerial Survey ..... | 6         |
| 4.2      | Fauna .....                                      | 7         |
| <b>5</b> | <b>Results.....</b>                              | <b>7</b>  |
| 5.1      | Flora.....                                       | 7         |
| 5.1.1    | Vegetation Map Verification: Aerial Survey ..... | 7         |
| 5.1.2    | Ground-Based Verification: License Area.....     | 9         |
| 5.1.3    | Ground-Based Verification: Service Area .....    | 11        |
| 5.1.4    | Special-Status Flora and Critical Habitat.....   | 12        |
| 5.2      | Fauna .....                                      | 13        |
| 5.2.1    | Avifauna .....                                   | 15        |
| 5.2.2    | Mammals .....                                    | 16        |
| 5.2.3    | Terrestrial Reptiles and Amphibians.....         | 16        |
| 5.2.4    | Insects and other Invertebrates .....            | 16        |
| 5.2.5    | Special-Status Fauna and Critical Habitat.....   | 16        |
| <b>6</b> | <b>Impacts .....</b>                             | <b>18</b> |
| 6.1      | Proposed Action .....                            | 18        |
| 6.1.1    | General .....                                    | 19        |
| 6.1.2    | Flora.....                                       | 20        |
| 6.1.3    | Fauna .....                                      | 20        |
| 6.2      | No Action Alternative .....                      | 22        |
| 6.3      | Water Lease Volume Alternative.....              | 22        |
| 6.4      | Water Lease Term Alternative .....               | 23        |
| 6.5      | Management Alternative .....                     | 23        |
| 6.6      | Greater Public Access Alternative .....          | 23        |
| <b>7</b> | <b>Avoidance and Minimization Measures.....</b>  | <b>24</b> |
| 7.1      | Flora.....                                       | 24        |
| 7.2      | Fauna .....                                      | 24        |
| 7.2.1    | Seabirds .....                                   | 25        |
| <b>8</b> | <b>Literature Cited.....</b>                     | <b>26</b> |

## Appendices

|  |  |
|--|--|
| Appendix A. Maps   |  |
| Appendix B. Vegetation Cover Descriptions  |  |
| Appendix C. Photographs of Vegetation Types for the Proposed East Maui Water Lease   |  |
| Appendix D. Voucher Specimen Descriptions  |  |
| Appendix E. Endangered and Threatened Fauna Species (Federal and State) with the Potential to Occur in the License Area and Service Area |  |

## Tables

|   |    |
|---|----|
| Table 1. East Maui Flora and Fauna Literature Review .....  | 5  |
| Table 2. Area of Vegetation Cover Types Present in the License Area .....   | 8  |
| Table 3. Area of Vegetation Cover Types Present in the Service Area .....   | 8  |
| Table 4. Endangered or Threatened Plant Species with Critical Habitat within the License Area.....                                    | 12 |
| Table 5. Wildlife Habitat Types.....  | 14 |
| Table 6. Area of Wildlife Habitat Types in the Study Area .....   | 14 |
| Table 7. Birds Observed by SWCA in and near the Service and License Areas.....  | 15 |
| Table 8. Special-Status Fauna with the Potential to Occur in the Study Area.....  | 17 |
| Table 9. License Area Streams Subject to the IIFS Decision and their Restoration Type .....   | 19 |
| Table 10. Proposed Action Impact of Stream Restoration Type on the Habitat of Special-Status Hawaiian Damselflies and Mosquitos ..... | 21 |

# 1 INTRODUCTION

In May 2001, Alexander & Baldwin, Inc. (A&B) and its subsidiary, East Maui Irrigation Company, Limited (EMI) (also collectively referred to as A&B), filed an application for the Sale of Lease (Water License) at Public Auction (Water Lease Application) with the Board of Land and Natural Resources (BLNR) seeking a long-term (30-year) lease for the right, privilege, and authority to enter and go upon the License Area (Figure A-1, Appendix A) for the purpose of developing, diverting, transporting, and using government-owned water (Water Lease). The long-term lease has yet to be awarded due to court challenges and petitions. However, for well over a hundred years, the EMI Aqueduct System has diverted water collected within an approximately 50,000-acre area (Collection Area) of which approximately 33,000 acres are owned by the State of Hawai'i (License Area) and approximately 17,000 acres are privately owned.

An environmental impact statement (EIS) is being prepared by Wilson Okamoto Corporation (WOC) in support of the Water Lease Application. SWCA Environmental Consultants (SWCA) was contracted by Wilson Okamoto Corporation to assess terrestrial flora and fauna resources, including the potential for the presence of state or federally listed threatened, endangered, proposed, or candidate species or rare species (hereafter referred to as special-status species). In general, this focuses on approximately 33,000 acres in East Maui (License Area), and approximately 36,000 acres<sup>2</sup> of former sugar fields in Central Maui (Service Area), which are collectively referred to as the Study Area (see Figure A-1, Appendix A). This report details the field methods, results, impacts analysis, and suggested avoidance and minimization measures for the project.

## 1.1 Proposed Action

The Proposed Action constitutes the issuance of a long-term Water Lease for the continued right, privilege, and authority to enter and go upon the License Area for the purpose of developing, diverting transporting, and using government owned water through the existing EMI Aqueduct System to deliver water to Upcountry Maui, including agricultural users at the Kula Agricultural Park (KAP) and the 262-acre KAP expansion, as well as the Nāhiku community. It will also allow for the continued provision of water to approximately 30,000 acres of agricultural lands (formerly in sugarcane) in Central Maui within the approximately 36,000-acre Service Area.

The maximum amount of water that can be awarded through the Water Lease will be determined by a recent related, but independent, action taken by the Commission of Water Resource Management (CWRM). On June 20, 2018, the CWRM issued a decision and order setting the Interim Instream Flow Standards (IIFS) for many of the streams in the License Area. The CWRM decision ordered full stream restoration for 10 streams and some flow restoration on additional streams. Compliance with the CWRM decision is required independent of the Water Lease Application.

The assessment of flora and fauna resources includes the Study Area. The assessment of the License Area considers the amount of water restored to streams by the IIFS. The assessment of the former sugarcane fields in Central Maui pertains to the impacts of using the water made available through the Water Lease for diversified agriculture relative to the former sugarcane monocrop and the current mostly unirrigated fallow condition. The areas in Upcountry Maui and Nāhiku served by the MDWS using water obtained through the EMI Aqueduct System are not assessed in this report. These areas are highly altered urban and agricultural environments maintained by imported water. The Proposed Action is not anticipated to significantly reduce the amount of water currently available for these areas, although future growth may

---

<sup>2</sup> There is approximately 30,000 acres of agricultural land in the Service Area. The remaining approximately 6,000 acres includes roads, gulches, and patches of uncultivated land, as described in Table 3.

be limited. Under a more restricted availability of water, new sources of water may need to be developed. If not, the frequency and duration of historic restrictions on water usage during drought conditions may increase. Such changes are not anticipated to affect terrestrial flora and fauna resources.

The License Area encompasses approximately 33,000 acres of State Forest Reserve on the north slope of Haleakalā. The License Area lies *mauka* (upslope) of Hāna Highway (Route 36) and is the only major thoroughfare that extends through East Maui. Most of the mauka boundary of the Nāhiku watershed adjoins more state land. A small portion of it and a small portion of the Ke‘anae watershed abuts federal land comprising the Haleakalā National Park. The mauka boundaries of the Huelo, Honomanū, and most of the Ke‘anae watersheds are bordered by privately owned land.

The purpose of the Water Lease is to allow the lessee the ability to continue to go on lands owned by the state to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System and would allow continued operation of the EMI Aqueduct System to deliver water to the Maui County Department of Water Supply (MDWS) for domestic and agricultural water needs in Upcountry Maui; for the Nāhiku community, which draws on average 41,000 gallons per day directly from the EMI Aqueduct System; and for agricultural users at the KAP and a proposed future 262-acre expansion of KAP. It would also allow the continued provision of water to approximately 30,000 acres of agricultural lands (formerly in sugarcane) in Central Maui included within the approximately 36,000-acre Service Area. The area to which water would be delivered is referred to as the Service Area (see Figure A-1, Appendix A).

The proposed Water Lease will ensure that the EMI Aqueduct System, which enabled the cultivation of naturally non-arable lands in Central Maui, will continue to serve the community and Maui’s rich agricultural heritage and will enhance the sustainability and diversity of Maui’s economy. Although sugarcane activities were terminated in 2016, A&B has stated that its goal is to put as much of that former sugarcane land into diversified agricultural uses as is economically feasible. On December 20, 2018, A&B sold approximately 40,000 acres, including these Central Maui agricultural fields (i.e., the Service Area), to Mahi Pono, LLC (Mahi Pono). Mahi Pono has stated that it intends to cultivate a variety of crops within the Service Area. Mahi Pono is presently a partner in the ownership and management of the EMI Aqueduct System. The utilization of waters from the EMI Aqueduct System will be an essential element to the success of any diversified agricultural pursuits.

The EMI Aqueduct System continues to serve a critical role in providing Upcountry Maui and the Nāhiku community with the ability to meet domestic and agricultural water demands, and should the delivery of water from the EMI Aqueduct System be curtailed, Upcountry Maui and the Nāhiku community would be left without a reliable source of water. The Water Lease is not expected to allow more water than the amount available for diversion after the CWRM IIFS (IIFS) Decision and Order (D&O) (CWRM 2018). The Draft EIS will address the anticipated timing of the Proposed Action.

In general, the objectives of the issuance of the proposed water lease (Proposed Action) are to

- preserve and maintain the EMI Aqueduct System,
- continue to meet domestic and agricultural water demands in Upcountry Maui,
- continue to provide water for agricultural purposes in Central Maui, and
- continue to serve community water demands in Nāhiku.

The EMI Aqueduct System encompasses approximately 388 separate intakes, over 24 miles of ditches, and 50 miles of tunnels, as well as numerous small dams, intakes, pipes, siphons, and flumes. The EMI Aqueduct System is composed of four major ditches: the Wailoa Ditch, New Hamakua Ditch, Lowrie Ditch, and Haiku Ditch. The Wailoa Ditch starts at Makapipi Stream at approximately 1,350 feet and ends at Kamole Weir at approximately 1,150 feet. The New Hamakua Ditch starts at Alo Stream at



approximately 1,260 feet and ends at Kauhikoa Maliko at approximately 900 feet. The Lowrie Ditch starts at Nailiilihaele Stream at approximately 660 feet and ends at Lowrie at Maliko at approximately 540 feet. Haiku Ditch starts at Kailua Stream at approximately 480 feet and ends at Haiku Maliko at approximately 320 feet. There are 36 identified streams by CWRM within the License Area; the EMI Aqueduct System historically diverted surface water from 34 of these streams<sup>3</sup>.

## **1.2 No Action Alternative**

Under this alternative, the right, privilege, and authority to enter and go upon the License Area for the purpose of developing, diverting, transporting, and using government-owned waters would not be offered for sale as a lease at public auction by the state. Consequently, no entity (including A&B) would have the right to use waters derived from state lands. As a consequence of this alternative, both domestic and agricultural water demands in Upcountry Maui, as well as the community of Nāhiku, and agricultural demands in Central Maui would need to be met by alternative water sources that may include but are not limited to desalinization of seawater or brackish groundwater or the extraction of fresh groundwater from wells that currently do not exist. Another option may be to continue obtaining non-government-owned waters from the EMI Aqueduct System's Collection Area, as well as from privately owned lands outside of the License Area through the EMI Aqueduct System, if continued maintenance of the system for that purpose is economically feasible. It is unknown whether sufficient groundwater resources exist in either Central or Upcountry Maui that could meet these water demands. It is anticipated that the development of alternative water source infrastructure would be prohibitively expensive, and, depending upon the specific sources or a combination of sources, could result in significant direct adverse impacts to the environment. While water demands in Central and Upcountry Maui could be potentially minimized through the implementation of water conservation measures, the extent to which such efforts would serve to counter reduced levels of water service is uncertain.

## **1.3 Water Lease Volume Alternative**

The Water Lease Volume alternative is understood as a modification (reduction) to the volume of water that is diverted from East Maui streams that would be available for diversion after the compliance with the CWRM IIFS D&O. As a consequence of this alternative, the overall amount of water that could be diverted to meet domestic and agricultural water demands in Upcountry Maui, as well as the community of Nāhiku, and agricultural demands in Central Maui would be reduced.

## **1.4 Water Lease Term Alternative**

The Water Lease Term Alternative is understood as a modification to the term for which the Water Lease will be awarded for other than the proposed term of 30 years. As a consequence of this alternative, should the lease term be shorter, diversified agriculture may not be able to come to fruition in Central Maui (i.e., the Service Area).

## **1.5 Management Alternative**

The Management Alternative is understood as a change of the entity that manages the diversion of water from East Maui streams. Currently, the EMI Aqueduct System is managed by EMI, which is jointly owned by A&B and Mahi Pono. As a consequence of this alternative, the EMI Aqueduct System would in turn be managed by another entity other than the current operators.

---

<sup>3</sup> The Draft Environmental Impact Statement identifies 37 streams within the License Area; Puakea Stream was not recognized by CWRM but is a stream within the License Area that is diverted by the EMI Aqueduct System.

## 1.6 Greater Public Access Alternative

The Greater Public Access Alternative is understood as the License Area being reduced in size to only cover the area where the EMI Aqueduct System and existing access roads (presumably with an additional buffer area) exist, allowing more public access into the area from current levels. As a result, public access would increase in the current License Area.

## 2 REGULATORY ENVIRONMENT

This section describes laws and regulations applicable to terrestrial flora and fauna in the context of the project.

### 2.1 Endangered Species Act

The federal Endangered Species Act (ESA) of 1973, as amended, protects wildlife and plant species that have been listed as threatened or endangered. It is designed to conserve the ecosystem on which species depend. Candidate species, which may be listed in the near future, are not afforded protection under the ESA until they are formally listed as endangered or threatened. Section 9 of the ESA and rules promulgated under Section 4(d) of the ESA prohibit the unauthorized take of any endangered or threatened species of wildlife listed under the ESA. Under the ESA, the term *take* means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect species listed as endangered or threatened, or to attempt to engage in any such conduct.” As defined in regulations, the term *harm* means “an act that actually kills or injures wildlife; it may include significant habitat modification or degradation, which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering” (50 Code of Federal Regulations [CFR] 17.3). The rules define *harass* to mean “an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent, as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering” (50 CFR 17.3).

The ESA affords maximum legal protections to wildlife species listed as threatened or endangered under the law and also provides authorization for incidental take permits (ITP) for take that occurs incidental to otherwise legal operations. To comply with federal laws, additional measures must be taken to ensure that take of ESA-listed wildlife species does not occur. Any fatality of a listed wildlife species should be reported to the U.S. Fish and Wildlife Service (USFWS) and the Hawai‘i Division of Forestry and Wildlife (DOFAW) as soon as possible, and an incident report should be filed within 24 hours of detection. It is not prohibited by the ESA to destroy, damage or move listed plants unless such activities involve an ESA-listed plant species on federal land or if the action occurs in violation of state laws. If private land is developed, with no federal jurisdiction involved, and in accordance with state law, then the potential destruction, damage, or movement of ESA-listed plants does not violate the ESA. Although there is an ITP process for wildlife in section 10 (a)(1)(B) of the ESA, there is no such process for plants.

### 2.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, prohibits the take of migratory birds. A list of birds protected under MBTA-implementing regulations is published under 50 CFR 10.13. Unless permitted by regulations, under the MBTA, “it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product” (16 United States Code 703–712). The MBTA provides no process for authorizing incidental take of MBTA-protected

birds. As a result, birds that are not covered under the ESA that may be adversely affected by the proposed project cannot be covered by take authorizations. Furthermore, a recent memorandum from the Department of the Interior (M-37050, December 22, 2017) concludes that the MBTA does not prohibit the incidental taking of migratory birds. Regardless, incidental take of individual MBTA-protected species is unlikely to adversely affect the species as a whole; however, any take of MBTA-protected species should be documented and reported in a similar manner to any endangered or threatened species of wildlife listed under the ESA.

## 2.3 Hawai'i Revised Statutes Chapter 195D

The purpose of Hawai'i Revised Statutes (HRS) Chapter 195D is "to insure the continued perpetuation of indigenous aquatic life, wildlife, and land plants, and their habitats for human enjoyment, for scientific purposes, and as members of ecosystems." Section 195D-4 states that any endangered or threatened species of fish or wildlife recognized by the ESA shall be so deemed by the state statute. Like the ESA, the unauthorized take of such endangered or threatened species is prohibited (HRS 195D-4[e]), but incidental take licenses can be obtained (HRS Section 195D-21). In addition to species protected under the ESA, rules adopted under HRS Section 195D-4 allow for the listing of indigenous species as threatened or endangered due to the following reasons:

- Habitat destruction or alteration (current or predicted)
- Overexploitation
- Disease or predation
- Lack of regulatory mechanisms
- Other factors threatening the species' continued existence

Determinations are made based on any and all available sources of data (scientific, commercial, and other) and consultation with appropriate agencies (federal, state, and county) and interested organizations and parties.

## 3 LITERATURE REVIEW

SWCA conducted a literature review of published articles, government reports, and scholarly reports in preparation for field surveys. Table 1 lists the reports reviewed and pertinent items gleaned from each report.

**Table 1. East Maui Flora and Fauna Literature Review**

| Document   | Relevance   |
|--|---|
| <i>Hanawi Natural Area Reserve Management Plan</i> (DLNR 1989)   | Describes the general setting, flora, and fauna of a 7,500-acre parcel that occurs within the License Area.   |
| <i>Waikamoi Preserve East Maui Irrigation (EMI) Addition: Long Range Management Plan</i> (The Nature Conservancy, Maui Program 2014) | Describes the flora, fauna, and rare species present in a 3,721-acre parcel adjacent to the License Area.   |
| <i>Vegetation Maps of the Upland Plant Communities on the Islands of Hawai'i, Maui, Moloka'i, and Lana'i</i> (Jacobi 1989)           | Summarizes the results of a large-scale vegetation mapping project on the islands of Hawai'i, Maui, Moloka'i, and Lana'i that was developed to determine the current status of native forest birds and their associated habitats. |

| Document  | Relevance  |
|---|--|
| <i>Mapping Plant Species Ranges in the Hawaiian Islands: Developing a Methodology and Associated GIS Layers</i> (Price et al. 2007)   | Documents the methods used to map the geographic ranges of plant species in upland areas of the Hawaiian Islands using a geographic information system (GIS) and details several practical uses for species range maps.  |
| <i>Final Environmental Assessment for Hana Highway Storm Damage Repairs Huelo Towards Nahiku</i> (State of Hawaii, Department of Transportation, Highways Division 1993)      | Describes repairs to the Hāna Highway that encroached on a Special Management Area within the License Area.  |
| <i>Multi-Scale Analysis of Keanae Valley-Koolau Gap</i> (Myers 1998b)   | Evaluates the use of satellite remote sensing, aircraft-based remote sensing, aerial photography, and ground-based survey data for monitoring native and alien vegetation species in East Maui.  |
| <i>Land Use and Vegetation Change in the Windward East Maui Watershed</i> (Myers 1998a)   | Describes a study that tracked individual trees or stands of vegetation in windward East Maui over the course of 50 years, which provides a summary of the dynamic vegetation changes in this area over time.  |
| <i>Draft Revised Recovery Plan for Hawaiian Forest Birds</i> (USFWS 2003a)  | Describes federally listed forest bird fauna in the License Area.  |
| <i>Recovery Plan for Hawaiian Waterbirds</i> (USFWS 2011)   | Describes federally listed waterbird locations on Maui.  |
| <i>Conservation Biology of Hawaiian Forest Birds</i> (Pratt et al. 2009)  | Describes habitat and life history requirements for Hawaiian forest birds.   |
| <i>Assessment of the Environmental Impact of Stream Diversions on 21 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model</i> (Trutta 2019) | A project-specific survey that combines the results of habitat and diversion assessments and biotic surveys with the HSHEP model to assess issues associated with the current stream diversions and potential impacts to optimizing water withdrawal, including loss of instream habitat from construction or diversion of streamflow, creation of barriers to stream animal upstream movement, and entrainment of downstream drifting larvae. |

## 4 FIELD METHODS

### 4.1 Flora

Flora surveys consisted of a combination of ground (automotive and pedestrian) and aerial (helicopter) surveys of the Study Area. Ground surveys took place from November 28, 2017, to December 1, 2017, to determine whether vegetation types and species found during previous surveys and mapping efforts are still present in the Study Area and to record any notable changes. Rocky outcrops, gulches, waterfalls, cliffsides, and other areas likely to contain native species were closely examined.

Plants recorded during the survey are indicative of the season (rainy versus dry) and the environmental conditions at the time of the survey. It is likely that additional surveys conducted at a different time of the year would result in minor variations in the species and abundances of plants observed.

An analysis was performed in ArcMap to link special-status plants to the Hawai'i Gap Analysis Program (HIGAP) vegetation classes where they are most likely to occur. This was done by intersecting the USFWS Critical Plant habitat shapefile with the HIGAP raster to calculate which HIGAP vegetation classes were found within each critical habitat polygon.

#### 4.1.1 ***Vegetation Map Verification: Aerial Survey***

The HIGAP data layer (Gon et al. 2006) was determined to be the most representative of the Study Area. To verify the HIGAP vegetation layer across the Study Area, SWCA conducted an aerial (helicopter)

survey on January 5, 2018. Meandering transects were flown throughout the Study Area with the purpose of matching HIGAP polygons with observed vegetation. All data was mapped and analyzed using ArcGIS 10.5 software. The following equipment was used:

- A Trimble Geo Explorer XT 6000 Series global positioning system (GPS) collected point data using ArcPad software from Esri and tracked log data for ground surveys.
- A Samsung Tablet collected GPS data during the helicopter survey with Collector for ArcGIS software.
- A Garmin Aera 500 Series portable aviation GPS assisted in programming a flight plan for the pilot and collecting flight path track data for post-survey analysis using Garmin BaseCamp software.
- iPhone movies and photographs were taken during the helicopter survey.
- A Canon PowerShot SX530 HS was used to collect photographs during the helicopter survey.

## 4.2 Fauna

Fauna surveys consisted of a combination of ground (automotive and pedestrian) and aerial (helicopter) surveys of the Study Area. Ground surveys were conducted from November 28, 2017, to December 1, 2017, and consisted of visual observations (aided by 10 × 42–millimeter binoculars) and auditory vocalization identifications. All birds, mammals, reptiles, amphibians, fish, and invertebrate species seen or heard and any sign (scat or tracks) were noted. Field surveys for the endangered Hawaiian hoary bat, or ‘ope‘ape‘a (*Lasiurus cinereus semotus*), were conducted by noting areas of suitable foraging and roosting habitat as indicators of potential presence; acoustic surveys were not conducted. An aerial survey took place on January 5, 2018, from 10:00 a.m. to 2:00 p.m. to evaluate potential habitat types for federal- and state-listed species.

## 5 RESULTS

The following section describes the results of the flora and fauna ground and aerial surveys in the Study Area. The Study Area includes the License Area in East Maui as well as the Service Area encompassing approximately 33,000 acres of former sugar land in Central Maui. As discussed previously, the areas served by the MDWS in Upcountry Maui, Nāhiku, and the KAP are excluded.

### 5.1 Flora

#### 5.1.1 Vegetation Map Verification: Aerial Survey

Following the aerial survey, the HIGAP vegetation data layer (Gon et al. 2006) was determined to be highly representative of the Study Area. The HIGAP vegetation layer describes 19 vegetation cover types in the License Area and 20 in the Service Area (Figures A-2 and A-3, Appendix A). Each vegetation cover type and the area of each is described in detail in Table B-1 in Appendix B. Tables 2 and 3 below list the area of each vegetation cover type present in the License and Service Areas, respectively. The License Area is composed primarily of open and closed ‘ōhi‘a forest. The Service Area comprises primarily agriculture.



**Table 2. Area of Vegetation Cover Types Present in the License Area**

| <b>Vegetation Cover Type</b>                   | <b>Area (acres)</b> | <b>% of Total</b> |
|--|---------------------|-------------------|
| Open 'Ōhi'a Forest (uluhe)                     | 10,934              | 33%               |
| Closed 'Ōhi'a Forest (native shrubs)           | 8,575               | 26%               |
| Alien Forest                                   | 7,658               | 23%               |
| Closed 'Ōhi'a Forest (uluhe)                   | 1,527               | 5%                |
| Uncharacterized Open-Sparse Vegetation         | 1,430               | 4%                |
| Uluhe Shrubland                                | 658                 | 2%                |
| Closed Koa-'Ōhi'a Forest (uluhe)               | 611                 | 2%                |
| Uncharacterized Shrubland                      | 579                 | 2%                |
| Alien Grassland                                | 209                 | 1%                |
| Uncharacterized Forest                         | 172                 | 1%                |
| Native Wet Cliff Vegetation                    | 145                 | < 1%              |
| Closed Koa-'Ōhi'a Forest (native shrubs)       | 139                 | < 1%              |
| Native Shrubland/Sparse 'Ōhi'a (native shrubs) | 82                  | < 1%              |
| Deschampsia Grassland                          | 22                  | < 1%              |
| Native Shrubland (alien grasses)               | 22                  | < 1%              |
| Open 'Ōhi'a Forest (native shrubs)             | 10                  | < 1%              |
| Very Sparse Vegetation to Unvegetated          | 8                   | < 1%              |
| Kikuyu Grass Grassland/Pasture                 | 2                   | < 1%              |
| Low Intensity Developed                        | 1                   | < 1%              |
| <b>Total</b>                                   | <b>32,784</b>       | <b>100%</b>       |

**Table 3. Area of Vegetation Cover Types Present in the Service Area**

| <b>Vegetation Cover Type</b>                    | <b>Area (acres)</b> | <b>% of Total</b> |
|---|---------------------|-------------------|
| Agriculture                                     | 30,538              | 83%               |
| Alien Forest                                    | 3,192               | 9%                |
| Alien Grassland                                 | 1,247               | 3%                |
| Open Kiawe Forest and Shrubland (alien grasses) | 476                 | 1%                |
| Water   | 358                 | 1%                |
| Low Intensity Developed                         | 313                 | 1%                |
| Uncharacterized Open-Sparse Vegetation          | 275                 | 1%                |
| Closed Kiawe - Koa Haole Forest and Shrubland   | 173                 | < 1%              |
| Alien Shrubs and Grasses                        | 57                  | < 1%              |
| Very Sparse Vegetation to Unvegetated           | 34                  | < 1%              |
| Kikuyu Grass Grassland / Pasture                | 31                  | < 1%              |
| High Intensity Developed                        | 25                  | < 1%              |
| Closed Ōhi'a Forest (native shrubs)             | 24                  | < 1%              |
| Alien Shrubland                                 | 17                  | < 1%              |
| Open Ōhi'a Forest (uluhe)                       | 16                  | < 1%              |

| Vegetation Cover Type                           | Area (acres)  | % of Total  |
|---|---------------|-------------|
| Deschampsia Grassland                           | 14            | < 1%        |
| Undefined                                       | 9             | < 1%        |
| Native Shrubland / Sparse Ōhi'a (native shrubs) | 8             | < 1%        |
| Uncharacterized Forest                          | 1             | < 1%        |
| Uncharacterized Shrubland                       | 0             | < 1%        |
| <b>Total</b>                                    | <b>36,808</b> | <b>100%</b> |

### 5.1.2 Ground-Based Verification: License Area

Findings from the November 28, 2017, to December 1, 2017 flora (botanical) ground surveys of the License Area yielded results consistent with the vegetation types described in Gon et al. (2006) and with the description of plant communities cited in the Environmental Impact Statement Preparation Notice (EISPN) for the proposed Water Lease (EISPN 2017).

Ground surveys focused on access roads and aqueducts, which lie within the lower-elevation portions of the License Area. According to Gon et al. (2006), the vegetation within these lower-elevation areas consists largely of a heterogeneous mosaic dominated by Alien Forest vegetation, with occasional Open Ōhi'a Forest, Closed Ōhi'a Forest, and Uluhe Shrubland scattered throughout (see Figure A-2, Appendix A). The Native Wet Cliff Vegetation type was rarely encountered and was found at the upper elevational reaches of access roads. Lower portions of Pi'ina'au Road were described by Gon et al. as Uncharacterized Open-Sparse Vegetation, which was confirmed during ground surveys.

Descriptions of each vegetation type found during ground surveys of the License Area are below. This report uses the same terms for vegetation types used in Gon et al. (2006); however, the ground surveys demonstrated more complexity to the vegetation than can be seen from the air. For this reason, the vegetation types described below may not directly correspond with the descriptions given by the Gon et al. report.

#### 5.1.2.1 ALIEN FOREST

Alien Forest was the most common vegetation type seen during ground surveys, and the HIGAP vegetation layer indicates that this vegetation type accounts for 23% of the vegetation in the License Area (see Table 2; Figure C-1, Appendix C). The description of this vegetation type in Gon et al. (2006) is as follows: "Mixed, typically dense canopies of alien tree species, often plantation forest plantings, with dominants including, but not limited to: *Eucalyptus*, *Casuarina*, *Falcataria*, *Araucaria*, *Fraxinus*, *Melaleuca*, *Psidium*, and *Grevillea* spp." Paperbark (*Melaleuca quinquenervia*) and eucalyptus (*Eucalyptus* spp.), likely introduced as forestry species, were found during the ground surveys to be the predominant overstory species in this vegetation type. Shoebutt ardisia (*Ardisia elliptica*) and strawberry guava (*Psidium cattleianum*) were common throughout the midstory, and understory species included a variety of non-native grass species such as basketgrass (*Oplismenus hirtellus* spp. *hirtellus*), Job's tears (*Coix lachryma-jobi*), and bristly foxtail (*Setaria verticillata*), in addition to herbaceous species such as Koster's curse (*Clidemia hirta*), Spanish needle (*Bidens pilosa*), and tick trefoil (*Desmodium triflorum*). 'Ie'ie (*Freycinetia arborea*), a native liana, and laua'e haole (*Phlebodium aureum*), a non-native epiphytic fern, can occasionally be seen twining through the midstory in this vegetation type.

### 5.1.2.2 OPEN/CLOSED ‘ŌHI‘A FOREST

Though less commonly seen during ground surveys, which focused on disturbed lowland areas dominated by non-native species, the Closed and Open ‘Ōhi‘a Forest vegetation type accounts for over 60% of the vegetation in the License Area (Figure C-2, Appendix C). Gon et al. (2006) describe this vegetation type as follows: “Vegetation dominated by an open or closed canopy of ‘Ōhi‘a (*Metrosideros polymorpha*) and other native trees, with an understory dominated by hāpu‘u tree ferns (*Cibotium* spp.), alien grasses, native shrubs, or uluhe (*Dicranopteris linearis* and/or other native mat ferns, e.g., *Sticherus*, *Diplopterygium*), typically at lowland-montane elevations in mesic-wet zones.” A strictly native species-dominated, closed-canopy overstory was rarely seen during ground surveys; instead, open ‘Ōhi‘a forests tended to have native species such as ‘Ōhi‘a, pāpala kēpau (*Pisonia grandis*), and lapalapa (*Cheirodendron trigynum*) co-dominating with invasive species such as African tulip tree (*Spathodea campanulata*) and Formosa koa (*Acacia confusa*). The midstory was often a co-dominant mixture of native and non-native as well, with natives such as hāpu‘u fern (*Cibotium* sp.) and koa (*Acacia koa*) blending with invasive species such as shoebutton ardisia, mule’s foot fern (*Angiopteris invecta*), and strawberry guava. The understory frequently consisted of uluhe with a mixture of non-native herbaceous species along the margins, including glorybush (*Tibouchina herbacea*), white ginger (*Hedychium coronarium*), Koster’s curse, Spanish needle, and Job’s tears.

### 5.1.2.3 ULUHE SHRUBLAND

Uluhe-dominated slopes were seen on ground surveys occurring adjacent to ‘Ōhi‘a forest on relatively steep slopes up and downhill from access roads (see Figure C-2, Appendix C). These areas were characterized by a generally monotypic understory layer of uluhe with the sporadic presence of native shrubs and trees, including ‘Ōhi‘a, pāpala kēpau, and lapalapa, but also the less commonly seen native species ‘ōhā wai nui (*Clermontia arborescens* spp. *waihia*).

### 5.1.2.4 NATIVE WET CLIFF VEGETATION

Wet cliff areas were thoroughly examined during ground surveys. Due to the steep aspect of these areas, they are less likely to be impacted by feral pigs or human activities and thus are more likely to contain threatened or endangered plant species. No threatened, endangered, or candidate plants were seen in these areas during the ground surveys, but some less-commonly seen species were noted, including a *Cyrtandra* species (likely *Cyrtandra grayi*), and ‘ōhā wai nui. Fern species tend to dominate these areas, most notably *Cyclosorus parasiticus*. *Machaerina*, a native sedge, was also frequently seen (Figure C-3, Appendix C).

### 5.1.2.5 UNCHARACTERIZED OPEN-SPARSE VEGETATION

Gon et al. (2006) describe this vegetation type as follows: “Open to sparse vegetation, occurring at all elevations, part of a complex mosaic of naturalized alien vegetation in a mosaic of forest, shrubland and grassland.” The lower portion of Pi‘ina‘au Road, a frequently used hunting access road, typifies this vegetation type. The understory (which exists in open areas and occasionally under tree and shrub layers) consists of a matrix of non-native herbs and grasses, including Job’s tears, Guinea grass (*Urochloa maxima*), *Cyclosorus parasiticus*, tick trefoil, sensitive plant (*Mimosa pudica* var. *unijuga*), and elephant’s-foot (*Elephantopus mollis*). Shoebutton ardisia, hau (*Hibiscus tiliaceus*), and strawberry guava dominate the midstory, and the canopy consists primarily of eucalyptus and paperbark. The native species found in this vegetation type included māmakī (*Pipturus albidus*), hāpu‘u, and uluhe (Figure C-4, Appendix C).

### 5.1.3 Ground-Based Verification: Service Area

Findings from the December 1, 2017, flora (botanical) ground surveys of the Service Area yielded results consistent with the vegetation types described in Gon et al. (2006).

Surveys focused on the roads traversing the fallow sugarcane fields and the roads in housing areas adjacent to agricultural areas. According to the HIGAP vegetation layer, the vegetation located in the Study Area consists almost exclusively of the Agricultural vegetation type, with Alien Forest and Alien Grassland along the margins and Water features (with hydrophytic vegetation at their margins) spread throughout. Housing areas contain the High Intensity Developed vegetation type. Descriptions of each vegetation type found during ground surveys of the Service Area are below.

#### 5.1.3.1 AGRICULTURE

According to the HIGAP vegetation layer, this vegetation type makes up 83% of the Service Area. The Agriculture vegetation type seen during ground surveys consisted almost entirely of fallow sugarcane (*Saccharum officinarum*) fields, some with sugarcane remaining and some where the sugarcane had been harvested. Corn (*Zea mays*) and Sunn hemp (*Crotalaria juncea*) were also being cultivated in some fields. Weedy plants seen within the fields included castor bean (*Ricinus communis*), Mexican poppy (*Argemone mexicana*), *Sida rhombifolia*, cheeseweed (*Malva parviflora*) and golden crown-beard (*Verbesina encelioides*). The non-native ruderal vines little bell (*Ipomoea triloba*), bitter melon (*Momordica charantia*), and *Macroptilium atropurpureum* can be seen twining throughout (Figure C-5, Appendix C).

#### 5.1.3.2 ALIEN GRASSLAND

Non-native grasses such as swollen fingergrass (*Chloris barbata*), Guinea grass, and pitted beardgrass (*Bothriochloa pertusa*) were found on the margins of most agricultural fields in the Service Area. Mixed in with these grasses was a variety of ruderal herbaceous species, similar to those found within the agricultural fields (Figure C-6, Appendix C).

#### 5.1.3.3 ALIEN FOREST

Non-native species in this vegetation type found in the Service Area include *Pittosporum pentandrum*, Koa haole (*Leucaena leucocephala*), Christmas berry (*Schinus terebinthifolius*), and kiawe (*Prosopis pallida*). This suite of species can be found in the Service Area around abandoned buildings, on the margins of fallow fields, and occasionally along ditches and other water features (see Figure C-6, Appendix C).

#### 5.1.3.4 WATER

Holding ponds and irrigation ditches are found sporadically throughout the agricultural portions of the Service Area and provide habitat for a number of non-native hydrophytic plant species, including sourbush (*Pluchea carolinensis*), primrose willow (*Ludwigia octovalvis*), and California grass (*Urochloa mutica*). Koa haole, *Pittosporum pentandrum*, Christmas berry, Java plum (*Syzygium cumini*), and common ironwood (*Casuarina equisetifolia*) can be found on uphill slopes near these water features, with maunaloa vine (*Canavalia cathartica*) occasionally twining in the under- and midstory (Figure C-7, Appendix C).

#### 5.1.3.5 HIGH-INTENSITY DEVELOPED

Areas labeled High-Intensity Developed are described by Gon et al. as constructed areas and urban and rural housing. Plant species around these sites in the Service Area include commonly cultivated

ornamental and food plants such as ti (*Cordyline fruticosa*), mango (*Mangifera indica*), guava (*Psidium guajava*), hibiscus (*Hibiscus rosa-sinensis*), snowbush (*Breynia disticha*), mock orange (*Murraya paniculata*), panax (*Polyscias guilfoylei*), croton (*Codiaeum variegatum*), liliko'i (*Passiflora edulis*), and plumeria (*Plumeria rubra*), as well as tolerated weeds, which include Chinese violet (*Asystasia gangetica*), yellow alder (*Turnera ulmifolia*), morning glory (*Ipomoea obscura*), and castor bean. Lawn grasses include St. Augustine grass (*Stenotaphrum secundatum*) and Bermuda grass (*Cynodon dactylon*) (Figure C-8, Appendix C).

### 5.1.4 Special-Status Flora and Critical Habitat

Special-status flora refers to plant species listed by the USFWS and the State of Hawai'i as threatened, endangered, or candidate. These species are discussed in detail below.

The USFWS has identified 21 endangered or threatened plants with final designated critical habitat within or near the vicinity of the License Area (EISPN 2017: Appendix A). None of the species listed in the EISPN (2017) were found during ground or aerial surveys; however, it is very likely, given the size and range of vegetation cover types that occur in the License Area, that many of these species could or do exist in the area, particularly in higher elevations on steep cliffs and gulches inaccessible to grazing ungulates. Table 4 lists the 18 species with designated critical habitat that fall within the License Area and indicates which vegetation classes (taken from the HIGAP vegetation layer) are found within each critical habitat unit. See Figure A-4 in Appendix A for the locations of the critical habitat units. Some HIGAP vegetation classes found within the License Area shown in Figure A-2 in Appendix A were not listed as critical habitat for the 21 species identified by the USFWS in Appendix A of the EISPN, so they are not listed in Table 4. Three of the 21 species identified by the USFWS—*Peucedanum sandwicense*, *Ischaemum byrone*, and *Cyperus pennatifolius*—are coastal species whose designated critical habitat units are located outside of the License Area. No further analysis was performed for these species. Locations of voucher specimens for some species are shown in Table D-1, Appendix D.

**Table 4. Endangered or Threatened Plant Species with Critical Habitat within the License Area**

| HIGAP Vegetation Classes Found in Critical Habitat Unit | Species found in Critical Habitat Unit (Hawaiian Name, Status)   |
|---|--|
| <b>Lowland Wet 01</b>                                   |  |
| Alien Forest  | <i>Bidens campylothea</i> spp. <i>waihoiensis</i> (ko'oko'olau, ko'olau, Endangered); <i>Clermontia samuelii</i> ('ōhā wai, 'ōhā, hāhā, Endangered); <i>Cyanea asplenifolia</i> , <i>Cyanea copelandii</i> spp.  |
| Alien Grassland   | <i>haleakalaensis</i> , <i>Cyanea hamatiflora</i> spp. <i>hamatiflora</i> , <i>Cyanea kunthiana</i> , <i>Cyanea maritae</i> , <i>Cyanea mceldowneyi</i> (hāhā, Endangered); <i>Melicope balloui</i> , <i>Melicope ovalis</i> (alani, alani kuahiwi, Endangered); <i>Huperzia mannii</i> (no Hawaiian name, Endangered) |
| Closed Koa-Ōhi'a Forest (native shrubs)                 |  |
| Closed Koa-Ōhi'a Forest (uluhe)                         |  |
| Closed Ōhi'a Forest (native shrubs)                     |  |
| Closed Ōhi'a Forest (uluhe)                             |  |
| Low Intensity Developed                                 |  |
| Native Wet Cliff Vegetation                             |  |
| Open Ōhi'a Forest (uluhe)                               |  |
| Uluhe Shrubland   |  |
| Uncharacterized Forest                                  |  |
| Uncharacterized Open-Sparse Vegetation                  |  |
| Uncharacterized Shrubland                               |  |



| HIGAP Vegetation Classes Found in Critical Habitat Unit | Species found in Critical Habitat Unit (Hawaiian Name, Status)  |
|---|---|
| <b>Montane Wet 01</b>                                   |   |
| Alien Forest  | <i>Cyanea duvalliorum</i> , <i>Cyanea maritae</i> , <i>Cyanea mceldowneyi</i> (hāhā, Endangered); <i>Phyllostegia pilosa</i> (no Hawaiian name, Endangered); <i>Melicope balloui</i> (alani, alani kuahiwi, Endangered); <i>Huperzia mannii</i> (no Hawaiian name, Endangered)  |
| Alien Grassland   |   |
| Closed 'Ōhi'a Forest (native shrubs)                    |   |
| Native Wet Cliff Vegetation                             |   |
| Open 'Ōhi'a Forest (uluhe)                              |   |
| Uluhe Shrubland   |   |
| Uncharacterized Forest                                  |   |
| Uncharacterized Open-Sparse Vegetation                  |   |
| <b>Montane Wet 02</b>                                   |   |
| Alien Forest  | <i>Bidens campylotheca</i> spp. <i>pentamera</i> (ko'oko'olau, ko'olau, Endangered); <i>Clermontia samuelii</i> ('ōhā wai, 'ōhā, hāhā, Endangered); <i>Cyanea copelandii</i> spp. <i>haleakalaensis</i> , <i>Cyanea duvalliorum</i> , <i>Cyanea hamatiflora</i> spp. <i>hamatiflora</i> , <i>Cyanea horrida</i> , <i>Cyanea kunthiana</i> , <i>Cyanea mceldowneyi</i> (hāhā, Endangered); <i>Geranium hanaense</i> , <i>Geranium multiflorum</i> (nohoanu, hinahina, Endangered); <i>Wikstroemia villosa</i> ('ākia, kauhi, Endangered) |
| Alien Grassland   |   |
| Closed Koa-'Ōhi'a Forest (native shrubs)                |   |
| Closed Koa-'Ōhi'a Forest (uluhe)                        |   |
| Closed 'Ōhi'a Forest (native shrubs)                    |   |
| Closed 'Ōhi'a Forest (uluhe)                            |   |
| Native Wet Cliff Vegetation                             |   |
| Open 'Ōhi'a Forest (native shrubs)                      |   |
| Open 'Ōhi'a Forest (uluhe)                              |   |
| Uluhe Shrubland   |   |
| Uncharacterized Forest                                  |   |
| Uncharacterized Open-Sparse Vegetation                  |   |
| Uncharacterized Shrubland                               |   |
| Very Sparse Vegetation to Unvegetated                   |   |

## 5.2 Fauna

The fauna observed in the Study Area includes species that are endemic, indigenous, migratory, and non-native introductions. The endemic, indigenous, and migratory species often require specific niche habitats and are frequently locally abundant where they occur. The non-native introduced species tend to be more generalist and often occupy a broad range of habitats.

The pre-field desktop analysis of HIGAP data identified a mosaic of 24 land cover types in the License and Service Areas. HIGAP land cover types were categorized into wildlife habitat types based on the dominant vegetation and vegetative structure. This was done to simplify the analysis because wildlife often use certain land cover types in similar ways. Table 5 displays HIGAP land cover types categorized into seven wildlife habitat types present in the License Area and/or Service Area.

**Table 5. Wildlife Habitat Types**

| Habitat Type           | HIGAP Vegetation Cover Type                     |
|------------------------|---|
| Forest                 | Closed Koa-‘Ōhi’a Forest (native shrubs)        |
|                        | Closed ‘Ōhi’a Forest (native shrubs/uluhe)      |
|                        | Open ‘Ōhi’a Forest (native shrubs/uluhe)        |
|                        | Open ‘Ōhi’a Forest (native uluhe)               |
|                        | Alien Forest                                    |
|                        | Uncharacterized Forest                          |
| Shrubland              | Native Shrubland (alien grasses)                |
|                        | Native Shrubland/Sparse ‘Ōhi’a (native shrubs)  |
|                        | Uluhe Shrubland                                 |
|                        | Uncharacterized Open-Sparse Vegetation          |
|                        | Uncharacterized Shrubland                       |
|                        | Alien Shrubs and Grasses                        |
|                        | Alien Shrubland                                 |
|                        | Closed Kiawe-Koa Haole Forest and Shrubland     |
|                        | Open Kiawe Forest and Shrubland (alien grasses) |
| Grassland              | Deschampsia Grassland                           |
|                        | Alien Grassland                                 |
|                        | Kikuyu Grass Grassland/Pasture                  |
| Stream                 | Streams and aqueducts (not identified in HIGAP) |
| Rocky                  | Very Sparse Vegetation to Unvegetated           |
| Cliff                  | Native Wet Cliff Vegetation                     |
| Developed/Agricultural | Low Intensity Developed                         |
|                        | Agriculture                                     |
|                        | High Intensity Developed                        |

Table 6 displays the amount of each wildlife habitat type present in the license and Service Areas. Forest habitat is most abundant in the License Area and developed/agriculture habitat is most abundant in the Service Area (Figure A-5, Appendix A).

**Table 6. Area of Wildlife Habitat Types in the Study Area**

| Habitat Type | License Area (acres) | Service Area (acres) |
|--------------|----------------------|----------------------|
| Forest       | 29,626               | 3,233                |
| Shrubland    | 2,770                | 1,008                |
| Grassland    | 233                  | 1,291                |
| Cliff        | 145                  | 0                    |
| Rocky        | 8                    | 34                   |

| Habitat Type           | License Area (acres) | Service Area (acres)      |
|------------------------|----------------------|---------------------------|
| Developed/Agricultural | 1                    | 30,875                    |
| Wetland                | 0                    | 358                       |
| Stream*                | 168                  | 59                        |
| <b>Total</b>           | <b>32,783</b>        | <b>36,799<sup>†</sup></b> |

\* Stream habitat is represented in linear miles and does not contribute to total area.

<sup>†</sup> This total does not include the 9 acres of undefined vegetation class listed in Table 3.

## 5.2.1 Avifauna

The birds observed in the License Area are species commonly found in low- to mid-elevation mesic and wet forest areas on the northern slope of Haleakalā Volcano. In all, 9 bird species were documented, six of which are protected by the MBTA (Table 7). Of these, three species—‘apapane (*Himatione sanguinea*), Hawai‘i ‘amakihi (*Chlorodrepanis virens wilsoni*), and ‘i‘iwi (*Drepanis coccinea*)—are endemic to Hawai‘i; one is a migratory shorebird and two are non-native introductions. The ‘i‘iwi is the only federally and state-listed bird that was detected during ground surveys and was identified by vocalizations. In addition to ‘i‘iwi, the federally and state-listed Maui parrotbill (*Pseudonestor xanthophrys*) and crested honeycreeper (*Palmeria dolei*) are known to occur in mesic and wet forest above approximately 3,937 feet (1,200 meters [m]) (Pratt et al. 2009).

Birds observed in the Service Area are species commonly found in disturbed, low-elevation areas on Maui’s central plain. In all, 24 birds were documented, 13 of which are protected by the MBTA (see Table 7). Of the 13 MBTA-protected birds, three birds are federally and state listed; two are endemic; two are migrant waterfowl; one is a migrant shorebird; one is an indigenous waterbird, and four are non-native introductions. The federally and state-listed species are discussed in more detail in Section 5.2.5.

**Table 7. Birds Observed by SWCA in and near the Service and License Areas**

| Common Name               | Scientific Name                      | Status* | Detection Area | Protected under MBTA |
|---------------------------|--------------------------------------|---------|----------------|----------------------|
| ‘Apapane                  | <i>Himatione sanguinea</i>           | E       | LA             | X                    |
| Hawai‘i ‘amakihi          | <i>Chlorodrepanis virens wilsoni</i> | E       | LA             | X                    |
| Black-crowned night-heron | <i>Nycticorax</i>                    | I       | SA             | X                    |
| Cattle egret              | <i>Bubulcus ibis</i>                 | NN      | SA             | X                    |
| Chestnut munia            | <i>Lonchura atricapilla</i>          | NN      | LA, SA         |                      |
| Chicken                   | <i>Gallus domesticus</i>             | NN      | SA             |                      |
| Common myna               | <i>Acridotheres tristis</i>          | NN      | SA             |                      |
| ‘i‘iwi                    | <i>Drepanis coccinea</i>             | FT,ST   | LA             | X                    |
| Green-winged teal         | <i>Anas crecca</i>                   | M       | SA             | X                    |
| Grey francolin            | <i>Francolinus pondicerianus</i>     | NN      | SA             |                      |
| Japanese white-eye        | <i>Zosterops japonicus</i>           | NN      | LA, SA         |                      |
| Mallard                   | <i>Anas platyrhynchos</i>            | M       | SA             | X                    |
| Melodious laughing thrush | <i>Garrulax canorus</i>              | NN      | LA             |                      |
| Mourning dove             | <i>Zenaida macroura</i>              | NN      | SA             | X                    |
| Hawaiian coot             | <i>Fulica americana alai</i>         | FE, SE  | SA             | X                    |

| Common Name           | Scientific Name                      | Status*   | Detection Area | Protected under MBTA |
|-----------------------|--------------------------------------|-----------|----------------|----------------------|
| Hawaiian stilt        | <i>Himantopus mexicanus knudseni</i> | FE, SE    | SA             | X                    |
| House finch           | <i>Haemorhous mexicanus</i>          | NN        | LA, SA         | X                    |
| House sparrow         | <i>Passer domesticus</i>             | NN        | SA             |                      |
| Java sparrow          | <i>Lonchura oryzivora</i>            | NN        | SA             |                      |
| Northern cardinal     | <i>Cardinalis cardinalis</i>         | NN        | LA             | X                    |
| Pacific golden-plover | <i>Pluvialis fulva</i>               | M         | LA, SA         | X                    |
| Red-crested cardinal  | <i>Paroaria coronata</i>             | NN        | SA             |                      |
| Spotted dove          | <i>Streptopelia chinensis</i>        | NN        | SA             |                      |
| Zebra dove            | <i>Geopelia striata</i>              | NN        | SA             |                      |
| <b>Total</b>          |                                      | <b>24</b> |                | <b>13</b>            |

\* E = endemic; FE = federally endangered; FT = federally threatened; I = indigenous; LA = License Area; M = migrant; NN = non-native permanent resident; SA = Service Area; SE = state endangered, ST = state threatened.

## 5.2.2 Mammals

Mammals detected during the surveys include cow (*Bos taurus*), feral pig (*Sus scrofa*), and feral cat (*Felis catus*). No other mammals were observed during the ground surveys, although rat (*Rattus* spp.), mongoose (*Herpestes javanicus*), and mouse (*Mus musculus*) could be expected to occur. Cattle were only observed in the License Area; all other mammals likely occur in both the License Area and Service Area.

## 5.2.3 Terrestrial Reptiles and Amphibians

No terrestrial reptiles or amphibians are native to Hawai‘i. Terrestrial reptiles or amphibians were not detected during the ground surveys.

## 5.2.4 Insects and other Invertebrates

Twelve invertebrates were observed during the surveys, consisting of the Blackburn’s damselfly (*Megalagrion blackburni*), Hawaiian upland damselfly (*Megalagrion hawaiiense*), citrus swallowtail butterfly (*Papilio xuthus*), Monarch butterfly (*Danaus plexippus*), housefly (*Musca domestica*), smaller lantana butterfly (*Strymon bazochii*), mud dauber (*Sceliphron caementarium*), wandering glider (*Pantala flavescens*), green darner (*Anax junius*), Aedes mosquito (*Aedes* sp.), walking stick (*Sipyloidea sipyilus*), and witch moth (*Ascalapha odorata*). All these invertebrates are common in East Maui. Excluding the damselfly species, they are also common in Central Maui.

## 5.2.5 Special-Status Fauna and Critical Habitat

Special-status fauna refers to wildlife species listed by the USFWS and the State of Hawai‘i as threatened, endangered, or candidate. These species are discussed in detail below.

The USFWS lists 19 species that may occur in the Study Area: 18 endangered species and one threatened species (Table E-1, Appendix E). The ‘i‘iwi was classified as threatened on October 20, 2017, after the list was created and is included here. The following section discusses the special-status species observed and the special-status species that have the potential to occur in the License and Service Areas based on historical records, available habitat, and the USFWS list of ESA-listed species (USFWS 2016a).

Three special status species—‘i‘iwi, Hawaiian coot, and Hawaiian stilt—were detected during the surveys. The ‘i‘iwi was detected below 1,500 feet in the forest habitat of the License Area. The Hawaiian coot was observed foraging in the holding ponds in the Service Area. The Hawaiian stilt was observed loafing along the access roads and foraging in the holding ponds of the Service Area. Aerial and GIS database review of environmental resources identified the presence of designated critical habitat for the Maui parrotbill and crested honeycreeper in the Southeastern section of the License Area (USFWS 2003a, 2016b) (Figure A-6, Appendix A). Maui parrotbill critical habitat in the License Area consists of 4,573 acres that occurs from approximately 3,700 feet to 7,400 feet. Crested honeycreeper critical habitat in the License Area consists of 2,789 acres that occurs from approximately 4,100 feet to 7,400 feet. Thirteen special-status species could occur in the Study Area based on habitat: crested honeycreeper, Maui parrotbill, ‘i‘iwi, Hawaiian duck (*Anas wyvilliana*), Hawaiian goose (*Branta sandvicensis*), Hawaiian petrel (*Pterodroma sandwichensis*), Newell’s shearwater (*Puffinus auricularis newelli*), band-rumped storm-petrel (*Oceanodroma castro*), Hawaiian hoary bat (*Lasiurus cinereus semotus*), Blackburn’s sphinx moth (*Manduca blackburni*), flying earwig Hawaiian damselfly (*Megalagrion nesioties*), Pacific Hawaiian damselfly (*Megalagrion pacificum*), and orangeblack Hawaiian damselfly (*Megalagrion xanthomelas*).

The potential for the presence of Hawaiian hoary bat was assessed based on the presence of suitable habitat. The Hawaiian hoary bat has been documented roosting in ‘ōhi‘a, albizia (*Falcateria moluccana*), coconut, ironwood, eucalyptus, hala (*Pandanus tectorius*), hau, kiawe, kukui (*Aleurites moluccana*), macadamia (*Macadamia integrifolia*), mango, and pūkiawe (*Leptecophylla tameiameia*) and could roost in trees similar in structure. In addition, the Hawaiian hoary bat could forage over all the vegetation types throughout the Study Area.

Table 8 links special status fauna species with the potential to be found in the Study Area with wildlife habitat types.

**Table 8. Special-Status Fauna with the Potential to Occur in the Study Area**

| Habitat Type           | Special-Status Fauna   |
|------------------------|--|
| Forest                 | Maui parrotbill, ‘i‘iwi, crested honeycreeper, Hawaiian hoary bat, Hawaiian petrel, Newell’s shearwater, and band-rumped storm-petrel  |
| Shrubland              | Hawaiian goose, Hawaiian hoary bat, Hawaiian petrel, Newell’s shearwater, and band-rumped storm-petrel   |
| Grassland              | Hawaiian hoary bat, Hawaiian goose, Hawaiian petrel, Newell’s shearwater, and band-rumped storm-petrel   |
| Stream                 | Hawaiian coot, Hawaiian duck, Hawaiian stilt, Hawaiian goose, Hawaiian hoary bat, flying earwig Hawaiian damselfly, Pacific Hawaiian damselfly, and orangeblack Hawaiian damselfly |
| Rocky                  | Hawaiian goose, Blackburn’s sphinx moth larvae, Hawaiian hoary bat, Hawaiian petrel, Newell’s shearwater, band-rumped storm-petrel   |
| Cliff                  | Hawaiian hoary bat, Hawaiian petrel, Newell’s shearwater, band-rumped storm-petrel, flying earwig Hawaiian damselfly   |
| Developed/Agricultural | Hawaiian goose, Blackburn’s sphinx moth larvae, Hawaiian hoary bat   |

Approximate elevation ranges of where special-status fauna are known to occur are as follows:

- Crested honeycreeper: 3,600 to 7,550 feet (Conant 1981; Scott et al. 1986; USFWS 2003a)
- Maui parrotbill: 4,000 to 7,700 feet (Mountainspring 1987; Scott et al. 1986; Simon et al. 1997; USFWS 2003a)
- ‘I‘iwi: above 3,937 feet (USFWS 2017a)



- Hawaiian duck: sea level to 7,000 (USFWS 2011)
- Hawaiian goose: sea level to 8,000 feet (USFWS 2004)
- Hawaiian petrel: above 7,200 feet (USFWS 1983)
- Newell's shearwater: 500 to 2,300 (USFWS 1983)
- Band-rumped storm-petrel: 1,950 to 3,900 feet and on Lehua Islet below 650 feet (Mitchell et al. 2005)
- Hawaiian hoary bat: sea level to 13,200 (Baldwin 1950; Fujioka and Gon 1988; Kepler and Scott 1990; Tomich 1974; USFWS 1998)
- Blackburn's sphinx moth: sea level to 5,000 feet (USFWS 2003b)
- Flying earwig Hawaiian damselfly: up to 3,000 feet (USFWS 2017b)
- Pacific Hawaiian damselfly: below 2,000 feet (USFWS 2017b)
- Orangeblack Hawaiian damselfly: 3,280 feet (Polhemus and Asquith 1996)

## 6 IMPACTS

This section identifies the types of effects that could occur as a result of the proposed Water Lease, specifically whether the effects are temporary, short term, or long term and whether the effects are direct or indirect. This analysis uses the terms *effect* and *impact* interchangeably, and each has the same intended meaning.

Effects analysis was conducted using the results of field surveys and the likely effects to existing occurrences and habitat from the proposed activities based on the literature and professional judgment. Avoidance and minimization measures (Section 7) were also developed to avoid or minimize detrimental impacts to plant species and habitat. If these measures are committed to be included as part of the Water Lease, actual impacts would be fewer than described in this document.

The Proposed Action consists of the issuance of one long-term Water Lease from the BLNR for the continued right, privilege, and authority to enter and go upon the License Area (see Figure A-1, Appendix A) for the purpose of developing, diverting, transporting, and using government-owned waters through the existing EMI Aqueduct System, which supplies water to domestic and agricultural water users. Since there is no habitat removal or loss proposed, impacts are not quantified but are described in qualitative terms.

### 6.1 Proposed Action

In this analysis, the term *fauna*, or *wildlife*, applies to any mammals, birds, reptiles, or amphibians with the potential to occur in the vicinity of the Proposed Action. *Habitat* refers to an area that contains the resources (food, water, and cover) necessary for the survival of a particular species or group of species.

The IIFS for East Maui streams describes four categories of streams with related streamflow restoration types (CWRM 2018; see Trutta 2018 for category definitions). These four types, along with the streams in the License Area that fall in each type, are presented in Table 9.

**Table 9. License Area Streams Subject to the IIFS Decision and their Restoration Type**

| Stream         | Streamflow Restoration Type |                            |              |          |
|----------------|-----------------------------|----------------------------|--------------|----------|
|                | Full                        | Habitat (H <sub>90</sub> ) | Connectivity | None     |
| Makapipi       | X                           |                            |              |          |
| Waiohue        | X                           |                            |              |          |
| West Wailuaiki | X                           |                            |              |          |
| Wailuanui      | X                           |                            |              |          |
| Waiokamilo     | X                           |                            |              |          |
| Palauhulu      | X                           |                            |              |          |
| Piinaau        | X                           |                            |              |          |
| Hanahoi        | X                           |                            |              |          |
| Huelo/Puolua*  | X                           |                            |              |          |
| Honopou        | X                           |                            |              |          |
| Kopiliula      |                             | X                          |              |          |
| East Wailuaiki |                             | X                          |              |          |
| Honomanu       |                             | X                          |              |          |
| Punalau        |                             | X                          |              |          |
| Waikamoi       |                             | X                          |              |          |
| Hanawi         |                             |                            | X            |          |
| Kapaula        |                             |                            | X            |          |
| Paakea         |                             |                            | X            |          |
| Nuaailua       |                             |                            | X            |          |
| Haipuaena      |                             |                            | X            |          |
| Pouhokamoa     |                             |                            | X            |          |
| Puaakaa*       |                             |                            | X            |          |
| Waiaaka        |                             |                            |              | X        |
| Ohia/Waianu    |                             |                            |              | X        |
| Wahinepee      |                             |                            |              | X        |
| <b>Total</b>   | <b>10</b>                   | <b>5</b>                   | <b>7</b>     | <b>3</b> |

\* Puolua (also known as Huelo) Stream, is a tributary to Hanahoi Stream, and per the June 20, 2018, CWRM IIFS D&O, was ordered to be fully restored and is included in the count of "Fully Restored Streams."

\* Puaakaa stream is a tributary to Kopiliula Stream, and per the June 20, 2018, CWRM IIFS D&O, was ordered to be restored as a "Connectivity Stream."

### 6.1.1 General

The Proposed Action does not require vegetation removal except for routine maintenance purposes. As such, the amount of each vegetation cover type currently present in the Study Area (see Tables 2 and 3), would remain substantially the same. For this reason, there would be no direct impacts to flora or fauna due to the Proposed Action. The main action under the Proposed Action is the diversion of water by the existing EMI Aqueduct System infrastructure for water delivery purposes. This action in and of itself would have no impact on terrestrial flora or fauna resources.

The presence of the aqueducts and associated access roads increases fragmentation in otherwise continuous habitat patches. Habitat fragmentation increases the amount of edge habitat, which can alter the composition of species present in any one area. This is because certain species, often special-status species and those that grow or breed in unique habitat conditions, often occur in core habitat patches away from edges. However, the Proposed Action proposes to continue the use of and access to the existing infrastructure at current levels and does not propose to increase infrastructure or access to it. Most of the aqueducts and access roads were built historically and have been in use for many years. For this reason, implementation of the Proposed Action would not increase habitat fragmentation over current conditions.

Approval of diverted water use under the Proposed Action may support diversified agriculture on agricultural lands in the Service Area. This is because it has been stated that the goal is to transition to diversify agriculture, should the long-term water lease be issued. Production of a single crop over a large area, such as sugarcane, provides a monoculture environment for flora and fauna, leading to population increases of certain, often weedy and generalist, species. Increasing the diversity of crops increases the niches in which flora and fauna can establish and would be beneficial to some flora and fauna because the agricultural lands would provide an increased diversity of foraging, breeding, and nesting resources. In general, increased diversity in croplands could lead to an increased diversity of flora and fauna.

### **6.1.2     *Flora***

Under the Proposed Action, EMI would be granted the right to “enter and go upon” the License Area for aqueduct maintenance activities. Some of these activities would entail vegetation maintenance (trimming or removal for access) and vegetation trampling by vehicles or humans, both of which would have a negligible impact on the existing flora. Maintenance activities could also increase the potential for weed introduction and invasion because undesirable seeds may be present on vehicles, equipment, and clothing. Weeds, by definition, can outcompete most flora for space and nutrient resources. Weed invasions, if they were to occur, would decrease the quality and quantity of habitat available for native plant species. However, current conditions are not expected to change given that implementation of the Proposed Action would not change current conditions.

### **6.1.3     *Fauna***

The presence of vehicles and humans for maintenance activities could disrupt the normal behavior of wildlife and temporarily displace individuals from roadside habitat. However, it is anticipated that maintenance activities would only take place sporadically, and so wildlife would resume normal behavior shortly after the passage of the vehicle or completion of the maintenance activity. However, maintenance activities currently take place and have for the duration of water diversion activities in the License Area. As such, the Proposed Action would not increase human noise and activity above current levels. The presence of human noise and activity would have a negligible effect on wildlife.

#### **6.1.3.1     SPECIAL-STATUS SPECIES AND CRITICAL HABITAT**

Under the Proposed Action, there would be the potential for fauna to be struck and killed or injured by vehicles that are on-site for maintenance activities. Certain species are more likely to be struck by vehicles than others. In the context of the Water Lease, the Hawaiian goose is the only special-status species with more than a low potential to be struck by a vehicle. However, given that the proposed Water Lease is essentially a continuation of water diversions that have been taking place within the License Area for over one hundred years, and maintenance activities have been conducted throughout that time, the potential for vehicle strikes would not increase with implementation of the Proposed Action.

If tree removal occurs during the bat breeding season (June 1 to September 15), direct impacts could occur to juvenile bats that are too small to fly but too large to be carried by a parent.

Tree tobacco, a common host plant for Blackburn sphinx moth larvae, was observed in the Service Area. Removal of this species and other common host plants could result in sphinx moth egg and larvae fatalities.

Under the Proposed Action, conditions in the License Area would more closely approximate natural flow than diversions under sugar cane production (i.e., highly diverted conditions immediately below each diversion) (Trutta 2019). Under the Proposed Action, habitat for flying earwig Hawaiian damselfly, Pacific Hawaiian damselfly, and orange black Hawaiian damselfly (collectively Hawaiian damselflies) would increase in 19 streams and decrease in three streams (see Table 9; Table 10). However, the restoration of IIFS-mandated flows would also improve habitat conditions for a number of introduced predator and competitor species of the Hawaiian damselflies, and therefore may not actually result in an increase of damselfly populations because of this increased predation (Trutta 2019).

Habitat for the southern house mosquito (*Culex quinquefasciatus* [mosquito]) would decrease overall because increased streamflow would reduce standing water that provides breeding habitat for the species. This would be beneficial to the Hawaiian honeycreeper (*Passeriformes drepanididae*) because it would reduce the likelihood, abundance, and potential for transmission of avian malaria, which is a vector-borne disease.

**Table 10. Proposed Action Impact of Stream Restoration Type on the Habitat of Special-Status Hawaiian Damselflies and Mosquitos**

| Stream Restoration Type | Number of Streams | Hawaiian Damselfly Habitat | Mosquito Habitat |
|-------------------------|-------------------|----------------------------|------------------|
| Full                    | 10                | Increase                   | Decrease         |
| Habitat                 | 5                 | Increase                   | Decrease         |
| Connectivity            | 7                 | Increase                   | Decrease         |
| None                    | 3                 | Decrease                   | Decrease         |

The Study Area provides suitable nesting habitat for Hawaiian seabirds. Breeding individuals may fly over the Study Area at night while traveling between upland nesting and ocean foraging sites. Disorientation and fallout as a result of light attraction could occur to individuals attracted to nighttime lighting. However, there is very little current nighttime lighting in the License Area, and implementation of the long-term Water Lease would not increase current nighttime lighting conditions in the Study Area overall. It is unlikely that maintenance activities would necessitate nighttime lighting. For these reasons, implementation of the Proposed Action would not increase the current risk of seabird fallout.

Impacts to critical habitat for the Maui parrotbill and crested honeycreeper are similar to the flora impacts discussed above in Section 6.1.2. Vegetation maintenance activities could increase the potential for invasive nonnative (alien) plant and animal species introduction and invasion. Alien plant and animal species are rarely unaccompanied and are collectively the greatest threat to Hawaii forest bird habitat (Pratt et al. 2009). Weed invasions, if they were to occur, may increase the populations of alien plant and animal species that currently exist, increase the likelihood of new alien plant and animal introductions, and would decrease the quality of critical habitat available for the Maui parrotbill and crested honeycreeper. However, current conditions are not expected to change given that implementation of the Proposed Action would not change current conditions.

## 6.2 No Action Alternative

The No Action Alternative would result in no Water Lease being issued by the State. Under the No Action Alternative, the EMI Aqueduct System would continue to divert non-government-owned water from the Collection Area (i.e., approximately 30 percent of the water available from the Collection Area). Should this be sufficient for EMI to continue operation and maintenance of the system, then the activities would have impacts comparable to the Proposed Action. Should EMI abandon the aqueduct system, no water would be diverted from the Collection Area or delivered to the Service Area; road and aqueduct maintenance activities would not take place. As a result, human noise and activity along the EMI Aqueduct System would be reduced from current levels to none. This would be beneficial for plants and wildlife because there would be no potential for vehicle strikes, crushing, or displacement. The roads and the EMI Aqueduct System would go into disrepair and likely become overgrown, which could reduce or reverse current levels of habitat fragmentation. Increased water flows in the streams would likely have very little impact on terrestrial flora and fauna. Impacts on aquatic flora and fauna (i.e., damselflies and mosquitoes) would vary depending on the eventual condition of each stream (Trutta 2019).

With a significantly reduced water delivery to the Service Area, it is likely that some proportion of the agricultural fields would be abandoned and become fallow, especially if securing new sources of water is cost prohibitive. If the EMI Aqueduct System is abandoned, an even greater amount of land would become fallow. In Central Maui, the abandonment of fields would result in a pattern of succession of weedy plants, beginning with herbaceous species and grasses such as wild sugarcane (*Saccharum spontaneum*), Guinea grass, and swollen fingergrass. Tree tobacco, castor bean, and woody species such as African tulip, albizia, Java plum, and Christmas berry would ultimately follow. Few to no native species would colonize the fields in the foreseeable future. Holding ponds would dry up and fill in, which would eliminate nest and foraging habitat for endangered Hawaiian waterbirds and foraging habitat for migrant shorebirds and migrant waterfowl. Assuming the lands in the Service Area continue to remain fallow, over time, biodiversity could gradually rise as the establishment of woody species would increase the complexity of the habitat structure, which would provide more nesting opportunities for MBTA-listed birds such as cattle egret, northern cardinal, mourning dove, and house finch. The potential for tree tobacco to colonize abandoned fields would be beneficial for the Blackburn's sphinx moth because it would increase available breeding habitat.

## 6.3 Water Lease Volume Alternative

The Water Lease Volume alternative is understood as a modification (reduction) to the volume of water that is diverted from East Maui streams that would be available for diversion under the CWRM IIFS D&O. As a consequence of this alternative, the overall amount of water that could be diverted to meet domestic and agricultural water demands in Upcountry Maui, as well as the community of Nāhiku, and agricultural demands in Central Maui would be reduced. As a result, the EMI Aqueduct System would require more routine maintenance of the open ditches due to vegetation growth within the ditches and access into the License Area due to less flowing water in the system. Human noise and activity along the EMI Aqueduct System would increase from current levels. This would increase the potential for negative impacts such as vehicle strikes, crushing, or displacement from current levels. The increased water flows in the streams would likely have very little impact on terrestrial flora and fauna. Impacts on aquatic flora and fauna (i.e., damselflies and mosquitoes) would vary depending on the eventual condition of each stream (Trutta 2019).

If the Water Lease is issued and does not authorize the use of sufficient amounts of water needed for the lessee to pursue diversified agriculture in the Service Area, alternative sources might be pursued, such as the construction of new wells, desalinization facilities, or reservoirs. The effects are comparable to those of the No Action Alternative. With less water awarded from what would be available to divert in



compliance with the CWRM IIFS D&O, it is likely that some proportion of the agricultural fields would be abandoned and become fallow, especially if securing new sources of water is cost prohibitive. If the EMI Aqueduct System is abandoned, an even greater amount of land would become fallow. The effects of field abandonment in the Service Area would be identical to those described for the No Action Alternative.

## **6.4 Water Lease Term Alternative**

The Water Lease Term Alternative is understood as a modification to the term for which the Water Lease will be awarded for other than the proposed term of 30 years. As a consequence of this alternative, should the lease term be shorter, diversified agriculture may not be able to come to fruition in Central Maui (i.e., the Service Area).

The term may be too short or risky to initiate and maintain a large scale diversified agricultural operation. As a result, the agricultural fields may be abandoned and an even greater amount of land would become fallow. The effects of field abandonment in the Service Area would be identical to those described for the No Action Alternative.

## **6.5 Management Alternative**

The Management Alternative is understood as a change of the entity that manages the diversion of water from East Maui streams. Currently, the EMI Aqueduct System is managed by the East Maui Irrigation Company in partnership with Mahi Pono, LLC. As a consequence of this alternative, the EMI Aqueduct System would in turn be managed by another entity other than the current operators. This alternative would be comparable to the Proposed Action.

Should another entity manage the diversion of water from the East Maui streams, the EMI Aqueduct would still require maintenance, and therefore there would still be a need for access into the License Area. Effects from the Management Alternative, would be identical to those described under the Proposed Action.

## **6.6 Greater Public Access Alternative**

The Greater Public Access Alternative is understood as the License Area being reduced in size that only covers the area where the EMI Aqueduct System and existing access roads (presumably with an additional buffer area), allowing more public access into the area from current levels. As a result, the current License Area would see an increase in public access.

An increase in public access to the current License Area as part of any proposed project alternative would have a potential impact to the flora and fauna species that are present in the License Area. Access into the License Area would presumably allow for hiking, hunting, gathering, and other recreational and/or cultural activities to take place. These activities would result in vegetation trampling, which, depending on degree of access and use of the area, may have a significant impact on existing flora. In addition, the potential for weed introduction and invasion would increase. Weeds, by definition, can outcompete most flora for space and nutrient resources. Weed invasions, if they were to occur, would decrease the quality and quantity of habitat available for native plant species, which in turn may decrease the quality of critical habitat for the Maui parrotbill and crested honeycreeper. The presence of vehicles and humans for various activities in the License Area could disrupt the normal behavior of wildlife and temporarily displace individuals from roadside habitat. Human noise and activity would increase due to an increase in access, which would have a negative impact on wildlife.

## 7 AVOIDANCE AND MINIMIZATION MEASURES

### 7.1 Flora

Although no plant species listed or proposed for listing as threatened or endangered under the ESA or candidates for possible future listing as threatened or endangered under the ESA were found during ground surveys of the License Area, portions of the aqueducts transect wet cliffs and other suitable habitat for these species. For this reason, a botanical monitor should be on-site during any maintenance activities on cliffsides, near waterfalls, and in other native species-dominated areas to ensure that no listed or candidate species are impacted. The botanical monitor should possess the following qualifications:

- Familiarity with the plants of the area, including special-status species
- Familiarity with natural communities of the area, including special-status natural communities;
- Experience conducting floristic field surveys
- Experience with analyzing impacts of development on native plant species and natural communities

To avoid the unintentional introduction or transport of new invasive plant species into more pristine portions of the License Area during aqueduct maintenance activities, all equipment and vehicles arriving from outside the License Area should be washed and inspected prior to any maintenance activities on cliffsides, near waterfalls, and in other native species-dominated areas in the License Area. In addition, construction materials arriving from outside Maui should also be washed and/or visually inspected (as appropriate) for excessive debris, plant materials, and invasive or harmful non-native species (plants, amphibians, reptiles, and insects). When possible, any raw materials used in maintenance activities should be purchased from a local supplier on Maui to avoid introducing non-native species not present on the island. Inspection and cleaning activities should be conducted at a designated location.

The inspector must be a qualified botanist/entomologist able to identify invasive species that are of concern relevant to the point of origin of the equipment, vehicle, or material. Invasive species that should be checked for during inspections can be found at the following online locations:

- U.S. Department of Agriculture, Hawai'i State-listed Noxious Weeds: <http://plants.usda.gov/java/noxious?rptType=State&statefips=15>
- Maui Invasive Species Committee Target Pests: <http://mauiinvasive.org/misc-target-pests/>

### 7.2 Fauna

To minimize potential impacts to fauna, the following measures should be followed:

- Regular on-site staff should be trained to identify special-status species with the potential to occur on-site and should know the appropriate measures to be taken if they are present.
- If tree trimming occurs in the 'iwi, Maui parrotbill and crested honeycreeper range (as defined in Section 5.2.5) from November to June, a qualified biologist should survey the trees for active nests of these species.
- If a downed tree must be removed from a road, trail, or other passageway, it will be inspected for the presence of active bird nests, specifically the nest of an MBTA-protected species, that may have been present prior to the tree falling. If an active nest is found, it should be protected in place until the chicks fledge.

- If a Hawaiian goose, Hawaiian stilt, or Hawaiian coot is observed in the area during construction activities, all activities within 100 feet (30 m) of the species should cease, and work should not continue until the species leaves the area on its own accord.
- If a Hawaiian goose nest is discovered, all activities within 150 feet (46 m) of the nest should cease, and the USFWS should be contacted. Work should not resume until directed by the USFWS.
- If felling of standing trees occurs during the bat breeding season, direct impacts could occur to juvenile bats that are too small to fly but too large to be carried by a parent. To minimize this impact, no trees taller than 15 feet (4.6 m) should be trimmed or removed between June 1 and September 15.
- The use of barbless top-strand wire is recommended for all fence construction to avoid entanglement of Hawaiian hoary bat.
- A survey for potential larval host plants for Blackburn's sphinx moth (particularly tree tobacco) should be conducted by biologists before construction/vegetation clearing. Results of the survey should be provided to the USFWS.
- If host plants are found, surveys for Blackburn's sphinx moth should be performed according to the most recent USFWS guidance, and preferably during the wet season (January to April), roughly 4 to 8 weeks following a significant rainfall event. Results of the survey should be provided to the USFWS. Any necessary follow-up actions should be coordinated with the USFWS.
- A qualified biologist should work closely with the USFWS and monitor ESA-listed damselflies to ensure activities do not have a negative impact.

### **7.2.1     *Seabirds***

To minimize potential impacts to seabirds, the following measures should be followed:

- Construction activity should be restricted to daylight hours as much as practicable during the seabird peak fallout period (September 15 to December 15) to avoid the use of nighttime lighting that could attract seabirds.
- All outdoor lights should be shielded to prevent upward radiation. This has been shown to reduce the potential for seabird attraction. A selection of acceptable, seabird-friendly lights can be found online at the Kauai Seabird Habitat Conservation Program website: <http://www.kauai-seabirdhcp.info/lighting-homes-businesses/>.
- Outside lights not needed for security and safety should be turned off from dusk through dawn during the fledgling fallout period (September 15 to December 15).

## 8 LITERATURE CITED

- Baldwin, P.H. 1950. Occurrence and Behavior of the Hawaiian Bat. *Journal of Mammalogy* 31:455–456.
- Commission on Water Resource Management (CWRM). 2018. Petition to Amend Interim Instream Flow Standards for Honopou, Hanehoi/Puolua (Huelo), Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, Ohia (Waianu), Waiokamilo, Kualani (Hamau), Wailuanui, Waikani, West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Waiohue, Paakea, Waiaaka, Kapaula, Hanawi, and Makapipi Streams. Case no. Cch-ma13-01. Hearings Officer's Proposed Findings of Fact, Conclusions of Law, & Decision and Order.
- Conant, S. 1981. Recent Observations of Endangered Birds in Hawaii's National Parks. *Elepaio* 41:55–61.
- Department of Land and Natural Resources (DLNR). 1989. *Hawaii Natural Area Reserve Management Plan*. Honolulu, Hawai'i.
- Environmental Impact Statement Preparation Notice: Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas* (EISPN). 2017. Prepared for Alexander & Baldwin, Inc. and East Maui Irrigation Company, Ltd. Wilson Okamoto Corporation, Honolulu, Hawai'i.
- Fujioka, K.K., and S.M. Gon III. 1988. Observations of the Hawaiian Bat (*Lasiurus cinereus semotus*) in the Districts of Kau and South Kona, Island of Hawaii. *Journal of Mammalogy* 69:369–371.
- Gon, S.M., III, A. Allison, R.J. Cannarella, J.D. Jacobi, K.Y. Kaneshiro, M.H. Kido, M. Lane-Kamahele, and S.E. Miller. 2006. *A GAP analysis of Hawaii—Final Report*. U.S. Geological Survey, Research Corporation of the University of Hawai'i.
- Jacobi, James D. 1989. *Vegetation Maps of the Upland Plant Communities on the Islands of Hawai'i, Maui, Moloka'i, and Lana'i*. Technical Report 68. University of Hawai'i at Mānoa and National Park Service, Honolulu, Hawai'i.
- Kepler, C.B., and J.M. Scott. 1990. Notes on the Distribution and Behavior of the Endangered Hawaiian Hoary Bat (*Lasiurus cinereus semotus*), 1964–1983. *Elepaio* 50(7):59–64.
- Mitchell, C., C. Ogura, D.W. Meadows, A. Kane, L. Strommer, S. Fretz, L. Leonard, and A. McClung. 2005. *Hawaii's Comprehensive Wildlife Conservation Strategy*. Submitted to the National Advisory Acceptance Team, October 1, 2005. Honolulu, Hawai'i: Department of Land and Natural Resources.
- Mountainspring, S. 1987. Ecology, Behavior, and Conservation of the Maui Parrotbill. *Condor* 89:24–39.
- Myers, R. 1998a. *Land Use and Vegetation Change in the Windward East Maui Watershed*. Available at <http://ice.ucdavis.edu/~robyn/timechange.html>. Accessed February 20, 2018.
- \_\_\_\_\_. 1998b. *Multi-Scale Analysis of Keanae Valley-Koolau Gap*. Available at <http://ice.ucdavis.edu/~robyn/multiscale.html>. Accessed February 20, 2018.
- Polhemus, D.A., and A. Asquith. 1996. *Hawaiian Damselflies: A Field Identification Guide*. Honolulu, Hawai'i: Bishop Museum Press.

- Price, Jonathan P., S.M. Gon III, J.D. Jacobi, and D. Matsuwaki. 2007. *Mapping Plant Species Ranges in the Hawaiian Island: Developing a Methodology and Associated GIS Layers*. Technical Report HCSU-008. Hawai'i Cooperative Studies Unit, University of Hawai'i at Hilo.
- Pratt, T.K., C.T. Atkinson, P.C. Banko, J.D. Jacobi, and B.L. Woodworth. 2009. *Conservation Biology of Hawaiian Forest Birds: Implications for Island Avifauna*. Yale University Press, New Haven and London.
- Scott, J. M., S. Mountainspring, F.L. Ramsey, and C.B. Kepler. 1986. Forest Bird Communities of the Hawaiian Islands: Their Dynamics, Ecology, and Conservation. *Studies in Avian Biology* 9:1–431. Lawrence, Kansas: Cooper Ornithological Society, Allen Press.
- Simon, J.C., P.E. Baker, and H. Baker. 1997. Maui parrotbill (*Pseudonestor xanthophrys*). In *The Birds of North America*, No. 311, edited by A. Poole and F. Gill. The Birds of North America, Inc., Philadelphia, Pennsylvania.
- State of Hawaii, Department of Transportation, Highways Division. 1993. *Final Environmental Assessment for Hana Highway Storm Damage Repairs, Huelo towards Nahiku*. Project No. 360AB-01-92. Honolulu, Hawai'i.
- The Nature Conservancy, Maui Program. 2014. *Waikamoi Preserve East Maui Irrigation (EMI) Addition: Long-Range Management Plan; Fiscal Years 2015–2020*. Submitted to Hawai'i Department of Land and Natural Resources, Honolulu, Hawai'i.
- Tomich, P.Q. 1974. The Hawaiian Hoary Bat, Daredevil of the Volcanoes. *National Parks and Conservation Magazine* 48(2):10–13.
- Trutta Environmental Solutions, LLC (Trutta). 2019. *Assessment of the Environmental Impact of Stream Diversions on 21 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model*. Prepared for Earl Matsukawa, Wilson Okamoto Corporation. Prepared by James Parham, Ph.D.
- U.S. Fish and Wildlife Service (USFWS). 1983. *Hawaiian Dark-rumped Petrel and Newell's Manx Shearwater Recovery Plan*. Portland, Oregon: U.S. Fish and Wildlife Service, Region 1.
- . 1998. *Recovery Plan for the Hawaiian Hoary Bat (Lasiurus cinereus semotus)*. Portland, Oregon: U.S. Fish and Wildlife Service, Region 1.
- . 2003a. *Draft Revised Recovery Plan for Hawaiian Forest Birds, Second Revision*. Portland, Oregon: U.S. Fish and Wildlife Service, Region 1.
- . 2003b. *Draft Recovery Plan for the Blackburn's Sphinx Moth (Manduca blackburni)*. Portland, Oregon: U.S. Fish and Wildlife Service, Region 1.
- . 2004. *Draft Revised Recovery Plan for the Nēnē or Hawaiian Goose (Branta sandvicensis)*. Portland, Oregon: U.S. Fish and Wildlife Service, Region 1.
- . 2011. *Recovery Plan for Hawaiian Waterbirds, Second Revision*. Portland, Oregon: U.S. Fish and Wildlife Service, Region 1.
- . 2016a. Endangered and Threatened Wildlife and Plants: Endangered Status for 49 Species from the Hawaiian Islands. *Federal Register* 81(190):67786.



- . 2016b. Endangered and Threatened Wildlife and Plants: Designation and Nondesignation of Critical Habitat on Molokai, Lanai, Maui, and Kahoolawe for 135 Species; Final Rule. *Federal Register* 81(61):17790.
- . 2017a. Endangered and Threatened Wildlife and Plants: Threatened Species Status of the I'iwi (*Drepanis coccinea*). *Federal Register* 82(181):43873.
- . 2017b. Endangered and Threatened Wildlife and Plants: Listing the Flying Earwig Hawaiian Damselfly and Pacific Hawaiian Damselfly as Endangered throughout their Ranges. *Federal Register* 75(121):35990.

## **APPENDIX A**

### **Maps**



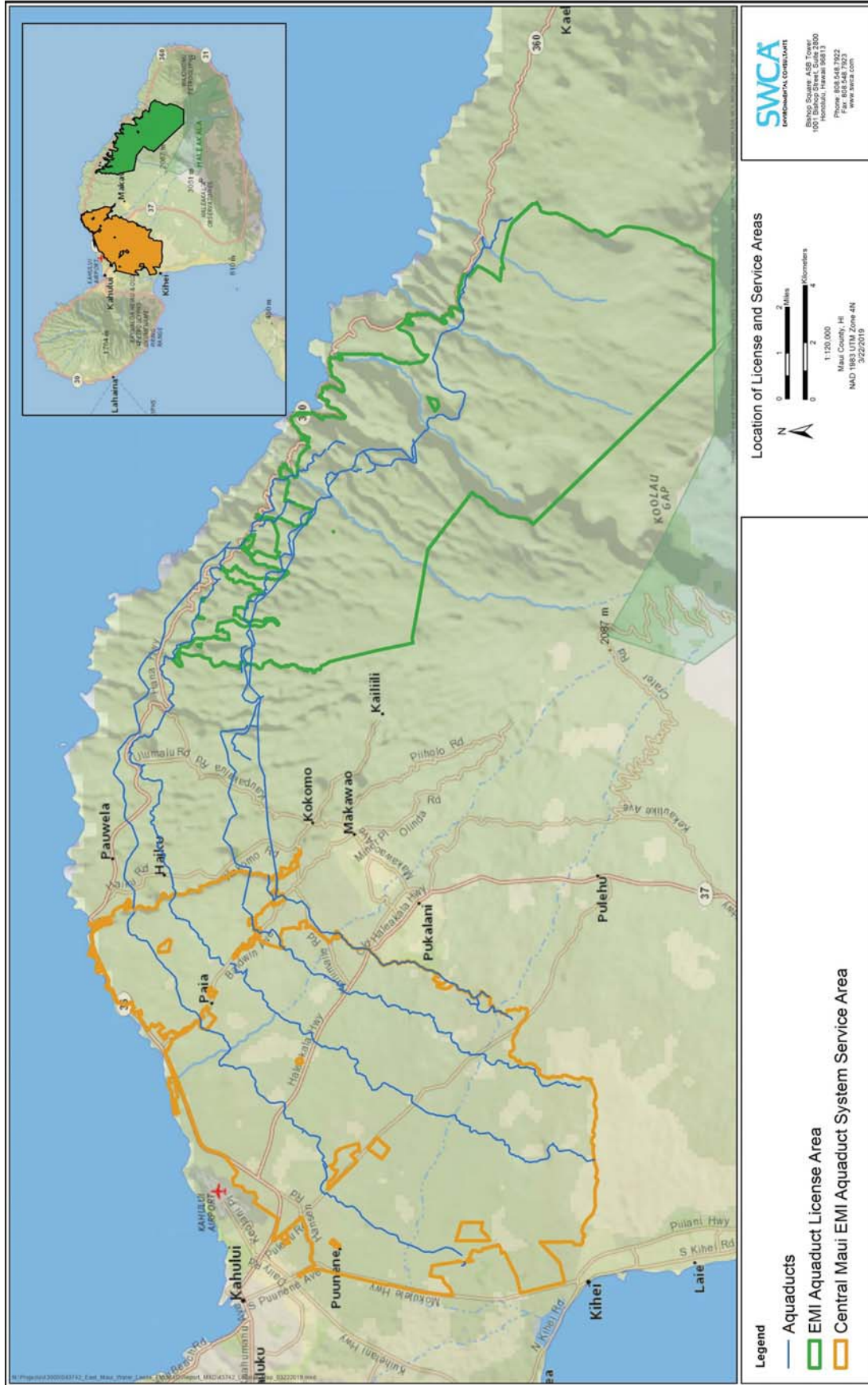


Figure A-1. Location of License and Service Areas.

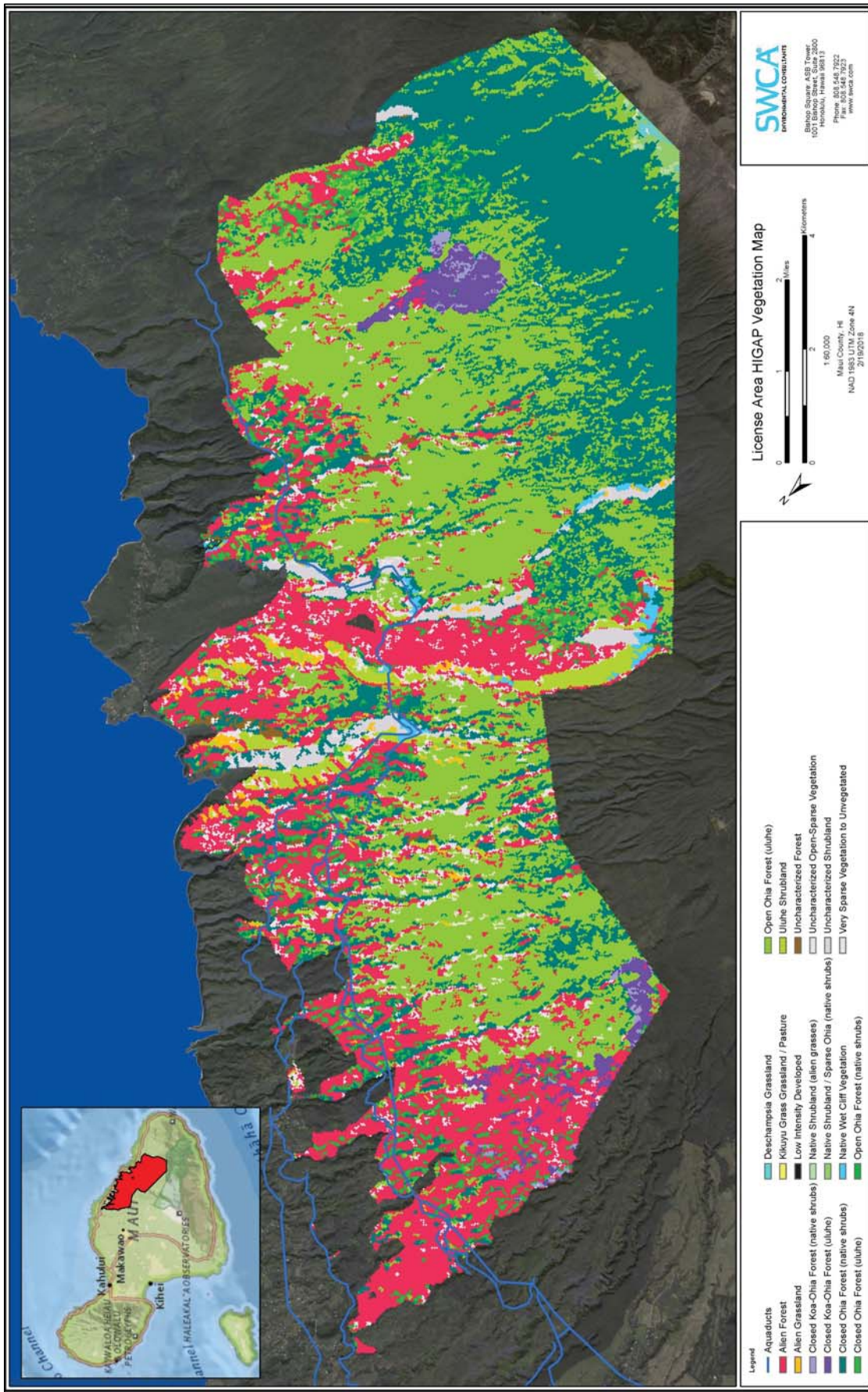


Figure A-2. License Area HIGAP vegetation classes.



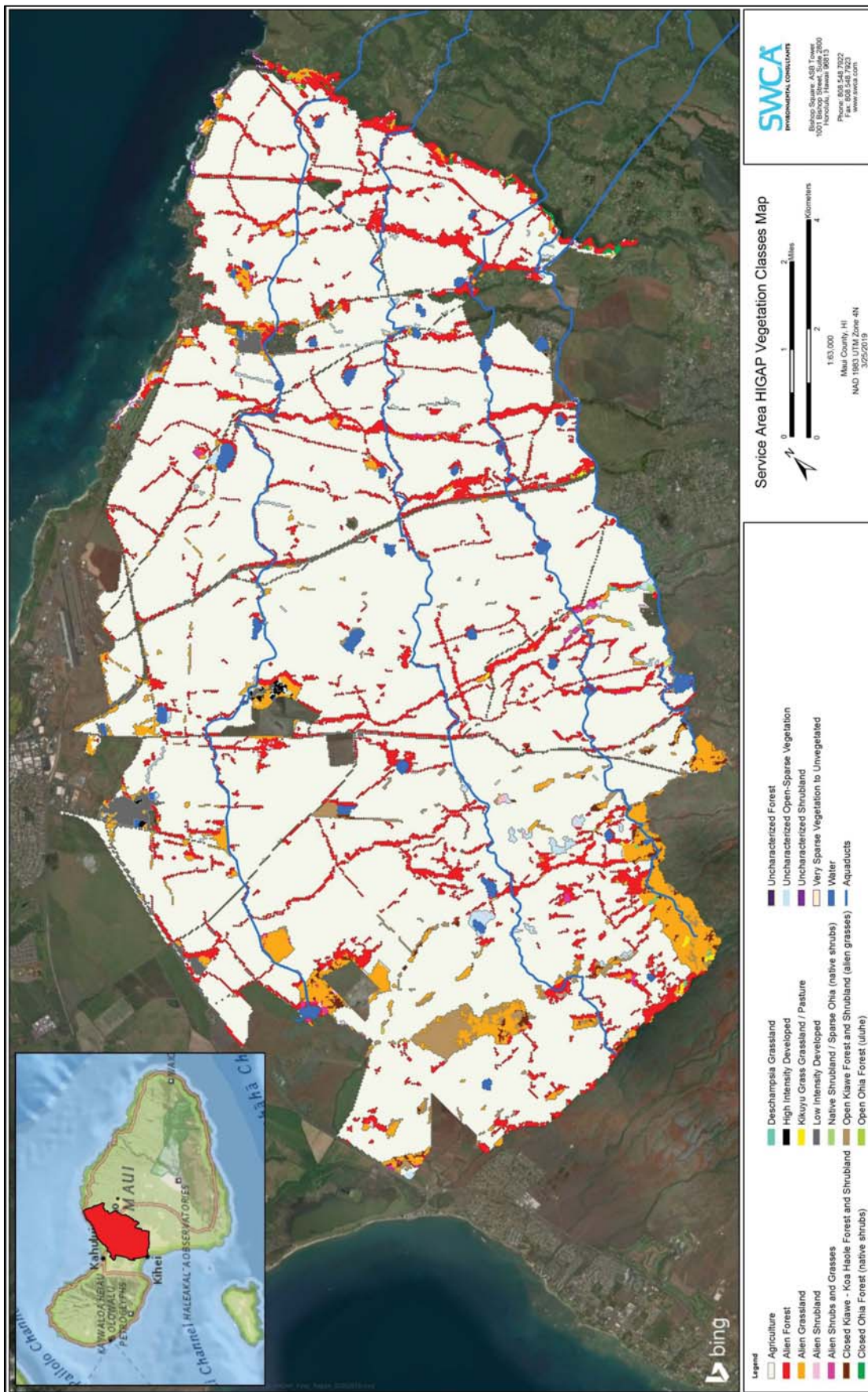
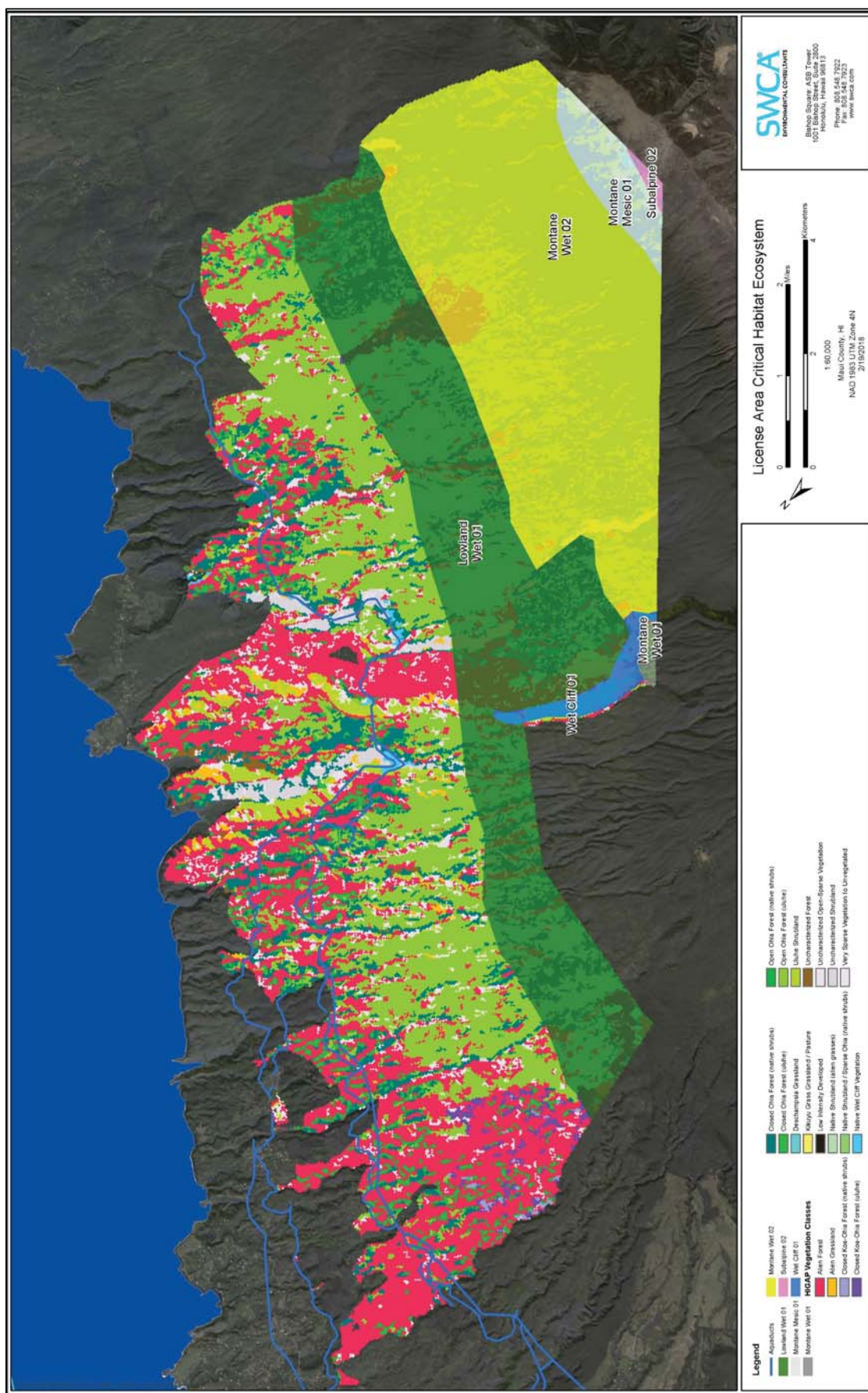


Figure A-3. Service Area HIGAP vegetation classes.





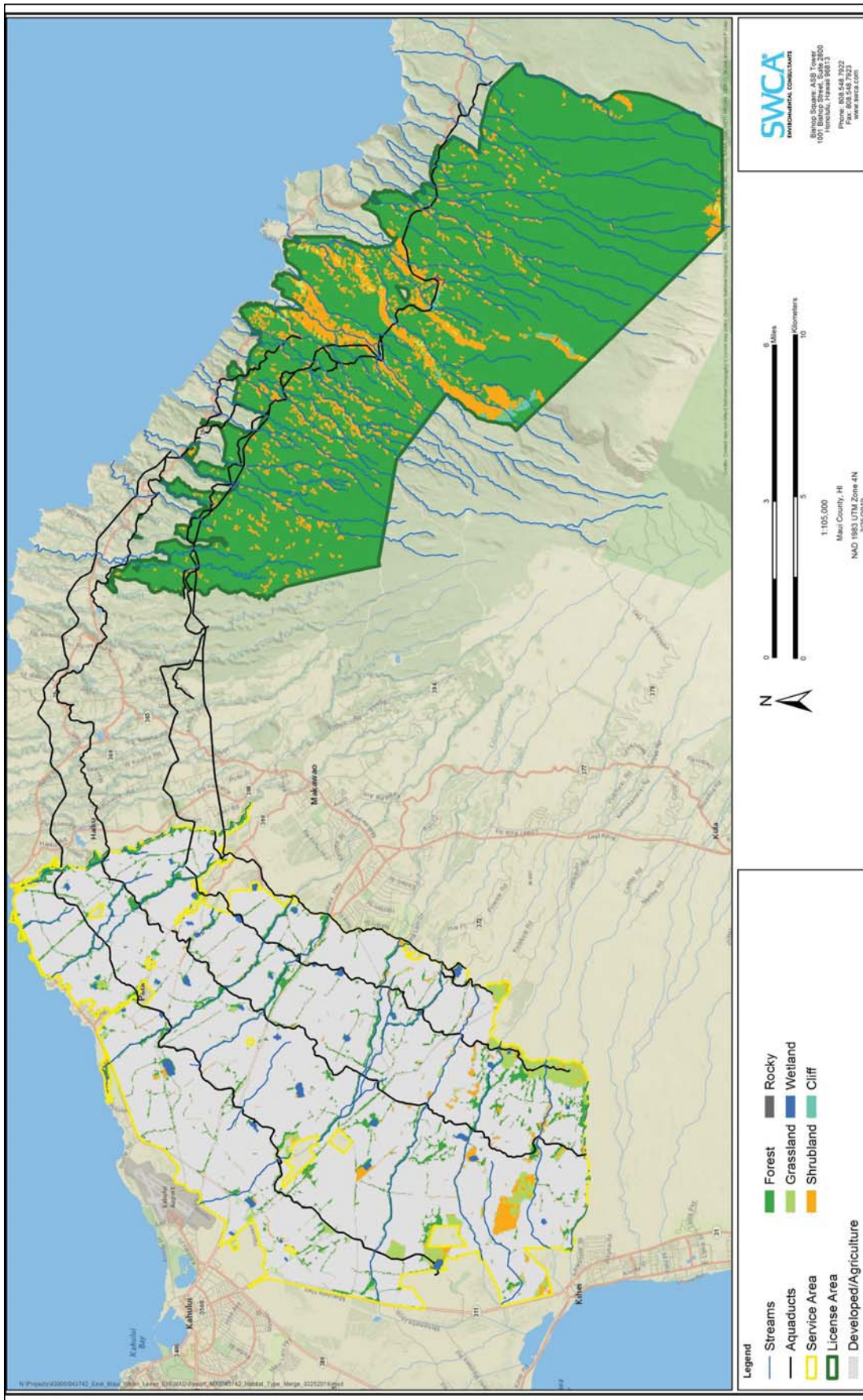
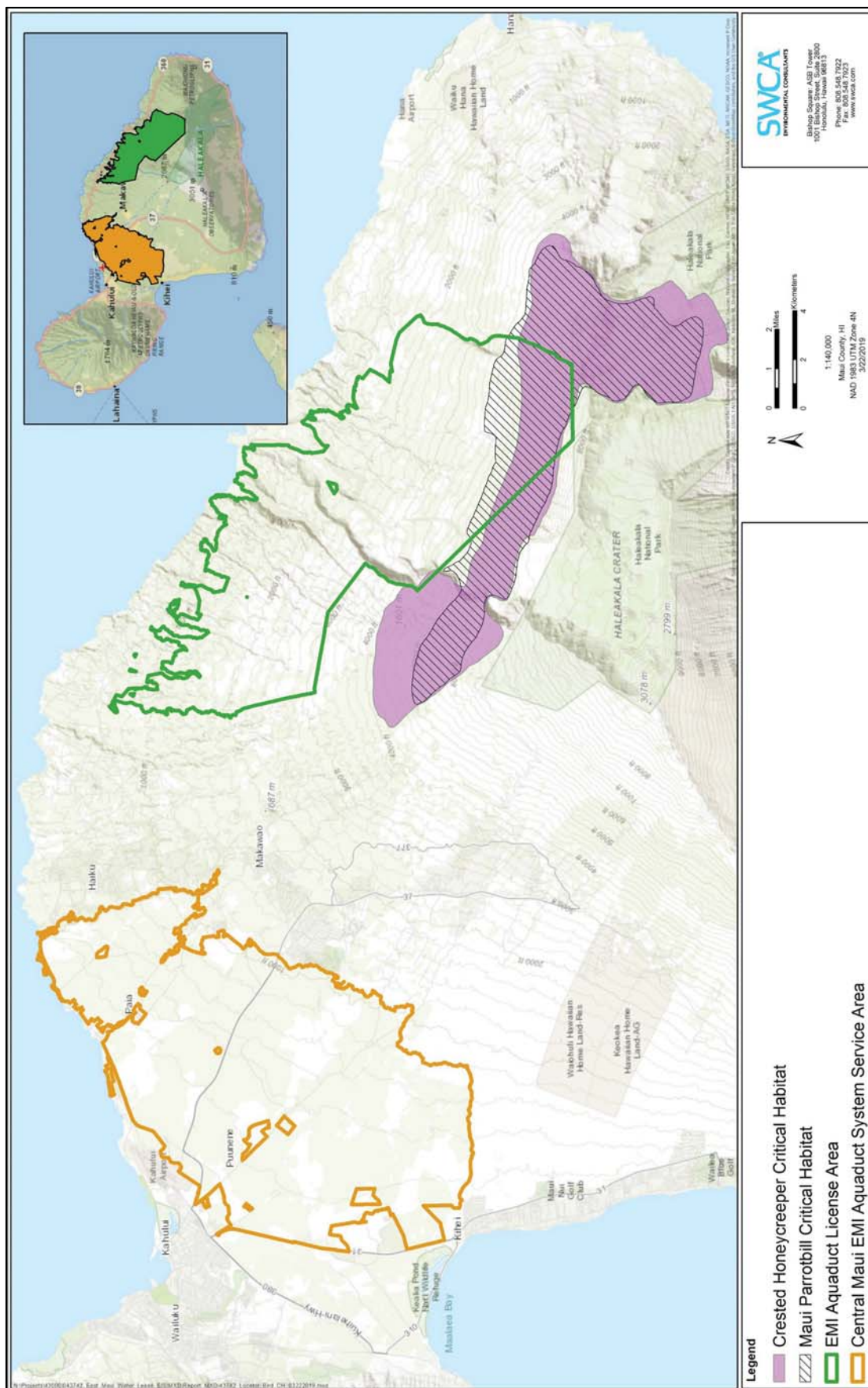


Figure A-5. Wildlife habitat types.





## **APPENDIX B**

### **Vegetation Cover Descriptions**





**Table B-1. Vegetation Cover Types Present in the License and Service Areas**

| Vegetation Cover Type by Location               | Description  |
|---|--|
| <b>License Area</b>                             |  |
| Deschampsia Grassland                           | Vegetation is dominated by the bunchgrass <i>Deschampsia australis</i> , in dry-mesic to wet-mesic settings at subalpine elevations on gentle to moderate slopes. Sparse native shrubs such as <i>Styphelia</i> , <i>Vaccinium</i> , <i>Geranium</i> , etc. may be found between grass tussocks.   |
| Native Shrubland (alien grasses)                | Vegetation is dominated by a mixture of mostly native shrubs and alien grasses, typically along the transition between native-dominated shrublands at higher elevations and Alien Grassland below. Heterogeneous signatures are often complicated by steep and complex terrain.  |
| Native Shrubland/ Sparse 'Ōhi'a (native shrubs) | Vegetation is dominated by shrubs, typically in dry to dry-mesic settings, often at high montane and subalpine elevations but occasionally in lowland dry and mesic settings. Typical dominants include pukiaue ( <i>Styphelia</i> ), 'a'ali'i ( <i>Dodonaea</i> ), and 'ōhi'a ( <i>Metrosideros</i> ); subalpine examples are often strongly dominated by <i>Styphelia</i> ; lower elevation occurrences are more mixed.  |
| Native Wet Cliff Vegetation                     | Vegetation is dominated by shrubs and ferns, on a steep aspect, from lowland to montane elevations, in wet settings. Typical species include <i>Metrosideros</i> , <i>Coprosma</i> , <i>Vaccinium</i> , <i>Machaerina</i> , and <i>Dicranopteris</i> .   |
| Uluhe Shrubland                                 | Vegetation is dominated by a shrubland (technically, a fernland) of uluhe ( <i>Dicranopteris linearis</i> ) and/or other native mat ferns (e.g., <i>Sticherus</i> , <i>Diplopterygium</i> ), generally on moderate and steep mesic to wet slopes, from lowland to montane elevations, typically on windward island slopes. This vegetation type often has a varying presence of native shrubs and sparse native trees, which typically includes 'ōhi'a ( <i>Metrosideros polymorpha</i> ). |
| Closed Koa-'Ōhi'a Forest (native shrubs)        | Vegetation is dominated by a closed canopy of koa ( <i>Acacia koa</i> ) and 'ōhi'a, ( <i>Metrosideros polymorpha</i> ) with varying understories dominated by hāpu'u ( <i>Cibotium</i> sp.), native shrubs, strawberry guava ( <i>Psidium cattleianum</i> ), or uluhe ( <i>Dicranopteris linearis</i> ), generally on moderate mesic to wet slopes, from lowland to montane elevations.  |
| Closed Koa-'Ōhi'a Forest (uluhe)                | Vegetation is dominated by a closed canopy of koa ( <i>Acacia koa</i> ) and 'ōhi'a, with varying understories dominated by uluhe ( <i>Dicranopteris linearis</i> ), generally on moderate mesic to wet slopes, from lowland to montane elevations.   |
| Closed 'Ōhi'a Forest (native shrubs)            | Vegetation is dominated by a closed canopy of 'ōhi'a ( <i>Metrosideros polymorpha</i> ) and other native trees, with varying understories dominated by hāpu'u <i>Cibotium</i> sp.), native shrubs or uluhe ( <i>Dicranopteris linearis</i> ), generally on moderate mesic to wet slopes from lowland to montane elevations.  |
| Closed 'Ōhi'a Forest (uluhe)                    | Vegetation is dominated by a closed canopy of 'ōhi'a ( <i>Metrosideros polymorpha</i> ) and other native trees, with varying understories dominated by uluhe ( <i>Dicranopteris linearis</i> ), generally on moderate mesic to wet slopes, from lowland to montane elevations.   |
| Open 'Ōhi'a Forest (native shrubs)              | Vegetation is dominated by an open canopy of 'ōhi'a ( <i>Metrosideros polymorpha</i> ) and other native trees, with an understory dominated by hāpu'u tree ferns ( <i>Cibotium</i> spp.), alien grasses, native shrubs, or uluhe ( <i>Dicranopteris linearis</i> ) and/or other native mat ferns, (e.g., <i>Sticherus</i> , <i>Diplopterygium</i> ), typically at lowland-montane elevations, in mesic-wet zones.  |
| Open 'Ōhi'a Forest (uluhe)                      | Vegetation is dominated by an open canopy of 'ōhi'a ( <i>Metrosideros polymorpha</i> ) and other native trees, with an understory dominated by uluhe ( <i>Dicranopteris linearis</i> ) and/or other native mat ferns, (e.g., <i>Sticherus</i> , <i>Diplopterygium</i> ), typically at lowland-montane elevations, in mesic-wet zones.  |
| Low Intensity Developed                         | Adopted with minor changes from the Coastal Change Analysis Program's Low Intensity Developed land cover class, thus defined: "Contains substantial amounts of constructed surface mixed with substantial amounts of vegetated surface. Small buildings (such as single family housing, farm outbuildings, and sheds), streets, roads, and cemeteries with associated grasses and trees typically fall into this subclass."  |
| Alien Grassland                                 | Vegetation consists of uncharacterized mixed alien grasslands, often at low elevations, often as part of complex vegetation mosaics of grass, shrubs, and trees. This class includes large areas dominated by fountain grass ( <i>Pennisetum setaceum</i> ), buffel grass ( <i>Cenchrus ciliaris</i> ), kikuyu grass ( <i>Pennisetum clandestinum</i> ), and other species. This class also includes the planted grass of parks and golf courses.  |

| <b>Vegetation Cover Type by Location</b>       | <b>Description</b>   |
|--|--|
| Kikuyu Grass Grassland/Pasture                 | Vegetation consists of large areas dominated by kikuyu grass. This class also includes pastures.   |
| Alien Forest                                   | Vegetation consists of mixed, typically dense canopies of alien tree species, often plantation forest plantings, with dominants, including but not limited to <i>Eucalyptus</i> , <i>Casuarina</i> , <i>Falcataria</i> , <i>Araucaria</i> , <i>Fraxinus</i> , <i>Melaleuca</i> , <i>Psidium</i> , and <i>Grevillea</i> spp. Found at lowland and montane, wet-mesic to mesic settings, often at the lower elevation edge of forest reserves.   |
| Uncharacterized Forest                         | Vegetation consists of an open-closed canopy forest, most often at low elevations, part of a complex mosaic of naturalized alien vegetation in a mosaic of forest, shrubland, and grassland. Small occurrences of native forest also may be found in this class.   |
| Uncharacterized Open-Sparse Vegetation         | Vegetation is dominated by open to sparse vegetation, occurring at all elevations, part of a complex mosaic of naturalized alien vegetation in a mosaic of forest, shrubland, and grassland. May also include very sparse native vegetation at higher elevations and pioneer native vegetation.  |
| Uncharacterized Shrubland                      | Vegetation is dominated by mixed, typically closed shrub vegetation, occurring at a variety of elevations, part of a complex mosaic of naturalized alien vegetation in a mosaic of surrounding forest, shrubland, and grassland. May also include small occurrences of native shrubland.   |
| Very Sparse Vegetation to Unvegetated          | Largely unvegetated, typically open lava or cinder substrates occupying dry settings at subalpine and alpine elevations (Maui and Hawai'i Islands) but also occurring in lower dry settings, especially on very young lava flows in the earliest seral stages or weathered soil or rock substrates on older islands.   |
| <b>Service Area</b>                            |  |
| Deschampsia Grassland                          | See above.   |
| Native Shrubland/Sparse 'Ōhi'a (native shrubs) | See above.   |
| Closed 'Ōhi'a Forest (native shrubs)           | See above.   |
| Open 'Ōhi'a Forest (uluhe)                     | See above.   |
| Water  | Inland water bodies and coastal fishponds of at least 0.36 hectare in area. This class is primarily derived from the National Hydrography Dataset.   |
| Agriculture                                    | Vegetation is dominated by planted lands of variable physiognomy, with annual to multiyear stability. May include ordered rows of tree plantings (often dense) in agricultural-zoned lands, typically in lowland mesic and wet settings. May include a wide variety of dominants, including macadamia, coconut, banana, guava, papaya, sugarcane, pineapple, coffee, vegetable crops, and fallow fields.   |
| Alien Shrubs and Grasses                       | Highly variable mixed shrubland/grassland is dominated locally by one or more species, including <i>Lantana camara</i> , koa haole ( <i>Leucaena leucocephala</i> ), Christmasberry ( <i>Schinus terebinthifolius</i> ), klu ( <i>Acacia farnesiana</i> ), fountain grass ( <i>Pennisetum setaceum</i> ), buffel grass ( <i>Cenchrus ciliaris</i> ), kikuyu grass ( <i>Pennisetum clandestinum</i> ), and other species. Often grades into agricultural plantings or mixed alien grasslands. |
| High Intensity Developed                       | Adopted with minor changes from the Coastal Change Analysis Program's High Intensity Developed land cover class, thus defined: "Contains little or no vegetation. This subclass includes heavily built-up urban centers as well as large constructed surfaces in suburban and rural areas. Large buildings (such as multiple family housing, hangars, and large barns), interstate highways, and runways typically fall into this subclass."   |
| Low Intensity Developed                        | See above.   |
| Alien Grassland                                | See above.   |
| Alien Shrubland                                | Vegetation consists of highly variable mixed shrubland dominated locally by one or more species, including <i>Lantana camara</i> , koa haole, Christmasberry, klu, and others. Often grades into agricultural plantings or mixed alien grasslands.   |
| Alien Forest                                   | See above.   |

| Vegetation Cover Type by Location               | Description  |
|---|--|
| Closed Kiawe-Koa Haole Forest and Shrubland     | Vegetation is dominated by a closed canopy of the alien shrubs/trees kiawe ( <i>Prosopis pallida</i> ) and koa haole ( <i>Leucaena leucocephala</i> ), typically found in dry coastal settings, with dense stands adjacent to fresh groundwater sources near sea level.  |
| Open Kiawe Forest and Shrubland (alien grasses) | Vegetation is dominated by an open canopy of the alien shrub/tree kiawe ( <i>Prosopis pallida</i> ), with an understory of alien grasses (most often <i>Cenchrus ciliaris</i> ), and grading into Koa Haole Shrubland and/or Fountain Grass/Buffel Grass Grassland. Typically found in dry coastal settings, with dense stands adjacent to fresh groundwater sources near sea level. |
| Uncharacterized Forest                          | See above.   |
| Uncharacterized Open-Sparse Vegetation          | See above.   |
| Uncharacterized Shrubland                       | See above.   |
| Very Sparse Vegetation to Unvegetated           | See above.   |

Source: Gon et al. 2006.

*This page intentionally left blank.*

## **APPENDIX C**

### **Photographs of Vegetation Types for the Proposed East Maui Water Lease**







**Figure C-1. Photograph of the Alien Forest vegetation type, which occurred frequently throughout ground surveys of the License Area. Plant species in this photograph include paperbark (*Melaleuca quinquenervia*), eucalyptus (*Eucalyptus* spp.), shoebutton ardisia (*Ardisia elliptica*), strawberry guava (*Psidium cattleianum*), Job's tears (*Coix lachryma-jobi*), and Koster's curse (*Clidemia hirta*).**



**Figure C-2. Photograph of the Open 'Ōhi'a Forest vegetation type with the Uluhe Shrubland vegetation type in the foreground, taken during ground surveys of the License Area. Plant species in this photograph include ohia (*Metrosideros polymorpha*) and uluhe (*Dicranopteris linearis*).**



**Figure C-3. Photograph of the Native Wet Cliff vegetation type, taken during ground surveys of the License Area. Plant species in this photograph include *Cyrtandra* cf. *grayi*, *Cyclosorus parasiticus*, and a *Machaerina* species.**





Figure C-4. Photograph of the Uncharacterized Open-Sparse vegetation type, taken during ground surveys of Pi'ina'au Road in the License Area. Plant species in this photograph include Job's tears (*Coix lachryma-jobi*), Guinea grass (*Urochloa maxima*), tick trefoil (*Desmodium triflorum*), sensitive plant (*Mimosa pudica* var. *unijuga*), elephant's-foot (*Elephantopus mollis*), and shoebutton ardisia (*Ardisia elliptica*).



Figure C-5. Photograph of the Agriculture vegetation type, taken during ground surveys of the Service Area. Plant species in the background include sugarcane (*Saccharum officinarum*) and Guinea grass (*Urochloa maxima*). Some weedy herbaceous plants were seen nearby, including little bell (*Ipomoea triloba*) and cheeseweed (*Malva parviflora*).



**Figure C-6. Photograph of the vegetation found along Paia Mill Road, in the Service Area, which includes the Alien Grassland and Alien Forest vegetation types. Alien Grassland species in the foreground include swollen finger grass (*Chloris barbata*), Guinea grass (*Urochloa maxima*), and pitted beardgrass (*Bothriochloa pertusa*). Tree and shrub species in the background include Taiwanese cheesewood (*Pittosporum pentandrum*), Koa haole (*Leucaena leucocephala*), Christmas berry (*Schinus terebinthifolius*), and kiawe (*Prosopis pallida*).**



**Figure C-7. Photograph of one of the holding ponds in the Service Area, which provide habitat for several non-native wetland species and non-native shrubs and trees. Plants in the foreground include California grass (*Urochloa mutica*), Java plum (*Syzygium cumini*), and Koa haole (*Leucaena leucocephala*). Plants in the background include primrose-willow (*Ludwigia octovalvis*), sourbush (*Pluchea carolinensis*), Taiwanese cheesewood (*Pittosporum pentandrum*), and Christmas berry (*Schinus terebinthifolius*).**





**Figure C-8. Photograph of the typical vegetation around High Intensity Developed areas in the Service Area. Species in these areas include cultivated plants and tolerated weed species. Shown in the foreground are snowbush (*Breynia disticha*), mock orange (*Murraya paniculata*), panax (*Polyscias guilfoylei*), St. Augustine grass (*Stenotaphrum secundatum*), and morning glory (*Ipomoea obscura*).**



*This page intentionally left blank.*

## **APPENDIX D**

### **Voucher Specimen Descriptions**



**Table D-1. Voucher Specimen Descriptions**

| Species Name  | Location  | Elevation   | Collection Year |
|---|---|-------------|-----------------|
| <i>Clermontia samuelii</i>                          | Kawaipapa Stream, along stream on wet cliff walls, above Nahiku-Hana area   | 856 m       | 2013            |
| <i>Clermontia samuelii</i> ssp. <i>hanaensis</i>    | East Maui, Hana District, Nahiku AHU, Tr 9(32), north slope of Haleakala, east of Kuhiwa Stream and Valley                    | 3,210 feet  | 1980            |
| <i>Clermontia samuelii</i> ssp. <i>hanaensis</i>    | Hana District, Kawaipapa Stream, above Nahiku-Hana area   | 936 m       | 2013            |
| <i>Cyanea copelandii</i> ssp. <i>haleakalaensis</i> | Ko'olau Gap, Ke'anae Valley, east Piinaau drainages   | 884 m       | 2007            |
| <i>Cyanea duvalliorum</i>                           | East Maui, Ke'anae Valley   | –           | 1911            |
| <i>Cyanea duvalliorum</i>                           | Trail east of Ke'anae and up the ridge between West and East Wailuaiki Stream   | –           | 1920            |
| <i>Cyanea hamatiflora</i> ssp. <i>hamatiflora</i>   | Ke'anae Valley  | –           | 1927            |
| <i>Cyanea hamatiflora</i> ssp. <i>hamatiflora</i>   | East Maui, Hana District, Ko'olau Forest Reserve, in gulch along East Wailuaiki Stream  | 975 m       | 1980            |
| <i>Cyanea horrida</i>                               | Makawao District, upper western tributary of Honomanu Stream, northeast of Pu'u Luau, Waikamoi Preserve                       | 6,000 feet  | 2008            |
| <i>Cyanea horrida</i>                               | Waikamoi Preserve, Honomanu Gulch   | 6,800 feet  | 1989            |
| <i>Cyanea horrida</i>                               | Makawao District, Waikamoi Preserve, below Hosmer Grove   | 1,785 m     | 2013            |
| <i>Cyanea horrida</i>                               | Northeast Haleakala, near Ke'anae Valley  | –           | 1954            |
| <i>Cyanea horrida</i>                               | East Maui, Nahiku   | –           | 1909            |
| <i>Cyanea kunthiana</i>                             | East Maui, northeast of Ke'anae Valley  | 1,524 m     | 1954            |
| <i>Cyanea kunthiana</i>                             | East Maui, Hana District, Nahiku watershed, east of Kuhiwa Stream and Valley, Ko'olau Forest Reserve                          | 1,777 m     | 1980            |
| <i>Cyanea kunthiana</i>                             | East Maui, Waikamoi, Hāmākua, East Maui, along the trail to Honomanu Gulch  | 914–1,219 m | 1910            |
| <i>Cyanea kunthiana</i>                             | East Maui, Waikamoi, Slopes of Haleakala, wet forest between Waikamoi and Honomanu Gulch, along Kula Pipeline trail           | 4,200 feet  | 1910            |
| <i>Cyanea kunthiana</i>                             | East Maui, Hana District, Nahiku watershed, north slope of Haleakala, east of Kuhiwa Stream and Valley, Koolau Forest Reserve | 1,746 m     | 1980            |
| <i>Cyanea maritae</i>                               | East Maui, Ke'anae  | –           | 1911            |
| <i>Cyanea mceldowneyi</i>                           | Makawao District, Honomanu Gulch, on spur trail from west rim into stream   | 3,680 feet  | 2013            |
| <i>Cyanea mceldowneyi</i>                           | Makawao District, Honomanu Gulch  | 3,800 feet  | 2013            |
| <i>Cyanea mceldowneyi</i>                           | Makawao District, Nahiku watershed, north slope of Haleakala, east of Kuhiwa Stream and Valley                                | 978 m       | 1980            |
| <i>Geranium multiflorum</i>                         | East Maui, upper Honomanu Gulch   | 2,042 m     | 1984            |
| <i>Ischaemum byrone</i>                             | Pauwalu Point, near Ke'anae   | 5 m         | 1933            |
| <i>Ischaemum byrone</i>                             | Pauwalu Point, Ke'anae  | 24 m        | 1978            |
| <i>Ischaemum byrone</i>                             | Hana District; Ke'anae, Pauwalu Point, sea cliffs   | 53 m        | 2012            |
| <i>Melicope balloui</i>                             | East Maui, Makawao District, Waikamoi Preserve, western Honomanu drainage basin   | 6,050 feet  | 2011            |

| Species Name               | Location   | Elevation  | Collection Year |
|----------------------------|--|------------|-----------------|
| <i>Melicope balloui</i>    | East Maui, Makawao District, Waikamoi Preserve, western Honomanu drainage basin, east-northeast of Pu'u Luau | 5,900 feet | 2012            |
| <i>Melicope balloui</i>    | East Maui, Makawao District, Waikamoi Preserve, Honomanu drainage basin                                      | 6,000 feet | 2012            |
| <i>Melicope ovalis</i>     | East Maui, Hana District, western Ke'anae Valley, Pi'ina'au Stream   | 2,225 feet | 2014            |
| <i>Melicope ovalis</i>     | East Maui, Hana District, Ke'anae Valley/Ko'olau Gap   | 3,720 feet | 2011            |
| <i>Wikstroemia villosa</i> | East Maui, Makawao District, eastern Honomanu drainage basin   | 4,700 feet | 2012            |
| <i>Wikstroemia villosa</i> | Nahiku   | —          | 1909            |

Source: Bernice Pauahi Bishop Museum *Herbarium Pacificum*. 2015.

## **APPENDIX E**

**Endangered and Threatened Fauna Species  
(Federal and State) with the Potential to Occur in the  
License Area and Service Area**





**Table E-1. Endangered and Threatened Fauna Species (Federal and State) with the Potential to Occur in the License Area and Service Area**

| Common Name<br>(Scientific Name)                           | Status*    | Range or<br>Habitat Requirements†   | Potential for Occurrence in<br>License and Service Areas   |
|--|------------|---|--|
| <b>Birds</b>   |            |   |  |
| Crested honeycreeper<br>( <i>Palmeria dolei</i> )          | Endangered | Found in East Maui in forest habitat at least 4,200 feet in elevation. It feeds on nectar from the 'ōhi'a flower and other native plants and will also eat insects and fruits.  | Known to occur in the license area; the license area is within their known range.  |
| 'I'iwi<br>( <i>Vestiaria coccinea</i> )                    | Threatened | Found in closed forest habitat composed of tall 'ōhi'a trees or 'ōhi'a and koa tree mixed forests. It feeds on nectar from 'ōhi'a, mamane, and lobelioids (USFWS 2017a).  | Known to occur in the license area; one was aurally detected while conducting pedestrian surveys below an elevation of 1,500 feet.   |
| Maui parrotbill<br>( <i>Pseudonestor xanthophrys</i> )     | Endangered | Found in forest habitat from 4,300 to 6,800 feet in elevation, in subcanopy trees and understory plants. Parrotbills feed on insect larvae by splitting dry branches.   | Known to occur in the license area; the license area is within its known range.  |
| Hawaiian coot<br>( <i>Fulca alai</i> )                     | Endangered | Found in wetland habitat. This species is associated with emergent marshes in lowland valleys, reservoirs, and occasionally in high-elevation plunge pools. Nests are built on floating vegetation.   | Known to occur in the service area; Hawaiian coot were observed in the holding ponds during the survey.  |
| Hawaiian stilt<br>( <i>Himantopus mexicanus knudseni</i> ) | Endangered | Prefers a variety of wetland habitats but is limited by water depth and vegetation cover. This species loafs in open mudflats, sparsely vegetated pickleweed mats, and open pastures. Specific water depths of 5 inches are required for optimal foraging. Nest sites are frequently separate from feeding sites, and stilts move between these areas daily. Nesting sites are adjacent to or on low islands within bodies of fresh, brackish, or salt water.   | Known to occur in the service area; Hawaiian stilt were observed in the holding ponds and on access roads during the survey.   |
| Hawaiian duck<br>( <i>Anas wyvilliana</i> )                | Endangered | Found in lowland, river valley, and mountain stream wetland habitats. This species nests on the ground near water (USFWS 2011).   | May occur; foraging habitat occurs in the license area and service area and it could nest in vegetation adjacent to the mountain streams and holding ponds.  |
| Hawaiian goose or nēnē<br>( <i>Branta sandvicensis</i> )   | Endangered | Frequents shrubland, grassland, wetland, rocky, and developed/agricultural habitats. It does not require standing or flowing water for successful breeding but will use it when available. Nest sites include various habitat types ranging from beach strand, shrubland, and grassland to lava rock, in elevations ranging from coastal lowlands to alpine areas (Banko 1988; Banko et al. 1999). This species' current distribution has been highly influenced by captive-bred releases into the wild.  | Known to occur. Suitable foraging habitat occurs in the grassland and shrubland habitats of the license area and service area.   |
| Hawaiian petrel<br>( <i>Pterodroma sandvicensis</i> )      | Endangered | Breeding season is from March to October, during which time this species nests in some of the main Hawaiian Islands, notably on Maui, Lāna'i, and Kaua'i. This species nests in burrows, primarily in remote locations in forest, shrubland, grassland, rocky, and cliff habitats, near large rock outcrops, under cinder cones, under old lichen-covered lava, or in soil beneath dense vegetation. This species was once abundant on all main Hawaiian islands except Ni'ihau. Currently, the largest known breeding colonies are found at Haleakala Crater on Maui and on the summit of Lāna'i. Other colonies are on Kaua'i, the Island of Hawai'i, and possibly Molokai. | May occur in the license area and fly over the service area. Hawaiian petrels may nest in the grassland, shrubland, and cliff habitats in the license area and may fly over the service area at night while transiting between nest sites and the ocean. It is not likely to land or use habitat in the service area because nesting habitat does not occur there. |

| Common Name<br>(Scientific Name)                               | Status*             | Range or<br>Habitat Requirements†  | Potential for Occurrence in<br>License and Service Areas   |
|--|---------------------|--|--|
| Newell's shearwater<br>( <i>Puffinus auricularis newelli</i> ) | Threatened          | During its 9-month breeding season (April through November), this species nests in forest, shrubland, grassland, rocky, and cliff habitats under ferns on forested mountain slopes and needs an open downhill flight path through which it can become airborne. Nest burrows are used year after year, usually by the same pair of birds. This species was once abundant on all of the main Hawaiian Islands and has been documented breeding on Maui in small numbers (Ainley et al. 1997).   | May occur in the license area and fly over the service area. Newell's shearwater may nest in the grassland, shrubland, and cliff habitats in the license area and may fly over the service area at night while transiting between nest sites and the ocean. It is not likely to land or use habitat in the service area because nesting habitat does not occur there.      |
| Band-rumped storm petrel<br>( <i>Oceanodroma castro</i> )      | Proposed endangered | This species is found in several areas of the subtropical Pacific and Atlantic Oceans. In Hawai'i, this species is known to nest on Kaua'i, Lehua Islet, and the Island of Hawai'i. It likely nests in remote cliff habitat locations. Only three inactive nests have ever been found in the Hawaiian Islands; all were located in small caves or crevices. Adults of this species visit the nest site after dark. Vocalizations have been heard within Haleakala Crater (USFWS 2016). When not at nest locations, it forages on the open ocean. | May occur in the license area and fly over the service area. Band-rumped storm petrel may nest in the grassland, shrubland, and cliff habitats in the license area and may fly over the service area at night while transiting between nest sites and the ocean. It is not likely to land or use habitat in the service area because nesting habitat does not occur there. |
| <b>Mammals</b>   |                     |  |  |
| Hawaiian hoary bat<br>( <i>Lasiurus cinereus semotus</i> )     | Endangered          | This species is found primarily from sea level to 7,500 feet, although it has also been observed above 13,000 feet. The Hawaiian hoary bat can be found in forest, shrubland, grassland, wetland, rocky, cliff, and developed/agricultural habitats. Most of the available documentation suggests that this elusive bat roosts among trees in forested areas. It has been observed on the Islands of Hawai'i, Maui, Moloka'i, Oahu, and Kaua'i.  | Likely to occur in the license area and service area. Bat roosting could occur in the Forest and Agriculture habitats and foraging could occur in Forest, Grassland, Shrubland, Wetland, Agriculture, Water, and Cliff habitats.   |
| <b>Reptiles</b>  |                     |  |  |
| Green sea turtle<br>( <i>Chelonia mydas</i> )                  | Threatened          | The green sea turtle is found worldwide in warm seas. It occupies three habitat types: open beaches, open sea, and feeding grounds in shallow, protected waters. Nesting occurs throughout the Hawaiian archipelago. This species has been documented transiting some Hawai'i rivers up to 2 miles (3 kilometers) inland.  | Unlikely to occur in the license and service areas. The license area contains streams that connect to the ocean. The green sea turtle is not able to traverse the steep waterfalls in the license area and the wetland habitat in the service area does not connect to the ocean.  |
| Hawksbill sea turtle<br>( <i>Eretmochelys imbricata</i> )      | Endangered          | The hawksbill sea turtle is found in warm tropical waters worldwide. It is a shy tropical reef-dwelling species that feeds on jellyfish, sea urchins, and sea sponges. It may also eat algae that grows on the reef. In Hawai'i, nesting occurs on the Islands of Hawai'i, Maui, Moloka'i, and Oahu.   | Unlikely to occur in the license and service Areas. The hawksbill sea turtle is not known to travel up streams in Hawai'i.   |

| Common Name<br>(Scientific Name)                                     | Status*    | Range or<br>Habitat Requirements†  | Potential for Occurrence in<br>License and Service Areas   |
|--|------------|--|--|
| <b>Invertebrates</b>   |            |  |  |
| Blackburn's sphinx moth<br>( <i>Manduca blackburni</i> )             | Endangered | Occurs in topographically diverse landscapes from sea level to 5,000 feet that contain low to moderate levels of non-native vegetation. The Blackburn's sphinx moth uses shrubland, grassland, rocky, and developed/agricultural habitats. Most historical records were from coastal or lowland dry forest habitats in areas receiving less than 50 inches annual rainfall. The non-native tree tobacco is a typical host plant for the species. | May occur in the service area. Tree tobacco was documented throughout the service area.  |
| Flying earwig Hawaiian damselfly<br>( <i>Megalagrion nestotes</i> )  | Endangered | The biology of the flying earwig damselfly is not understood, and it is not known if it prefers standing or flowing water. The only confirmed population occurs along a single stream in East Maui that is adjacent to cliff habitat with uluhe (USFWS 2017b).   | Known to occur in the license area. The flying earwig Hawaiian damselfly occurs within and adjacent to wetland and cliff habitat.                  |
| Orangeblack Hawaiian damselfly<br>( <i>Megalagrion xanthomelas</i> ) | Endangered | Occurs within anchialine pool, coastal, lowland dry, and lowland mesic ecosystems in wetland habitat. On Maui, this species is known to occur at an undisclosed location in the West Maui mountains (USFWS 2016) and near anchialine pools in East Maui (Polhemus et al. 1999).  | May occur in the license area. The orangeblack Hawaiian damselfly is known to occur at an undisclosed location in East Maui near anchialine pools. |
| Pacific Hawaiian damselfly<br>( <i>Megalagrion pacificum</i> )       | Endangered | Occurs almost exclusively in wetland habitat that consists of seepage-fed pools along overflow channels in the terminal reaches of perennial streams in areas surrounded by dense vegetation (USFWS 2017b).  | Known to occur in the license area. The Pacific Hawaiian damselfly occurs in and adjacent to wetland habitat.                                      |
| Yellow-faced bee<br>( <i>Hyaleus anthracinus</i> )                   | Endangered | Known to occur at two locations (Kanaio and Manawainui [Magnacca 2005] on Maui in the coastal and lowland dry ecosystems.  | Unlikely to occur; not known to occur in the license area and service area.  |
| Yellow-faced bee<br>( <i>H. assimulans</i> )                         | Endangered | Currently known to occur at only two locations on Maui in coastal and lowland dry forest habitat (USFWS 2016).   | Unlikely to occur; not known to occur in the license area and service area.  |
| Yellow-faced bee<br>( <i>H. longiceps</i> )                          | Endangered | Currently restricted to small patches of coastal and lowland dry habitat on Maui (USFWS 2016).   | Unlikely to occur; not known to occur in the license area and service area.  |

\* Federal (USFWS) status definitions: Endangered = Any species considered by the USFWS as being in danger of extinction throughout all or a significant portion of its range. The ESA specifically prohibits the take of a species listed as endangered. Take is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct. Proposed = Any species of fish, wildlife, or plant that is proposed in the *Federal Register* to be listed under Section 4 of the ESA. Threatened = Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The ESA specifically prohibits the take of a species listed as threatened.

† Unless otherwise noted, data are from USFWS (2014).

*This page intentionally left blank.*



---

# **APPENDIX D:**

Historical Structure Assessment  
East Maui Aqueduct System

Mason Architects, Inc.





## Historical Structure Assessment

### East Maui Aqueduct System

Mason Architects, Inc.

Prepared under contract to Wilson  
Okamoto Corporation

April 2019



## Table of Contents

|   |    |
|---|----|
| Background and Statement of Objectives.....                         | 2  |
| Project Team.....   | 3  |
| Methodology.....  | 3  |
| Boundary Explanation and Justification.....                         | 4  |
| Setting .....   | 4  |
| Historical Overview, East Maui Irrigation.....                      | 7  |
| Irrigation Ditch System Overview .....                              | 14 |
| Glossary of Other Built Components of the EMI Aqueduct System ..... | 17 |
| Stream Diversions.....  | 23 |
| Type A Stream Diversion.....  | 24 |
| Type A Variation .....  | 25 |
| Type B Stream Diversion .....                                       | 26 |
| Type C Stream Diversion .....                                       | 27 |
| What is a Sluice Gate? .....  | 29 |
| Sluice Gate Types.....  | 26 |
| Ratchet Type .....  | 27 |
| Geared Type.....  | 28 |
| Board-adjusted Type .....   | 31 |
| Threaded Shaft-Type .....   | 33 |
| Historic Significance and Integrity.....                            | 35 |
| Impact Analysis.....  | 37 |
| Bibliography .....  | 38 |
| Data Sheets/Appendices .....  | 39 |
| Appendix A – Surveyed Resources by Type                             |    |
| Appendix B – Photographs of 31 Surveyed Sluice Gates                |    |
| Appendix C – Sketch Plans of 20 EMI Stream Diversions and Photos    |    |
| Appendix D – Basis for Estimated Construction Dates                 |    |





## Background and Statement of Objectives

In May 2001, Alexander & Baldwin, Inc. (A&B) and its subsidiary, East Maui Irrigation Company, Limited (EMI) (also collectively referred to as A&B), filed an application for the Sale of Lease (Water License) at Public Auction (“Water Lease Application”) with the Board of Land and Natural Resources (BLNR) seeking a long-term (30-year) lease for the “*right, privilege, and authority to enter and go upon*” the License Area “*for the purpose of developing, diverting, transporting, and using government-owned water*” (“Water Lease”).

An Environmental Impact Statement (EIS) is being prepared by Wilson Okamoto Corporation (WOC) in support of the Water Lease Application. At the request of WOC, Mason Architects, Inc. (MAI) has prepared this report to assist the decision-making by assessing the impacts to architectural resources if the Water Lease is issued or if other alternative actions are taken.

The Proposed Action constitutes the issuance of a long-term Water Lease for the continued “*right, privilege, and authority to enter and go upon*” the License Area for the “*purpose of developing, diverting, transporting, and using government owned waters*” through the existing EMI Aqueduct System to deliver water to the County Of Maui Department of Water Supply (MDWS) for domestic and agricultural water needs in Upcountry Maui, including agricultural users at the Kula Agricultural Park (KAP), as well as the Nāhiku community. It will also allow for the continued provision of water to approximately 30,000 acres of agricultural lands (formerly in sugarcane) in Central Maui. The Water Lease will enable the lessee to continue to go on State-owned lands to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System.

As an over one hundred-year-old aqueduct system, it is understood that the EMI Aqueduct System is a historic resource. The Proposed Action, in itself, does not propose any modifications to the EMI Aqueduct System, and, thus will have negligible impact on historic properties. Therefore, and because of the expansive size and complexity of the EMI Aqueduct System, this report is less an inventory, and more a reference/typology guide for irrigation systems and their components. As such, identification, documentation, and photography of each individual resource is not provided nor is there a tally of all historic resources within the License Area, or individual evaluations of each resource.

Although a decision on the issuance of the Water Lease will not result in any modifications to the EMI Aqueduct System, a recent action taken by the Commission on Water Resource Management (CWRM) that is unrelated to the Water Lease mandates modifications to the EMI Aqueduct System. On June 20, 2018, the CWRM issued a decision and order setting Interim Instream Flow Standards (IIFS) for many of the streams within the License Area. The CWRM decision ordered full stream restoration for 10 streams and some flow restoration on additional streams. Compliance with the CWRM decision requires modifications to many of the stream diversion works that are part of the EMI Aqueduct System. Diversions requiring partial restoration of stream flow would involve adjustments to sluice gates. Such adjustments are within the normal operation of a diversion structure, and would have no impact on its historic value. Full stream flow restoration may require removal to permanently end the stream diversion function of the sluice gates. Hence, this report focuses on those particular components of this extensive aqueduct system. Compliance with the CWRM decision, however, is independent of the Water Lease Application. In other words, the modifications to the stream diversion works needed to comply with the IIFS decision are required whether the Water Lease is issued or not.

Because these modifications are mandated and must be implemented whether or not a Water Lease is issued, the modifications required for implementation of the IIFS are discussed generally

but not analyzed as impacts of the Proposed Action or alternative actions. Under alternative scenarios (No Action Alternative and Reduced Water Lease Alternative), however, additional modification to the EMI Aqueduct System would result. This report assesses potential impacts under those conditions.

## Project Team

This Historical Structure Assessment was written by MAI under contract to WOC. MAI Research Section Director and architectural historian Polly Tice, and architectural historian Dee Ruzicka, are responsible for its preparation. Dee Ruzicka undertook fieldwork on the EMI Aqueduct System, performed research, and wrote the report. Polly Tice provided project oversight on scope and content, as well as quality assurance reviews and edits to the written content. Ms. Tice and Mr. Ruzicka both meet and exceed the Secretary of the Interior's (SOI) Professional Qualification Standards [36 CFR § 61] for Architectural Historian. Trina DeNuccio assisted with graphics preparation, and Leslie Jones assisted with mapping.

## Methodology

The Proposed Action, in itself, does not propose any modifications to the EMI Aqueduct System, and, thus, will have negligible impact on historic resources. Therefore, and because of the expansive size and complexity of the EMI Aqueduct System, this report is less an inventory, and more a reference/typology guide for irrigation systems and their components. As such, identification, documentation, and photography of each individual resource is not provided, nor is there a tally of all historic resources within the License Area, or individual evaluations of each resource.

### *Photographs and Fieldwork*

Digital photographs were taken in the field between May 15 and 18, 2018, of the 20 representative stream diversion features and 31 sluice gate examples. Representative features and examples were chosen for this report to illustrate the wide variety of feature types while also being accessible in the field for photography. For components other than stream diversions and sluice gates that were not observed during the fieldwork, photographs in EMI's files were used in this assessment. All examples of field photos taken by MAI that were used for this report have an orientation / directional notation. MAI worked closely with EMI Managers Garret Hew and Mark Vaught to understand how the system works, with the selection of the representative examples of features to be surveyed for the report, and with coordinating the fieldwork.

### *Historical Research*

Historical research was undertaken to assist in developing the context of EMI Aqueduct System's resources. This includes reviewing prior reports written on the License Area, including *Kalo Kanu O Ka Aina, A Cultural Landscape Study of Ke-anae and Wailuanui, Island of Maui* (July 1995), as well as *Cultural Surveys Hawai'i, Inc. Archaeological Literature Review and Field Inspection for the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna District, Maui Island, TMKs: [2] 1-1-001:044, 50, 1-1-002:002, 1-2-004:005, 007 (por.), 2-9-014:001, 005, 011, 012, 017 (2019)*, other books and newspaper articles. MAI worked closely with EMI Managers Garret Hew and Mark Vaught to obtain historical information about the EMI Aqueduct System.

### *Mapping*

The locations of the 20 representative stream diversion features are identified on location map (Figure 2).



## Boundary Explanation and Justification

The boundary of the state-owned License Area includes four areas in East Maui, known as the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. See Figure 1 map prepared by Wilson Okamoto Corp. for the EIS Preparation Notice. The EMI Aqueduct System operates in a larger Collection Area that includes thousands of acres (privately owned lands in addition to the state-owned lands).

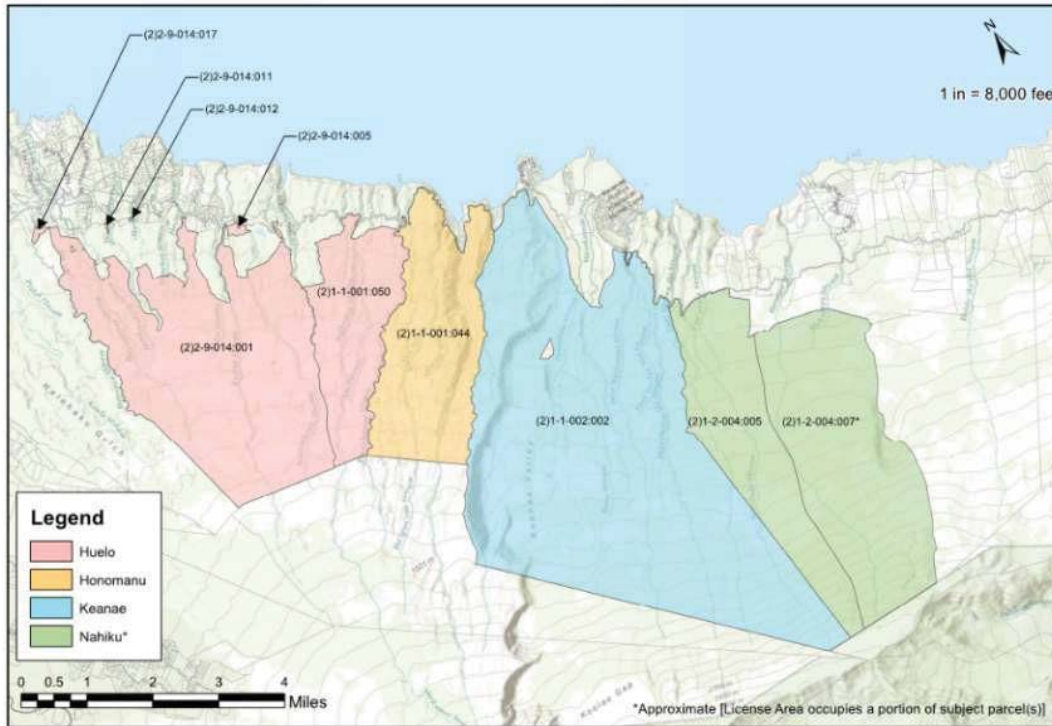


Figure 1: Water lease areas in the EMI system. (Source: Wilson Okamoto Corp.)

## Setting

The License Area is located completely in East Maui and within the State Land Use Conservation District. The larger Collection Area functions as a watershed to collect rainwater, which is then diverted and transported within the EMI Aqueduct System to the drier, central part of Maui, as well as to the County of Maui Department of Water Supply (MDWS), which in turn services water to Upcountry Maui, including the agricultural users at Kula Agricultural Park (KAP), and the Nāhiku community. As such, the East Maui area is characterized primarily by undeveloped, native forest subject to very high average annual rainfall (approximately 250 inches). Natural features include valleys, streams, waterfalls, and wetland forest. Constructed features include: dams, ditches, flumes, intakes, siphons, sluice gates, stream diversions, tunnels, roads, bridges, walkways, and weirs.

The EMI Aqueduct System includes 24 miles of ditches, 50 miles of tunnels, various flumes, weirs, aqueducts, small dams, and stream diversion intakes. There are 36 streams identified by CWRM within the License Area<sup>1</sup>. Of these 36 streams, the EMI Aqueduct System has historically diverted water from 34 of these streams.

<sup>1</sup> The Draft Environmental Impact Statement identifies 37 streams within the License Area. CWRM did not identify Puakea Stream within the IIFS.



Table 1 summarizes the 20 stream diversions surveyed for this report in the EMI Aqueduct System, and their locations are shown in Figure 2. The basis for MAI's estimated year built dates is provided separately, in Appendix D.



Figure 2: Location map of 20 EMI Aqueduct System features surveyed. (Source: MAI)



# HISTORICAL STRUCTURE ASSESSMENT EAST MAUI AQUEDUCT SYSTEM

Table 1 – 20 EMI Aqueduct System Stream Diversions Surveyed

| #  | Feature Name      | Estimated year built | Ditch     | Intake Type | Main Sluice Gate Type (in dam) | 2nd Sluice Gate Type (intake) | 3rd Sluice Gate Type (throw out) | Additional water throw out gate | Notes   |
|--|-------------------|----------------------|-----------|-------------|--------------------------------|-------------------------------|----------------------------------|---------------------------------|---|
| 001  | Makapipi          | 1904                 | Koolau    | A           | ratchet                        |                               |                                  |                                 |   |
| 002  | Hanawi            | 1904                 | Koolau    | A           | ratchet                        |                               |                                  |                                 |   |
| 003  | Ko Piliula West   | 1914                 | Koolau    | A           | geared x2                      | geared                        |                                  |                                 | Ditch water is co-mingled in impounded pool. Stilling wall and sluice gate at intake. |
| 004  | Wai o Hue         | Pre-1960             | Koolau    | B           |                                | board adj.                    | board adj.                       |                                 |   |
| 005  | Na ili ili Haele  | 1920s                | Lowrie    | A           | ratchet                        |                               |                                  |                                 | Stilling wall.  |
| 006  | Wailua Nui West   | 1923                 | Koolau    | A           | ratchet                        |                               |                                  |                                 | Sluice gate in dam is removed.  |
| 007  | Wailua Nui East   | 1923-24              | Koolau    | A           | ratchet                        |                               |                                  |                                 | Sluice gate in dam is removed.  |
| 008  | Wailua Iki West   | 1923-24              | Koolau    | A           | ratchet                        | board adj.                    |                                  |                                 | Stilling wall and sluice gate at intake.  |
| 009  | Wailua Iki East   | 1923-24              | Koolau    | A           | ratchet                        | board adj.                    |                                  |                                 | Stilling wall and sluice gate at intake.  |
| 010  | Hoolawa Haiku     | 1923                 | Haiku     | A           | geared                         | ratchet                       |                                  |                                 | Stilling wall (submerged) and sluice gate at intake.                                  |
| 011  | Banana Intake     | 1924                 | Spreckles | A           | ratchet                        |                               |                                  |                                 | Stilling wall and sluice gate at intake.  |
| 012  | Main Honomanu     | 1923-24              | Spreckles | A           | geared                         | geared                        |                                  |                                 | Stilling wall and sluice gate at intake.  |
| 013  | Kolea Power House | Pre-1960             | Koolau    | B           |                                | board adj.                    | ratchet                          | thread. shaft                   |   |
| 014  | Kaaiea            | 1928                 | Center    | C           |                                |                               | ratchet                          |                                 |   |
| 015  | Hoalua            | 1929                 | Lowrie    | B           |                                | board adj.                    | ratchet                          |                                 |   |
| 016  | Hoolawa Lii Lii   | Pre-1960             | Lowrie    | A           | ratchet                        |                               |                                  |                                 | Ditch water is co-mingled in impounded pool.  |
| 017  | Hoolawa Nui       | Pre-1960             | Lowrie    | C           |                                |                               | ratchet                          |                                 |   |
| 018  | Pii Naau          | Pre-1960             | Koolau    | D           |                                |                               | board adj.                       | board adj.                      | Not an intake, a water throw out from ditch   |
| 019  | Wai Kamoi         | Pre-1960             | Center    | A           | ratchet                        |                               |                                  |                                 | Ditch water is co-mingled in impounded pool. Stilling wall.                           |
| 020  | Kolea             | Pre-1960             | Center    | A           | ratchet                        |                               |                                  |                                 | Ditch water is co-mingled in impounded pool. Stilling wall.                           |
| Intake Type Descriptions   |                   |                      |           |             |                                |                               |                                  |                                 |   |
| A = Close the sluice gate in the dam for intake                            |                   |                      |           |             |                                |                               |                                  |                                 |   |
| B = Open the intake sluice gate for intake                                 |                   |                      |           |             |                                |                               |                                  |                                 |   |
| C = Throw out gate controls intake, close throw out sluice gate for intake |                   |                      |           |             |                                |                               |                                  |                                 |   |
| D = a water throw out from ditch   |                   |                      |           |             |                                |                               |                                  |                                 |   |

## Historical Overview, East Maui Irrigation

The following history is excerpted with permission from Cultural Surveys Hawaii, Inc.'s *Archaeological Literature Review and Field Inspection for the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna District, Maui Island. TMKs: [2] 1-1-001:044, 50, 1-1-002:002, 1-2-004:005, 007 (por.), 2-9-014:001, 005, 011, 012, 017.*<sup>2</sup>

### The Growth of Early Sugar in East Maui

With the decline of the whaling industry in the Pacific in the mid- to late-1800s, the Hawaiian Islands attracted a new generation of managers, professionals, and entrepreneurs who would reshape the landscape for western enterprises and pursuits. Samuel T. Alexander and Henry P. Baldwin were prominent in this movement. Alexander had been sent from his family home at Lahainaluna to study at Oahu College (Punahou School) in Honolulu followed by studies at Williams College in Massachusetts. Alexander returned to Lahainaluna in 1862 as a teacher, and he is credited with using irrigation for improving the town's sugar cane and banana yields with his students (Dean 1950). Reverend Dwight Baldwin (1798-1886) had arrived in the Hawaiian Islands in 1831 and was stationed at Lahaina between 1835 and 1870. During the early 1850s, Rev. Baldwin had been granted 2,675 acres of land in northwest Maui. This land holding became the basis for enterprises expanding over areas of West Maui undertaken by his son, Henry P. Baldwin, during subsequent decades of the nineteenth century (Dean 1950).

With the ratification of the treaty of reciprocity with the United States in 1876, the future success of sugar in the Hawaiian Islands seemed assured. At that time, several small plantations in the districts east of Wailuku and Kahului and north of Makawao developed new plans to expand the growing of sugar. The Haiku Plantation, managed by Samuel T. Alexander, as well as the Paia Plantation of Henry P. Baldwin, and the Grove Ranch Plantation of T. H. Hobron all suffered from frequent drought. In 1867, Samuel T. Alexander proposed a massive construction project to bring mountain water from the streams of East Maui west to their plantations along the slopes of Haleakalā (Kuykendall 1967:64).

The stockholders of the Haiku Plantation agreed to back the project. On 30 September 1876, the government of Hawai'i gave permission to the plantations of Maui to take water from the principal six streams of the region and convey the water by ditch to their fields, for an annual rental of \$100. The grant for the water was to last for 20 years, with the stipulation that the ditch construction be completed within the next two years (Kuykendall 1967:64). The system by which mountain water was brought from East Maui to the Haiku Plantation fields in Ha'ikū and further west onto the isthmus of Maui was the breakthrough that the sugar industry needed to flourish (Wilcox 1996:127).

---

<sup>2</sup> Prepared for: Wilson Okamoto Corporation. Prepared by: Trevor M. Yucha, B.S., Zachariah D. Royalty, B.S., and Hallett H. Hammatt, Ph.D., of Cultural Surveys Hawai'i, Inc., Wailuku, Hawai'i. Job Code: MAUI 26. December 2018.

The “Hamakua Ditch Company” was organized on November 2, 1876, and specifically allotted the shares and costs and the divisions of water to the various plantations, as thus;

The ownership, share of costs and division of water were 9/20ths Haiku Sugar Company, 5/20ths the Alexander and Baldwin Company, 2/20ths James Alexander, and 4/20ths T. H. Hobron. Construction of the Hamakua Ditch, which consisted of a combination of an open ditch, tunnels and iron pipes, was carried on throughout 1876-1877. Funding for the project was accomplished by the agency of Castle & Cooke. Castle & Cooke agreed to finance the project, with the belief that Samuel T. Alexander and Henry P. Baldwin could bring the ditch project in for between \$25,000 to \$50,000 (Kuykendall 1967:64).

Thrum (1877:39-42) in *Hawaiian Annual and Almanac for 1878*, published a description of the project:

The digging of the ditch was a work of no small magnitude. A large gang of men, sometimes numbering two hundred, was employed in the work, and the providing of food, shelter, tools, etc., was equal to the care of a regiment of soldiers on the march. As the grade of the ditch gradually carried the line of work high up into the woods, cart-roads had to be surveyed and cut from the main road to the shifting camps. All the heavy timbers for flumes, etc. were painfully dragged up hill and down, and in and out of deep gulches, severely taxing the energies and strength of man and beast, while the ever-recurring question of a satisfactory food supply created a demand for everything eatable to be obtained from the natives within ten miles, besides large supplies drawn from Honolulu and abroad. (Thrum 1877:39-42)

When construction got under way, Samuel T. Alexander and Henry P. Baldwin began to find out what a monumental job they had tackled. Torrential rains and landslides plagued the project. Workers had to hack their way through jungle and descend sheer cliffs by rope. When the men balked at the final barrier of the sheer drop of over 300 feet at the Māliko Gulch, Henry P. Baldwin, who had lost an arm in a sugar mill accident, shamed them into returning to work by sliding down a rope with his one good arm (Taylor et al. 1976:87).

In July 1877, the first water began flowing through the ditch. It reached the parched Haiku Plantation 24 hours later – barely one day before the deadline set in the royal grant. Approximately 60 million gallons of water a day were soon running through the aqueduct system. The ditch had cost \$80,000, which was paid for by Castle & Cooke. At the same time that the success of the Hamakua Ditch became known in the islands, the wealthy refiner of beet sugar in San Francisco, Claus Spreckels, arrived in Honolulu. Seeing the early success of the Alexander and Baldwin partnership, Spreckels moved fast to do business with the sugar growers of Hawai'i. Within three weeks, he had bought more than half the sugar crop of 1877 and was laying plans to take over the industry as a one-man monopoly (Taylor et al. 1976:87).

Spreckels had watched the Hamakua-Haiku Ditch development on Maui with special interest, hoping it would fail so that he could pick up the pieces. Anticipating the success for the future of sugar at East Maui, Spreckels acquired 8,000 acres of barren

plain adjacent to Ha'ikū and the Alexander & Baldwin properties. He then leased 24,000 acres of Crown land in Wailuku through an agreement with a prominent member of the royal family. In 1882, Spreckels was able to obtain title to these lands in fee simple. All he needed was water. Here, Spreckels turned to his friend, Kalakaua; the newly-elected king of the Hawaiian Islands. Kalakaua dismissed his cabinet, whom had previously turned down Spreckels' application for water from the same general area as Alexander & Baldwin's Hamakua Ditch. A new cabinet was appointed by the king, who then approved a new right to water for Spreckels. Spreckels went on to build his own ditch and develop his Maui lands into a profitable sugar plantation (Taylor et al. 1976:88-89).

Spreckels was quick to consolidate his gains. His sugar venture on Maui was named "Hawaiian Commercial & Sugar Company," His expenditures on irrigation and mill machinery were lavish, and his Spreckelsville plantation was nothing short of magnificent. When Claus Spreckels received permission to the use of water found in East Maui, he built his own ditch from Honomanū stream to Maui's south shore (Wilcox 1996).

### **The Rise of Commercial Enterprise in Hāna**

A 2 February 1897 article in *The Hawaiian Star* discusses the future of the Hāna region from the perspective of the continued growth of industry and commerce in Hawai'i at the turn of the century (The Hawaiian Star 1897). Hāna and the undeveloped slopes of East Maui are described as one of the last natural environments remaining in the State in the following excerpts:

"The district of Hana is one of the least known to the general public of any districts on the Islands. Beyond the fact that there are three sugar plantations, viz: Hana, Reciprocity and Kipahulu, the average citizen of Honolulu knows very little about it. It is one of the districts that, like Kona and Puna, will one of these days awake out of sleep.

The prospects of the Hana district are good. The sugar plantations lie on the belt of the undulating land at the extreme east of the Island. To the northwest of Hana Plantation there is an extent of country stretching for twelve or fourteen miles, which, at one time, supported a large population, but which at present time has only a scattered villages here and there.

The energy to develop these lands must come from without, it can never come from within. Again, it is not only energy and capital that are required, but roads. The roads of the portion of the Hana district have hardly been touched since the days of Dr. Judd, who, so far as memory serves, had the present so-called road constructed." (The Hawaiian Star 1897:4)

The ambition for successful commercial cultivation in East Maui continued to be the focus of all endeavors throughout the mid- and late-1800s. Sugar, coffee, and rubber plantations were started throughout the region with high hopes of success. A 19 December 1898 article in *The Hawaiian Star* documents a large land sale in Nāhiku and describes the beginning of "the awakening" of the region to foreign industry in the following excerpts:

“The land sale which took place at Paia on Saturday afternoon, December 17<sup>th</sup>, was indeed a phenomenal one. There were three lots for sale, and each of them sold for a little over five times the appraised price.

The lands in question are situated in Nahiku among the Palis of East Maui. A couple years ago it would have been hard to give the land away and no one wanted it, unless the chances of permanent government and therefore capital were assured. So the land lay a waste of guava scrub, ferns, ohia, kukui, lauhala and so forth. The thundering waterfalls crashed over the cliffs and the streams roared over their rocky beds to the ocean, with no tribute to the soil in the shape of irrigation. For miles there would be no habitation.

Now all this is being changed. The district, one of the most fertile on the Islands, awakes out of its lethargy. The valleys which have only heard the roar of the cataract and the rush of the stream will wake to the sound of the steam whistle and the ax, and man will enter upon his kingdom. Cultivation and civilization will reign, but the wild beauty of the Koolau district will be gone. Again this is progress under annexation.” (The Hawaiian Star 1898)

### **East Maui Irrigation Company**

The East Maui Irrigation Company (EMI) Aqueduct System was constructed to deliver water from the abundant watersheds of East Maui into coastal and central isthmus plantations to aid in sugar production. The aqueduct system has been in use for over 134 years and continues to collect water today for both private and municipal entities. The EMI Aqueduct System, at the time of this writing, contains 50 miles of tunnels, 24 miles of open ditches, 13 inverted siphons and flumes, and approximately 388 intakes. In addition, the system is served by approximately 62 miles of private roads, and a solar powered radio telemetry system to monitor ditch flow. The catchment begins at roughly 1,300 ft elevation and delivers water to Central Maui at an elevation of 1,150 ft, covering 18 miles from its western to eastern extent.

Built at a time when Hawai'i was still an independent kingdom, the EMI Aqueduct System was the first of its kind both in the Pacific and on the West Coast of the U.S. It is also the largest privately financed, constructed, and managed irrigation system in the U.S. The initial construction of the first section of the aqueduct system in the 1870s, named Old Hamakua, began the engineering trend of catchment ditches that would later fuel the sugar industry on Kaua'i, O'ahu, Hawai'i, and Maui, making sugar the major economic sector of Hawai'i for over a century. The aqueduct system itself is composed of a mosaic of multiple smaller ditches, all built at different times by different groups of financiers and engineers (ASCE 2001).

Hawai'i was moving through many economic and demographic shifts in the late 1800s following the intensification of Western commerce, including the continued drift of rural populations toward town centers, which made water a highly contested and protected resource on islands such as O'ahu where these demographic trends were most pronounced. This is largely because water had to be diverted from distant watersheds to support growing cities. The legality surrounding watershed catchment was continuously challenged for leaving too-little water for residents where streams were

diverted by the government (Wilcox 1996). Regardless of the dismay this may have caused, the costs of abandoning water catchment had to be carefully balanced by the Kingdom, since much more than the municipal water supply hung in the balance. In *Sugar Water: Hawaii's Plantation Ditches*, Carol Wilcox (1996:27) states:

“Hawaii moved steadily through this transition because it always had something that it could trade. At first the orient traded for Hawaiian sandalwood; then the whaling fleet needed crew and provisions; there was California Gold Rush market; the westerners wanted land-and these commodities all became available. Both the markets and the resources, however, were limited, and before long they were “used up.” Unless it developed a new commodity, Hawaii ran the risk of becoming a political and economic non-entity, a backwater nation. This did not fit the vision that the monarch, the resident haole, or the people had for the future of the kingdom.” (Wilcox 1996:27)

The prospect of growing sugar in Hawai'i was very appealing to the Kingdom as it would provide a renewable economic base. This view was further exemplified in 1876 by “An Act to Aid the Development of the Resources of the Kingdom” in which eminent domain rights reserved for public purposes (such as water) could be applied by the government to private enterprises for the development of sugar (Wilcox 1996). Along with the Reciprocity Act of 1876 that allowed the duty-free export of Hawaiian sugar to the mainland U.S., the groundwork had been set for the start of the sugar industry in the archipelago (ASCE 2001). This new industry would require a vast amount of water as exemplified by the poem about sugar cane named *The Crop* by Beryl Blaich: “And water, all the water you can find, dig, direct, scrounge, divert, tunnel and hold. Bring the water tribute to me, King Cane” (Beryl Blaich in Wilcox 1996:v).

Old Hamakua, the first catchment marking the start of the EMI Aqueduct System, was constructed during the reign of King Kalakaua. This section of ditch was constructed by Henry P. Baldwin, Samuel T. Alexander, and James M. Alexander between 1876 and 1878 under the name of the Hamakua Ditch Company. The result of the project was 17 linear miles of non-lined ditch finished in the last days of the deadline imposed by the Kingdom (Wilcox 1996). This ditch was servicing Ha'ikū fields by July 1877 with the water it harvested from Kailua, Hoalua, Huelo, Hoolawa, and Honopou streams on its way to the terminus at Nailiilihaele Stream.

The second addition to the aqueduct system was the Spreckels Ditch, also known as the Haiku Ditch, constructed between 1879 and 1880. The lease granted to Spreckels gave him rights to all water not already in use by 30 September 1878, the same date as the deadline for the completion of the Old Hamakua Ditch. Taking advantage of his unrestricted access to all streams not currently under collection, the Haiku Ditch was twice as long, three times as large, carried 50 percent more water than the Hamakua Ditch, and stretched from Honomanū Stream to the Kīhei boundary (Wilcox 1996). The ditch was 30 miles long and could deliver up to 60 million gallons per day (mgd), costing nearly half a million dollars by the time it was completed (ASCE 2001). The breadth and scale of this endeavor would redefine standards of water collection for the sugar industry in Hawai'i. The massive Haiku Ditch was the first developed by a foreign engineer, named Herman Schussler, a trend that would continue for all future additions to the EMI Aqueduct System (Wilcox 1996). Shortly after Spreckels formed the



Hawaiian Commercial and Sugar Company (HC&S), construction also began on Center Ditch (1898), Manuel Luis Ditch (1900), and the Lowrie Ditch (1899-1901) by Schussler (ASCE 2001).

In 1898, Spreckels lost controlling interest of HC&S to the agency of Alexander & Baldwin, who took up and completed construction of the Manuel Luis and Lowrie Ditches. Along with the Center Ditch, these two sections completed a lower elevation catchment running through the Hāmākua Loa and Koʻolau regions. Most notable was the Lowrie Ditch, sometimes called the Lowrie Canal, named after the manager from the HC&S plantation and mills at Spreckelsville, William J. Lowrie. The 22 mile-long Lowrie Ditch could deliver 60 million gallons per day and contained seventy-four tunnels (totaling 20,850 ft, with a single tunnel of 1,955 ft), 19 flumes (totaling 1,965 ft), and 12 siphons carrying water from distant Honomanū Valley to the central isthmus. This ditch was also engineered by a foreign expert, E. L. Van Der Neillen, and constructed by Japanese laborers under the direction of Carl Jensen (Wilcox 1996).

Following the completion of the Manuel Luis/Center/Lowrie Ditch extensions, the next large irrigation project for the Hamakua Ditch Company would be the Koolau Ditch, constructed between 1904 and 1905 by M. M. O'Shaughnessy. This extension of irrigation catchment reached an additional 10 miles toward the Hāna Region and consisted of 7.5 miles of tunnel and 2.5 miles of open ditch and flume. Given the extreme difficulty of working in the narrow and deep gulches of the region it was necessary to build a road alongside the ditch where it passed into tunneled rock, the span of these borings ranged from 300 to 2,710 ft in length (Wilcox 1996). It is this road that was famously travelled by author Jack London in 1905 (The Honolulu Advertiser 1914). This newest ditch section extended out to Makapipi Stream in Nāhiku and cost the Hamakua Ditch Company \$511,330 to complete. The Koolau Ditch was constructed concomitantly with the New Hamakua ditch, transferring the Koʻolau water further west toward Hāmākua Loa, located parallel to the Lowrie ditch but further upslope (Wilcox 1996).

In 1908 the Hamakua Ditch Company was succeeded by their new business entity, EMI. The purpose of this new entity was to develop and administer the surface water collection for all plantation entities under the Alexander & Baldwin umbrella, including the newly acquired Kīhei Plantation. Shortly after this transition, in 1912, EMI added lining to the Koolau Ditch bed and started construction on the Kauhikoa Ditch. The Kauhikoa Ditch collected the water originating in the Koolau/New Hamakua Ditches and carried them further west through Haʻikū, Pāʻia, and further out to Puʻunene in the central isthmus. This newest extension was completed in 1915 at 29,910 linear ft and carrying 110 million gallons per day. Shortly after starting the Kauhikoa Ditch EMI also started construction of the New Haiku Ditch in 1913. Construction of this lower altitude ditch, running from Halehaku gulch in Peahi to dry North Kīhei, was completed in 1914 with a finished length of 54,044 ft and a daily delivery of 100 mgd. The much longer New Haiku Ditch was completed faster than its Kauhikoa contemporary as the terrain it had to traverse was less severe (Wilcox 1996). Plans for the last major addition to EMI's catchment system, the Wailoa Ditch, was started in 1918. By the time this ditch was completed in 1923 it was the highest capacity channel in the entire network and had a greater median flow than any natural river in Hawaiʻi. The Koolau Ditch was

connected to the new Wailoa section, being diverted away from the New Hamakua Ditch, and connected to a series of hydro-electric power plants on the north shore of Maui. The Wailoa Ditch consists of 51,256 ft of mostly lined tunnel, and its water capacity ranged from 160 mgd upon completion to a later increased capacity of 195 mgd. This ditch ran parallel to, and above, the earlier New Hamakua and Kauhikoa Ditches (Wilcox 1996).

Upon completion of the major ditch features, EMI commanded the runoff water of a combined 50,000 acres, of which EMI owned 17,000 acres and the State of Hawai'i owning the balance and directed it toward their 30,000-acre sugar plantation and into Maui Department of Water Supply. Accompanying the water collection infrastructure were 12 siphons, 62 miles of road, 15 miles of telephone line, and numerous small feeders, dams, reservoirs, intakes, pipes, and flumes. The totality of the collection system was managed by four license areas (Huelo, Honomanū, Ke'anae, and Nāhiku) that dictated the circumstances and conditions under which EMI could collect the runoff from the various Government lands it crossed. The development and improvement of the EMI Aqueduct System over time has cost nearly \$5,000,000, compared to its modern assessment of nearly \$200,000,000 to create a comparable system.

## Irrigation Ditch System Overview

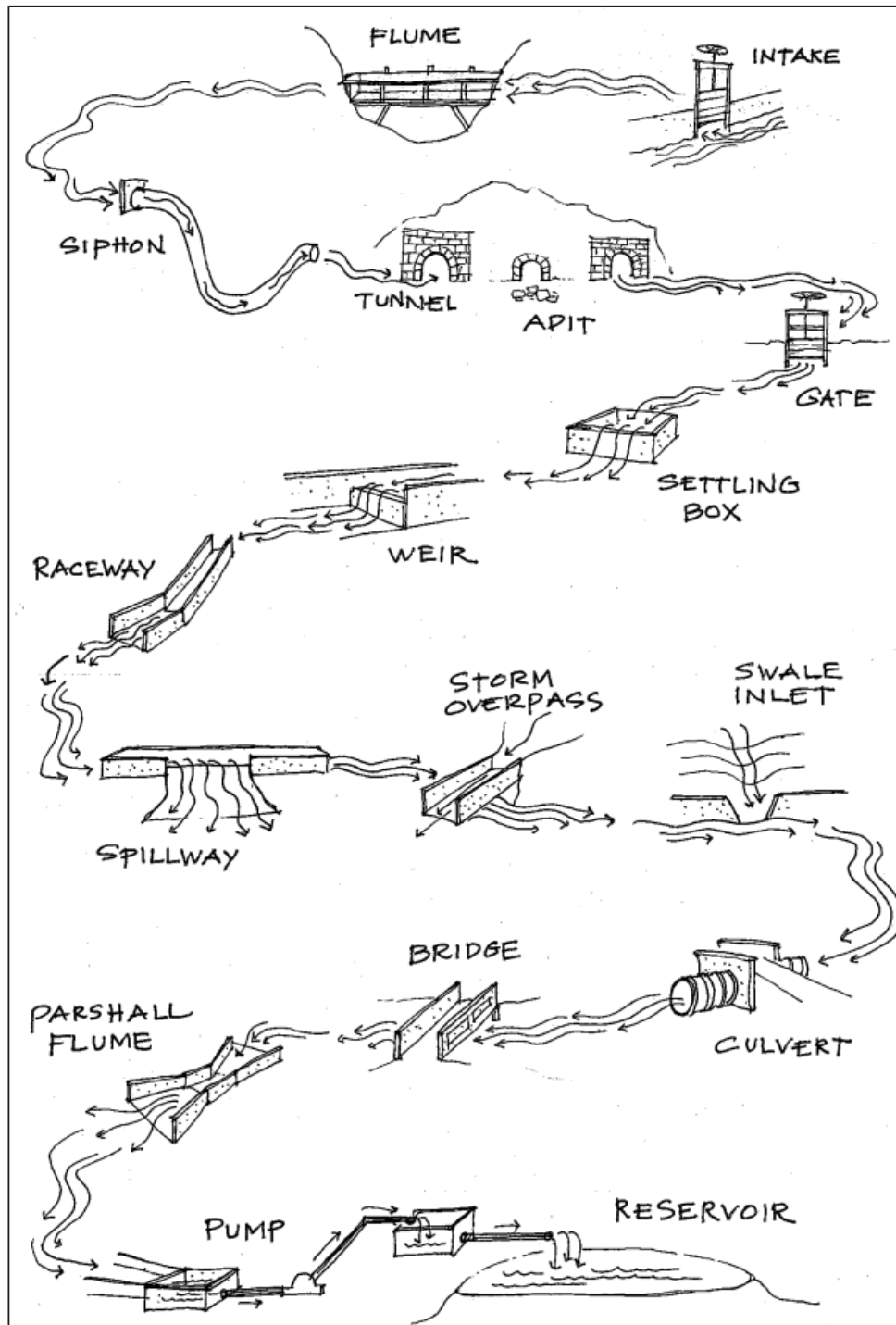


Figure 3: Typical features found in Hawaii's irrigation ditches (Source: Thematic Context Study: Hawaii's Irrigation Ditches, Mason Architects, Inc. 2018)

The EMI Aqueduct System is a network comprised of many different built components, and sluice gates are components of larger, important features. To follow is a general description of a representative Hawaiian sugar cane irrigation system.

A typical Hawaiian irrigation ditch for a sugar plantation originally delivered water across variable terrain, from the source (intake) to the cane fields. Ditch intakes typically consisted of a small dam of lava rock and concrete masonry erected across a stream bed to impound water behind it. As impounded water would rise to a certain level, it would flow into a channel, or intake, behind the dam. This would mark the beginning of that section of ditch. Multiple intakes could be located along the run of a ditch, wherever there was a suitable stream. Generally, the impounding dam was built low across the stream so that a heavy stream flow will wash over it. A light stream flow could be completely occluded by the dam. Occasionally, intake channels were built to accept water from a flowing spring, or from a pumped well.

The layout and design of an irrigation ditch system was planned using a field survey that plotted elevations along the route. The ditch was dug to provide a gradient to keep water flowing, but not so steep as to allow water to build up speed that would result in greater erosion. Generally, the gradient of a ditch was between about 1" to 4" of slope for each 25' of ditch run. Probably the most common treatment of ditch channels that exist today is a relatively thin concrete lining applied to the earth sides and bottom of the ditch. Ditch linings of concrete slabs, masonry of lava rock and concrete mortar, and unlined earth are also found. Sometimes ditches were routed into natural stream beds for a portion of their runs.



Figure 4: Kekaha Ditch, Kaua'i (possibly above the Mana Plain) ca. 1907. The gate in the photo is the inlet for a siphon. (Source: Private collection of Chris Faye, Kekaha, Kauai)



In places where ditches were routed across an area with a short and steep drop, concrete raceways were used with deep boxes at their lower ends to collect and still the descending water. Even with a mild gradient, erosion and scour is amplified at turns of the ditch. To minimize this, gentle turns were used where possible and the ditch walls were reinforced at sharper turns, often with lava rock and concrete masonry.



Figure 5: A wooden flume in West Maui. Date unknown. (Source: Wilcox, *Sugar Water*.)

Whenever possible, ditches were run to follow the contour of the terrain while maintaining their sloping gradient. It was often more expedient to bridge a gulch or canyon rather than weave the ditch completely in and out of gulches. This was accomplished using a flume (Figure 5) for a narrow gulch, and a siphon for a wider gulch or canyon. Although digging a ditch in the open was quicker and cheaper than tunneling, it was likewise often more expedient to go underground and cut a tunnel through ridges rather than follow the contour around them.

Because source water for irrigation ditches was frequently from a stream that flowed most productively during times of heavy rain, when the sugar crop was also getting well-watered, reservoirs were used to store water for times when it was needed most. Sometimes, such as at the Hamakua Coast of the Big Island, ditch water was used primarily for fluming cane to the mills.

## Glossary of Other Built Components of the EMI Aqueduct System

Numerous other built components in the EMI Aqueduct System were noted during the selected-sludge gate survey (there are no plans under the current project to modify these features). These are described below.

### *Bridges*

Bridges are used along the trail route that provides access to the ditches and their features. Bridges span gulches and streams. They are typically concrete slab construction with either curbs at their edges or solid concrete parapets. Some are inscribed with the year built.



Figure 6: Bridge at Banana Intake stream diversion carries an access trail over the stream. (Source: MAI, 2018)

### *Dams*

Dams are built in the streambed to impound water in order to draw water into ditches. Dams are typically of concrete or masonry (lava rock with concrete mortar) construction. They are typically built with lava cobbles that are laid uncoursed, or are of poured concrete. Some dams are built of faced, uncoursed, irregular lava rock, and some are quarry-faced rectangular blocks laid in courses with concrete mortar. Dams have sluice gates to regulate the amount of water impounded and to allow the stream to flow when no water is needed for the associated intake. Contrast dams with weirs are designed to have water flow over them. Most dams are less than 6' high, however some in larger streambeds can be up to 14' in height.



Figure 7: Dam at Wailuanui West Stream diversion impounds stream water for intake. (Source: MAI, 2018)



### *Ditches*

Ditches carry the collected water along a gently sloping grade across the terrain and deliver it to planted fields. They can be built of varying dimensions, from about 2' wide to over 10' wide and can be unlined or lined with concrete or masonry.



Figure 8: Koolau Ditch near Waiohue Stream diversion. View Facing S. (Source: MAI, 2018)

### *Flumes*

Flumes are used to carry water across a gulch or depressed area of terrain by remaining at ditch gradient. They have the same gentle slope as ditch sections. Historic flumes are typically cast concrete construction with a rectangular cross section and vertical sides that are between 4" and 8" thick. Concrete flumes often have transverse concrete braces across their open tops.



Figure 9: Flume at Koolau Ditch near Waiohue Stream diversion. View Facing N. (Source: MAI, 2018)

### *Intakes*

Intakes are located at stream diversions. They are channels that stream water flows through to be carried from the stream to the ditch. Intakes can have sluice gates at their apertures to control the amount of water taken in, or they can be without a gate. Some intake channels have throw-out sluice gates in their side walls that can be opened to discharge incoming water back out to the stream bed.



Figure 10: Intake at Hanawi Stream diversion. View Facing S.  
(Source: MAI, 2018)

### *Siphons*

Siphons' enclosed tubes that carry ditch water across a gulch or depressed area of terrain. Unlike flumes, siphons dip down to follow the depression and then ascend on the opposite side of the gulch. (There are 13 siphons but none were seen during the field work for this report.)



Figure 11: Maliko siphon, unknown date.  
(Source: EMI archives)



### *Stream diversions*

Stream diversions are features built into a streambed that allow stream water to be taken into a ditch. They generally have a dam or weir to impound a pool of water that is routed into an intake. Stream diversions are masonry or concrete construction, with some metal components such as sluice gates, trash grates, and walkways.



Figure 12: Honomanu Stream diversion. View facing E.  
(Source: MAI, 2018.)

### *Tunnels*

Tunnels are built to carry the ditch through the steep terrain of the watershed. Tunnels make up a large portion of the EMI Aqueduct System in East Maui, comprising about two-thirds of the length of the system. Tunnels were dug on a gently sloping grade similar to the standard grade of a ditch. (Most intakes at stream diversions that were visited during field work for this report fed their collected water into a tunneled portion of ditch.)



Figure 13: Tunnel near Kopiliula stream diversion carries water underground at ditch gradient. View facing SE.  
(Source: MAI, 2018.)

### *Walkways*

Walkways are used to cross gulches above some stream diversions. All of the walkways observed on the field visit for this report are of fairly recent construction of galvanized steel, aluminum, and plastic tread.)



Figure 14: Walkway above Makapipi Stream diversion. View facing S. (Source: MAI, 2018.)

### *Weirs*

Weirs are low dams built across a stream to impound water on their upstream side. They are intended to have water flowing over them during times of normal water level and are not high enough to totally obstruct the flow of a stream. Weirs are typically concrete construction or masonry of lava rock and concrete mortar. Some weirs are built with a shallow "v" depression along their top edge to keep the flowing water better channelized in the center of the stream bed.



Figure 15: Wailuanui West Stream diversion. View facing SW. (Source: MAI, 2018.)

HISTORICAL STRUCTURE ASSESSMENT  
EAST MAUI AQUEDUCT SYSTEM



## Stream Diversions

Operable sluice gates in stream diversions enable stream water to flow into ditch intakes by opening or closing the gate. Three types of stream diversions were noted during the field work, and are classified in this report by their configuration and whether stream water is taken into the ditch by either closing or opening the sluice gate. Some stream diversions have more than one sluice gate, depending on how they are configured to operate. Nineteen of the twenty features visited during the field work were stream diversions; the one remaining feature is a throw-out sluice gate that discharges water from the ditch itself.

# Type A Stream Diversion

## *Intakes Water by Closing the Sluice Gate*

The most common type of stream diversion seen during the field visit (classified as Type A for the purposes of this report), operates using a dam across the stream bed that is equipped with a sluice gate. This type accounts for fourteen of the nineteen stream diversions surveyed. When the sluice gate is closed, water is impounded in a pool above the dam. As the water rises in the pool, it reaches the level of a ditch intake aperture and is able to flow out of the impounded pool, through the aperture, and into the ditch. With the sluice gate in the dam open, stream water flows through the gate and is not impounded sufficiently by the dam to reach the level of the intake. The stream diversions visited used either a ratchet or geared type sluice gate to control the water going through the dam. Some variations to this type of stream diversion were seen, most commonly, the use of a stilling wall in the pool. This wall separates the intake aperture from the rest of the impounded pool.

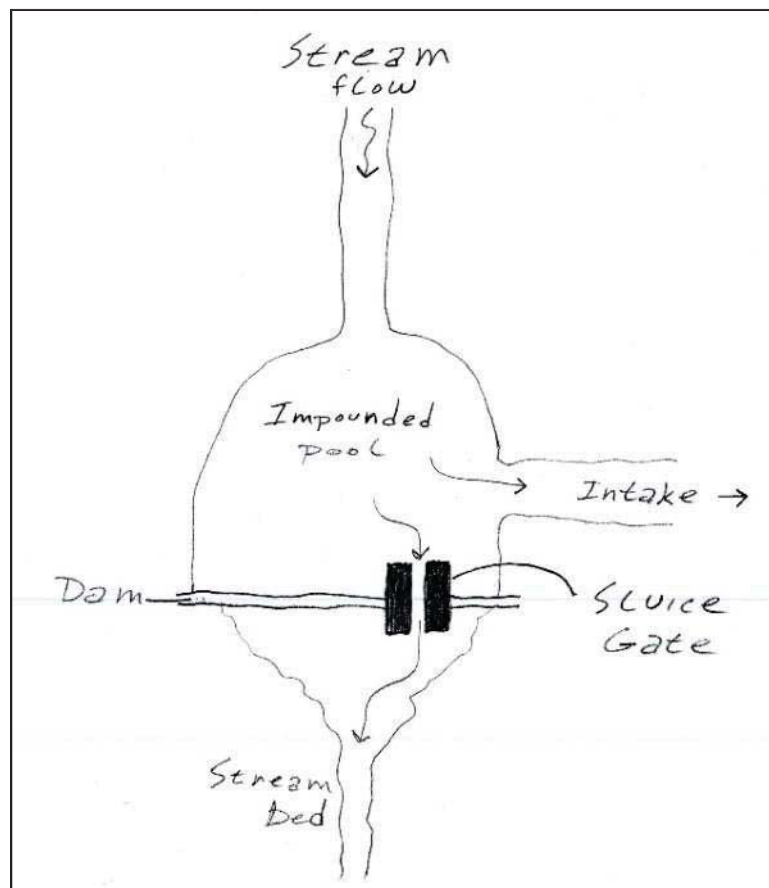


Figure 16: Type A Stream Diversion Schematic Diagram.  
(Source: MAI)

## Type A Variation

*Includes a stilling wall and/or sluice gate at intake*

The stilling wall is built to a level slightly below that of the top of the dam. When the dam sluice gate is closed and water backs up in the impounded pool, it flows over the top of the stilling wall and reaches the intake aperture. The stilling wall is designed to reduce the turbulence of the water that reaches the intake aperture from the impounded pool. Some stilling walls are constructed with perforations to allow water flow through them as well as over them. Another variation is a second sluice gate at the intake aperture. This sluice gate would need to be open to allow collected water to flow into the intake.

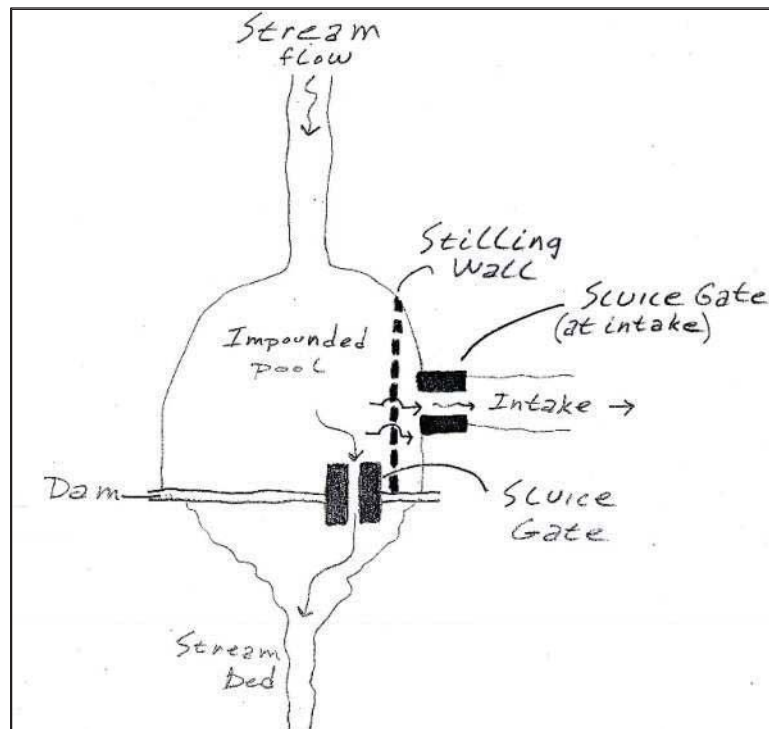


Figure 17: Type A Stream Diversion Variation Schematic Diagram. (Source: MAI)

## Type B Stream Diversion

### *Intakes Water by Opening the Sluice Gate*

This type of stream diversion operates by using a weir across the stream to impound water to a level that reaches the intake aperture. A sluice gate that is installed at the aperture is opened when water is needed in the ditch. When closed, this sluice gate prevents impounded water from entering the intake and the stream water flows over the weir out of the impound and continues down the stream bed. All three of the stream diversions of this type that were observed during the field work use board adjusted sluice gates at the intake apertures and had additional throw-out sluice gates located on the intake channels downstream of the intake apertures, which discharge excess water back into the stream bed when opened.

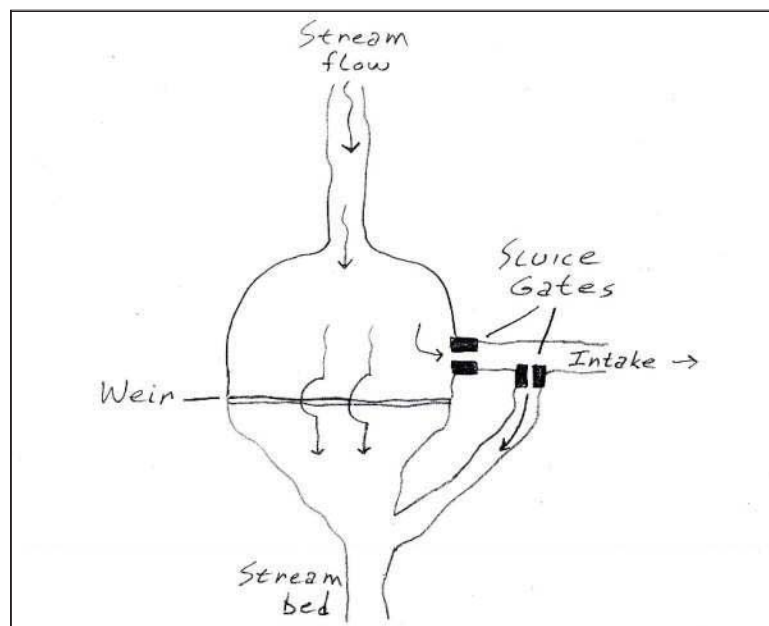


Figure 18: Type B Stream Diversion Schematic Diagram.  
(Source: MAI)

## Type C Stream Diversion

### *Intakes Water by Closing a Throw-Out Sluice Gate*

This type of stream diversion (used in two of the nineteen diversions surveyed) uses a weir and impounded pool to feed stream water into an intake aperture that is not equipped with a sluice gate. The intake aperture of this type is always open, it has no sluice gate. The amount of water fed into the ditch is controlled by a throw-out sluice gate in the side wall of the intake channel, downstream of the aperture. This throw-out gate, when open, discharges the water flowing into the intake channel back to the stream bed below the weir. When this sluice gate is closed, intake water is not discharged into the stream but continues down the intake channel into the ditch. Both of the diversions of this type observed during field work use a ratchet mechanism on the throw-out sluice gate.

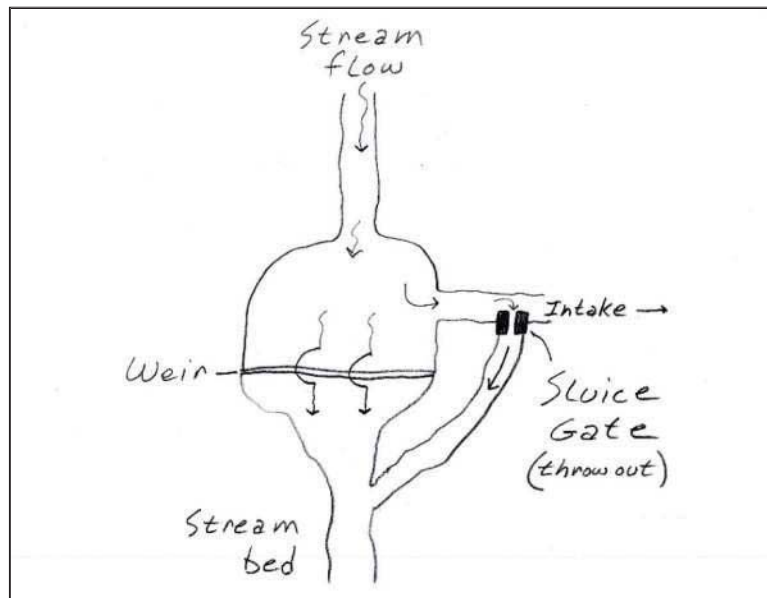


Figure 19: Type C Stream Diversion Schematic Diagram.  
(Source: MAI)



## Type D Ditch Water Throw-out

*Uses a Sluice Gate in the Ditch wall to discharge water*

One of the features surveyed was not a stream diversion, but a structure designed to stop the flow of water through the ditch. This has two board-adjusted sluice gates; one sluice gate straddles the ditch itself and a second, upstream sluice gate is built into the sidewall of the ditch. The two sluice gates of this structure serve to stop the flow of water through the ditch and to discharge water into a gulch. The wide, board adjusted sluice gate spanning the ditch is closed to block the continued flow of water through the ditch, and impound it above the gate. The second sluice gate, a throw-out gate, is then opened, discharging the impounded water into a gulch. When surveyed there was no water in this ditch, the wide sluice gate straddling the ditch was closed and the throw-out sluice gate in the side of the ditch wall was rendered permanently open by the removal of all boards.

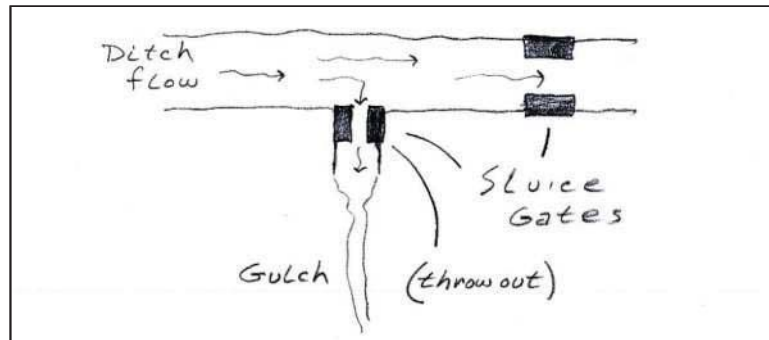


Figure 20: Type D Ditch Water Throw-Out, Schematic Diagram.  
(Source: MAI)

# What is a Sluice Gate?

## DESCRIPTION

A sluice gate is a panel of metal, wood boards, or plastic boards that slides vertically in grooves that are set in the sides of the waterway channel.

## FUNCTION

Sluice gates control water flow and flow rates. Depending on where they are positioned in a ditch system - and if they are open or closed - they can impound water behind them, allow water to flow into an intake, or throw-out water from a ditch. Sluice gates can either be a component of a larger feature (stream diversion) or a self-contained feature on their own.

Sluice gates can be adjusted by various means, including mechanisms for raising and lowering them. Some of these mechanisms have become inoperable due to lack of use. When necessary, however, they can be serviced to make the adjustments for regulatory compliance.



Figure 23: Typical board adjusted type sluice gate mechanism, shown with the gate closed. This gate is located at EMI stream diversion at Waiohue, which is ordered to be a “Fully Restored” stream by CWRM. View facing SE. (Source: MAI, 2018.)



Figure 21: Typical sluice gate. Note the vertically sliding panel at the lower end that is operated by the mechanism above. This ratchet-operating gate is located at EMI stream diversion at Wailuaki East, which is ordered to be restored as a “Habitat Stream” by CWRM. (Source: MAI, 2018.)



Figure 22: Typical configuration of sluice gates in a concrete dam. These sluice gates are located at EMI stream diversion at Kopiliula, which is ordered to be restored as a “Habitat Stream” by CWRM. View facing N. (Source: MAI, 2018.)

## Sluice Gate Types

Four types of sluice gates were noted during MAI's field work. Three types use various mechanisms: a ratchet, a gear, or a threaded shaft, to move a solid panel vertically in slots set in the channel. One type is defined by a series of horizontal boards that are slid up and down vertically in slots in the channel. All four of the sluice gate types noted are described and illustrated on the following pages.

## Ratchet Type

The ratchet type of mechanism was the most commonly encountered, accounting for sixteen of the thirty-one sluice gates in the twenty stream diversions and other features visited during the field survey. This mechanism operates similarly to a type of automobile jack, using a pawl that engages cross pins that are set in a tall vertical spar fixed to the top of the solid panel. The spar is raised in short increments by a lever that rises the cross pins, allowing the pawl to drop below each pin, arresting any downward movement so the lever can be re-engaged. For lowering the spar, a lever-operated friction brake controls downward movement of the spar when the pawl is released. The ratchet gate mechanisms observed were constructed primarily of painted steel. Some had stainless steel cross pins. Some ratchet mechanisms at the time of the field survey were inoperable due to broken, corroded, or removed parts. Some of these mechanisms have become inoperable due to lack of use. When necessary, however, they can be serviced to make the adjustments to diversions for regulatory compliance. Occasionally, a sluice gate mechanism has been removed by EMI to allow the full flow of stream water to continue past the diversion. This was done to restore full stream flow after the 2016 closing of the HC&S sugar plantation.



Figure 24: This typical ratchet type sluice gate operating mechanism is located at EMI Hoolawaili Stream diversion, on a tributary of Hoolawa, which is ordered to be restored as a “Habitat Stream” by CWRM. View facing SE. (Source: MAI, 2018.)



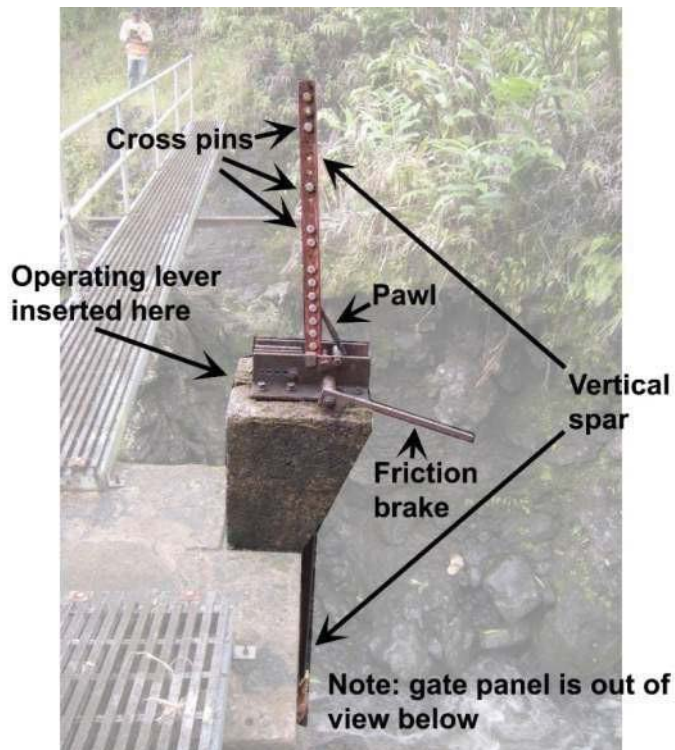


Figure 26: This photo illustrates the parts of the sluice gate. Existing modifications to ratchet type sluice gates include the replacement of cross pins (sometimes with stainless steel pins), and placing a locked box over the operating lever area to prevent unauthorized gate adjustments. The integrity of this type of gate can also be affected by the removal of operating parts by EMI to disable the gate, and by corrosion, which can degrade parts and cause them to break or come loose. (Source: MAI, 2018.)



Figure 25: This sluice gate mechanism is a ratchet type. The concrete pedestal and platform it is mounted on is typical of ratchet type gate mechanisms. This ratchet-operating gate is located at EMI stream diversion at Makapipi, which was fully restored in 2008. View facing SE. (Source: MAI, 2018.)



## Geared Type

The geared type of mechanism was seen on six of the thirty-one sluice gates in the twenty stream diversions and other features observed. This mechanism operates with a hand cranked pinion gear that raises and lowers a vertically-oriented gear rack affixed to the top of the solid panel of the gate. This mechanism has steel parts, and some examples seen were inoperable due to missing parts that were removed by EMI. Some of these mechanisms have become inoperable due to lack of use. When necessary, however, they can be serviced to make the adjustments to diversion for regulatory compliance.



Figure 27: This typical geared type sluice gate operating mechanism is located at EMI Honomanu Stream diversion, which is ordered to be restored as a “Habitat Stream” by CWRM. View facing SE. (Source: MAI, 2018.)



Figure 29: View of the same geared mechanism at right.



Figure 28: This sluice gate mechanism is a geared type. It operates by attaching a crank to the shaft of the small pinion gear. Revolving the crank operates the geared mechanism and advances the gear rack, to raise or lower the gates. This geared-operating gate is located at EMI stream diversion at Kopiliula, which is ordered to be restored as a “Habitat Stream” by CWRM. View facing E. (Source: MAI, 2018.)



## Board-adjusted Type

This type was found on eight of the thirty-one sluice gates in the twenty stream diversions and other features that were examined. It operates by manually sliding horizontally-oriented boards up and down in the tracks inset in the walls of the channel. Some of these gates were no longer needed and rendered inoperable by removing boards. All of the board adjusted sluice gates seen that were operational were fitted with plastic lumber boards that are held in an open position by stop pins inserted through the gate when it is raised to the desired height.



Figure 30: This typical board adjusted type sluice gate operating mechanism is located at EMI Kolea Power House stream diversion on Kolea, a tributary of Punalau, which is ordered to be restored as a “Habitat Stream” by CWRM. View facing SW. (Source: MAI, 2018.)



Figure 32: Board adjusted sluice gate with plastic boards installed. Boards are in the closed position, preventing water from passing through the gate. At about 2'-6" wide, this gate is typical width for board adjusted gates seen at EMI during the field survey. This board adjusted gate is located at EMI stream diversion at Waiohue, which is ordered to be a "Fully Restored" stream by CWRM. View facing SE. (Source: MAI, 2018.)



Figure 31: Board adjusted sluice gate with no boards installed. Note that this gate is about 5' wide in total, with three vertical spaces for boards. This board adjusted gate is located at EMI throw-out gate at Piinaau, which is ordered to be a "Fully Restored" stream by CWRM. View facing NE. (Source: MAI, 2018.)



## Threaded Shaft-Type

A gate mechanism using a vertical threaded shaft was seen on one of the thirty-one sluice gates. The shaft was fixed to the top of the solid panel gate and was operated by a handwheel that could advance the shaft and gate up or down. The single example of this type of sluice gate seen, was inoperable due to a missing handwheel and severely corroded threaded shaft. Some of these mechanisms have become inoperable due to lack of use. When necessary, however, they can be serviced to make the adjustments to diversions for regulatory compliance.



Figure 33: This threaded shaft type sluice gate operating mechanism is located along an irrigation ditch on the Big Island. It is very similar to the threaded shaft mechanism observed at EMI Kolea Power House stream diversion, on Kolea, a tributary of Punalau, which is ordered to be restored as a "Habitat Stream" by CWRM. The single example surveyed was too damaged to properly illustrate its configuration. (Photo: MAI, 2017.)





Figure 34: The sluice gate mechanism is a threaded shaft type that is inoperable due to corroded and missing parts. The gate once operated by turning a handwheel that advanced the formerly threaded vertical steel shaft up and down, moving the metal panel. The handwheel is missing and corrosion has destroyed the threads on the steel shaft. Some of these mechanisms have become inoperable due to lack of use. When necessary, however, they can be serviced to make the adjustments. This threaded shaft gate is located at EMI stream diversion at Kolea Power House, on Kolea, a tributary of Punalau, which is ordered to be restored as a “Habitat Stream” by CWRM. View facing S. (Source: MAI, 2018.)



Figure 35: Another view of the threaded shaft gate mechanism at left. This gate is paired with a ratchet type gate. (Source: MAI, 2018.)

## Historic Significance and Integrity

### Significance

The EMI Aqueduct System is evaluated as a historic resource. It is eligible under National Register Criterion A for its role in supporting the development of the sugar industry on Maui. It is also eligible under Criterion C as an extensive engineering design that exemplifies the characteristics, technology, and pattern of features common to irrigation ditch systems in Hawai'i.

### Integrity

The National Park Service's National Register guidelines define integrity as "the ability of a property to convey its significance." Integrity is typically assessed after significance is fully established, and seven aspects of integrity are considered; Location, Design, Setting, Materials, Workmanship, Feeling, and Association.

Because of their overall size, large, linear resources such as irrigation ditches like the EMI Aqueduct System are susceptible to cumulative impacts on integrity, such as those brought about by numerous repair modifications. Also, more significant changes, such as re-routing the ditch, enclosing or burying portions of originally open ditch, or completely reconstructing a ditch or ditch component in a different material or method, can compromise integrity. Since the entire EMI Aqueduct System was not surveyed for this project, an evaluation of its overall integrity was not possible to assess these factors. Due to their large size, irrigation ditch systems can often retain their overall integrity despite numerous modifications to individual components when the repairs are made in a historically appropriate manner and in keeping with the Secretary of the Interior's Standards for Rehabilitation, presented on the following page.

The 20 stream diversions that were visited, where the subject sluice gates are found, generally appear to retain their historic integrity. For example, they retain their original location in a natural and agricultural setting, and they also retain much of their historic materials (concrete and stone). Their overall original design and workmanship appear intact. Integrity of feeling and association are likewise retained.

The integrity of the 31 individual sluice gates surveyed within the 20 stream diversions was also assessed. Wet conditions in the vicinity of the EMI Aqueduct System causes the corrosion of metal and the decay of wood parts, resulting in frequent repairs. In most cases, the repairs that have been made over time to the sluice gates have had little or no effect on their historic integrity such as the replacement of metal sluice gate parts in-kind. However, in a few gates, repairs were not made in-kind, or in accordance with the Secretary of the Interior's Standards (see following page). For example, all of the operable board-adjusted sluice gates identified in the field are of fairly recent construction (less than 10 years), and contain plastic boards and aluminum frames.

## The Secretary of the Interior's Standards for Rehabilitation

The Standards (Department of Interior regulations, 36 CFR 67) pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and the interior, related landscape features and the building's site and environment as well as attached, adjacent, or related new construction. The Standards are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

## Impact Analysis

### Proposed Action

Under the Proposed Action, the State would lease “government-owned water” from the License Area up to the maximum allowable amount under the IIFS.

On June 20<sup>th</sup>, 2018, CWRM issued a decision and order setting IIFS for many of the streams within the License Area. The CWRM decision ordered full stream restoration for 10 streams and some flow restoration on a number of other streams. Compliance with the CWRM decision requires modifications to many of the stream diversion works that are part of the EMI Aqueduct System. Compliance with the CWRM decision is independent of the Water Lease Application. In other words, the modifications to the stream diversion works needed to comply with the IIFS decision are required whether the Water Lease is issued or not. Because the Proposed Action would authorize the diversion of water up to the maximum allowable amount under the IIFS, there will be no modification to the EMI Aqueduct System, other than those required to comply with the IIFS.

### No Action

The No Action Alternative would result in no Water Lease being issued by the State.

Under the No Action Alternative, the EMI Aqueduct System could continue to divert non-government-owned water from the Collection Area, i.e. approximately 30 percent of the water available from the Collection Area. To restrict the amount of water diverted to an amount less than allowed under the IIFS means that additional modifications to the EMI Aqueduct System will have to be implemented. Additional modifications, if not undertaken in keeping with the Secretary of the Interior’s Standards, could result in compromised integrity of the aqueduct system’s historic resources.

Should the Water Lease not be awarded, there may be insufficient incentive for EMI to maintain the EMI Aqueduct System, and EMI could abandon the EMI Aqueduct System. Under such a scenario, the aqueduct system’s historic resources may be found at risk for neglect from reduced or lack of maintenance, and/or possible demolition.

### Reduced Water Alternative

For this alternative, the Water Lease would authorize less water than allowed under the IIFS.

To restrict the amount of water diverted to an amount less than allowed under the IIFS means that additional modifications to the EMI Aqueduct System will have to be implemented. Depending on the amount of water allowed to be collected under this Reduced Water Alternative, there may be insufficient financial incentive for EMI to maintain the EMI Aqueduct System, and EMI could abandon the EMI Aqueduct System.

## Bibliography

- Dean, Arthur L. *Alexander & Baldwin, LTD. and the Predecessor Partnerships*. Honolulu: A&B, Ltd). 1950.
- Dorrance, William H., and Francis S. Morgan. *Sugar Islands, The 165-year Story of Sugar in Hawaii*. Honolulu: Mutual Publishing, LLC. 2000.
- Environment Hawaii, "Complex Legal Issues Surrounding A&B's Taking of East Maui Water." Website [www.environment-hawaii.org](http://www.environment-hawaii.org). Accessed June 25, 2018.
- Group 70 International, Inc., Davianna McGregor, Ph.D. and Cultural Surveys Hawaii, Inc. *Kalo Kanu O Ka Aina, A Cultural Landscape Study of Ke'anae and Wailuanui, Island of Maui* (July 1995).
- Jones, C. Allan, and Robert V. Osgood. *From King Cane to the Last Sugar Mill, Agricultural Technology and the Making of Hawaii's Premier Crop*. Honolulu: University of Hawaii Press. 2015.
- "Taro growers, practitioners elated with E. Maui water rights decision." *The Maui News*. June 26, 2018. P. 1.
- "Water commission orders restoration of East Maui Streams." *Honolulu Star Advertiser*. June 26, 2018. P. 1.
- Wilcox, Carol. *Sugar Water, Hawaii's Plantation Ditches*. Honolulu: University of Hawaii Press. 1996.
- Wilson Okamoto Corp. *Proposed Lease (Water Lease) for the Nahiku, Ke'anae, Honomanu, and Huelo License Areas Environmental Impact Statement Preparation Notice*. February 2017.








## Data Sheets/Appendices






HISTORICAL STRUCTURE ASSESSMENT  
EAST MAUI AQUEDUCT SYSTEM

## Appendix A







Table 2: 20 Surveyed Stream Diversions

| Feature Name /<br>Function                    | Intake<br>Type | Evaluation<br>of Significance* | Photo**   |
|---|----------------|--------------------------------|---|
| Makapii/<br>Stream diversion (intake)         | A              | Eligible<br>(Contributing)     |    |
| Hanawi/ Stream diversion (intake)             | A              | Eligible<br>(Contributing)     |    |
| Ko Piliula/ Stream diversion (intake)         | A              | Eligible<br>(Contributing)     |   |
| Waiohue Stream diversion (intake)             | B              | Eligible<br>(Contributing)     |   |
| Na Ili Ili Haele Stream diversion<br>(intake) | A              | Eligible<br>(Contributing)     |  |

HISTORICAL STRUCTURE ASSESSMENT  
EAST MAUI AQUEDUCT SYSTEM





| Feature Name /<br>Function                    | Intake<br>Type | Evaluation<br>of Significance* | Photo**  |
|---|----------------|--------------------------------|--|
| Wailua Nui West/ Stream diversion<br>(intake) | A              | Eligible<br>(Contributing)     |    |
| Wailua Nui East/ Stream diversion<br>(intake) | A              | Eligible<br>(Contributing)     |    |
| Wailua Iki West/ Stream diversion<br>(intake) | A              | Eligible<br>(Contributing)     |   |
| Wailua Iki East/ Stream diversion<br>(intake) | A              | Eligible<br>(Contributing)     |  |
| Hoolawa Haiku/ Stream diversion<br>(intake)   | A              | Eligible<br>(Contributing)     |  |

HISTORICAL STRUCTURE ASSESSMENT  
EAST MAUI AQUEDUCT SYSTEM

| Feature Name /<br>Function                      | Intake<br>Type | Evaluation<br>of Significance* | Photo**   |
|---|----------------|--------------------------------|---|
| Banana Intake/ Stream diversion<br>(intake)     | A              | Eligible<br>(Contributing)     |    |
| Honomanu/ Stream diversion (intake)             | A              | Eligible<br>(Contributing)     |     |
| Kolea Power House/ Stream diversion<br>(intake) | B              | Eligible<br>(Contributing)     |     |
| Kaaiea/ Stream diversion (intake)               | C              | Eligible<br>(Contributing)     |   |
| Hoalua/ Stream diversion (intake)               | B              | Eligible<br>(Contributing)     |  |
| Hoolawa Lii Lii/ Stream diversion<br>(intake)   | A              | Eligible<br>(Contributing)     |  |



HISTORICAL STRUCTURE ASSESSMENT  
EAST MAUI AQUEDUCT SYSTEM

| Feature Name /<br>Function                          | Intake<br>Type | Evaluation<br>of Significance* | Photo**   |
|---|----------------|--------------------------------|---|
| Hoolawa Nui/<br>Stream diversion (intake)           | C              | Eligible<br>(Contributing)     |    |
| PiiNaau/ Ditch throw out<br>(ditch water throw out) | D              | Eligible<br>(Contributing)     |    |
| Wai Kamoi/ Stream diversion (intake)                | A              | Eligible<br>(Contributing)     |   |
| Kolea/ Stream diversion (intake)                    | A              | Eligible<br>(Contributing)     |  |

\*Historic Evaluation - Since a survey was not undertaken on the entire EMI system, only a broad assumption regarding NRHP eligibility was provided here, Eligible, Contributing [to a potential overall district], "EC". This is solely based on being historically part of the EMI system, and largely retaining integrity.

\*\* Photographs taken by Mason Architects, Inc. in 2018.

## Appendix B

### Photographs of the 31 Sluice Gates

HISTORICAL STRUCTURE ASSESSMENT  
EAST MAUI AQUEDUCT SYSTEM



Figure 1: Ratchet sluice gate at Makapipi stream diversion dam. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing SE. (Source: MAI, 2018)



Figure 2: Ratchet sluice gate at Hanawi stream diversion dam. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing NE. (Source: MAI, 2018)



Figure 3: Geared sluice gate at Ko Piliula stream diversion dam. (Two sluice gates shown, side-by-side.) Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing N. (Source: MAI, 2018)



Figure 4: Geared sluice gate at intake at Ko Piliula stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity partially retained. View facing NE. (Source: MAI, 2018)



HISTORICAL STRUCTURE ASSESSMENT  
EAST MAUI AQUEDUCT SYSTEM



Figure 5: Board adjusted sluice gate at intake of Wai O Hue stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity partially retained. View facing S. (Source: MAI, 2018)



Figure 6: Board adjusted sluice gate throw out at intake of Wai O Hue stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing SE. (Source: MAI, 2018)



Figure 7: Ratchet sluice gate at Na Ili Ili Haele stream diversion dam. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing NW. (Source: MAI, 2018)

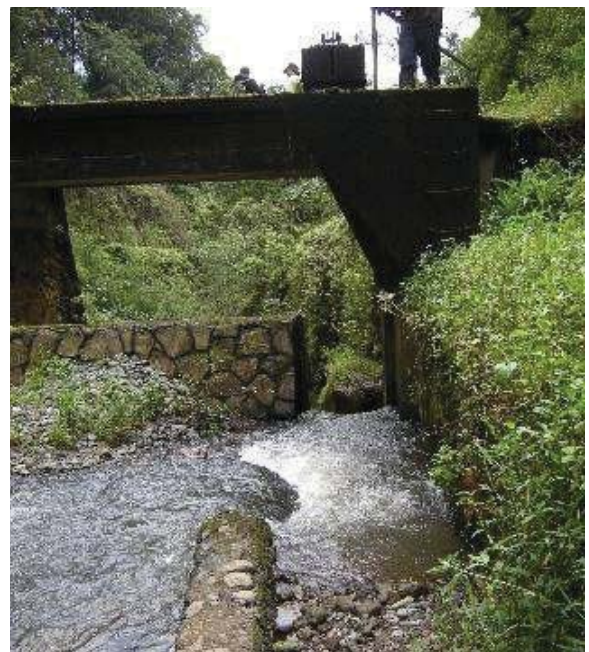


Figure 8: Removed sluice gate (ratchet) at Wailua Nui West stream diversion dam. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing NE. (Source: MAI, 2018)



HISTORICAL STRUCTURE ASSESSMENT  
EAST MAUI AQUEDUCT SYSTEM



Figure 9: Removed sluice gate (ratchet) at Wailua Nui East stream diversion dam. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing NE. (Source: MAI, 2018)



Figure 10: Ratchet sluice gate at Wailua Iki West stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing N. (Source: MAI, 2018)

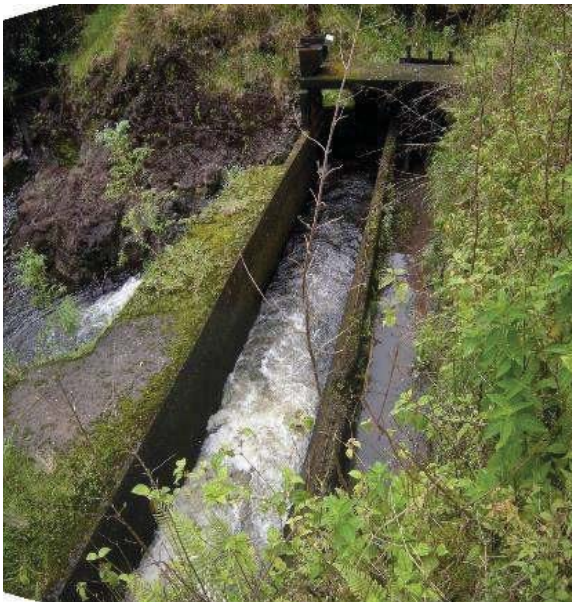


Figure 11: Board adjusted sluice gate at intake of Wailua Iki West stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing NE. (Source: MAI, 2018)



Figure 12: Ratchet sluice gate at Wailua Iki East stream diversion dam. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing NE. (Source: MAI, 2018)



HISTORICAL STRUCTURE ASSESSMENT  
EAST MAUI AQUEDUCT SYSTEM



Figure 13: Board adjusted sluice gate at intake of Wailua Iki East stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity partially retained. View facing NW. (Source: MAI, 2018)



Figure 14: Geared sluice gate at Hoolawa Haiku stream diversion dam. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity partially retained. View facing NW. (Source: MAI, 2018)



Figure 15: Ratchet sluice gate at intake at Hoolawa Haiku stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity partially retained. View facing E. (Source: MAI)

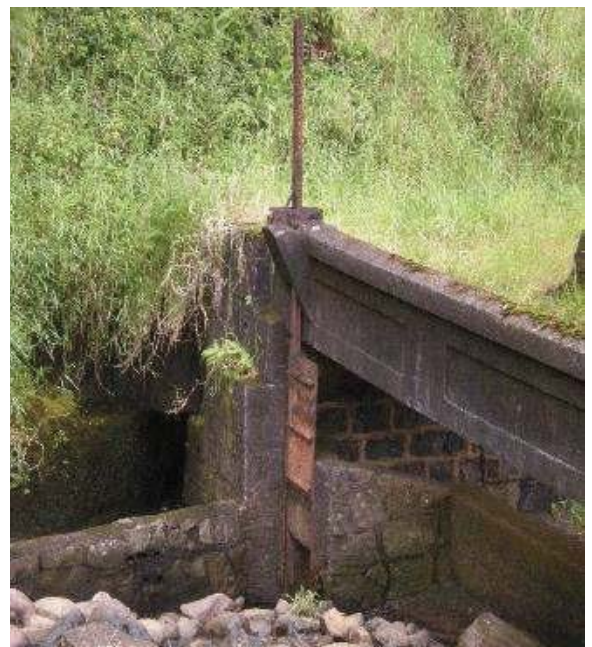


Figure 16: Ratchet sluice gate at Banana Intake stream diversion dam. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing NW. (Source: MAI, 2018)



HISTORICAL STRUCTURE ASSESSMENT  
EAST MAUI AQUEDUCT SYSTEM



Figure 17: Geared sluice gate at Honomanu stream diversion dam. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing N. (Source: MAI, 2018)



Figure 18: Geared sluice gate at intake at Honomanu stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing E. (Source: MAI, 2018)



Figure 39: Board adjusted sluice gate at intake of Kolea Power House stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity partially retained. View facing W. (Source: MAI, 2018)



Figure 20: Ratchet sluice gate throw out at intake of Kolea Power House stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing N. (Source: MAI, 2018)



HISTORICAL STRUCTURE ASSESSMENT  
EAST MAUI AQUEDUCT SYSTEM



Figure 21: Threaded shaft sluice gate throw out (on left) at intake of Kolea Power House stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing N. (Source: MAI, 2018)



Figure 22: Ratchet sluice gate throw out at Kaaiea stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing S. (Source: MAI, 2018)



Figure 23: Board adjusted sluice gate (on left) at intake of Hoalua stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity partially retained. View facing NE. (Source: MAI, 2018)



Figure 24: Ratchet sluice gate throw out at intake of Hoalua stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing NE. (Source: MAI, 2018)



HISTORICAL STRUCTURE ASSESSMENT  
EAST MAUI AQUEDUCT SYSTEM



Figure 25: Ratchet sluice gate at Hoolawa Lii Lii stream diversion dam. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing NE. (Source: MAI, 2018)



Figure 26: Ratchet sluice gate throw out at intake of Hoolawa Nui stream diversion. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing S. (Source: MAI, 2018)



Figure 27: Board adjusted throw out sluice gate at Piinaau throw out. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing NE. (Source: MAI, 2018)



Figure 28: Board adjusted sluice gate at Piinaau throw out. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity partially retained. View facing SW. (Source: MAI, 2018)



Figure 29: Ratchet sluice gate at Wai Ka Moi stream diversion dam. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing NW. (Source: MAI, 2018)



Figure 30: Ratchet sluice gate at Kolea stream diversion dam. Eligible for the Hawaii Register as a contributing feature to a potential district. Integrity largely retained. View facing NE. (Source: MAI, 2018)



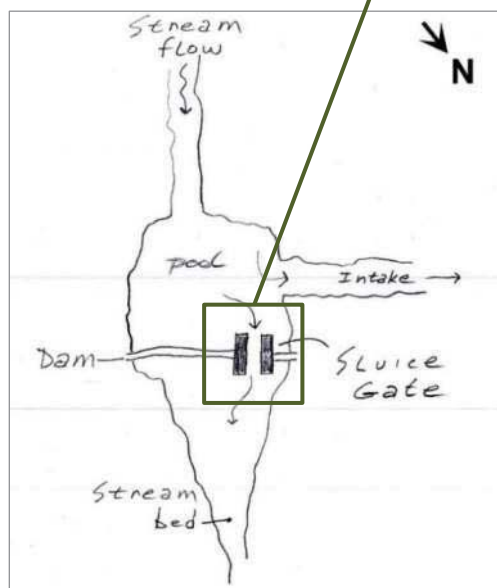


## Appendix C

Sketch plans of 20 EMI Aqueduct Stream Diversions with photos of their associated sluice gates

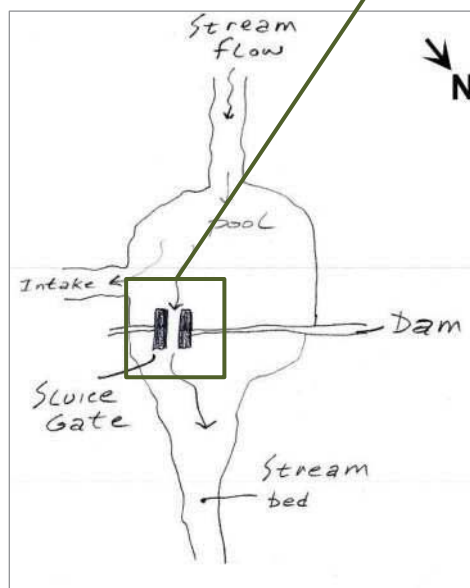
HISTORICAL STRUCTURE ASSESSMENT  
EAST MAUI AQUEDUCT SYSTEM

# MAKAPIPI



Ratchet sluice gate  
at Makapipi stream  
diversion dam.  
View facing NE.  
*Source: MAI, 2018*

# HANAWI



Ratchet sluice gate  
at Hanawi stream  
diversion dam.  
View facing SE.



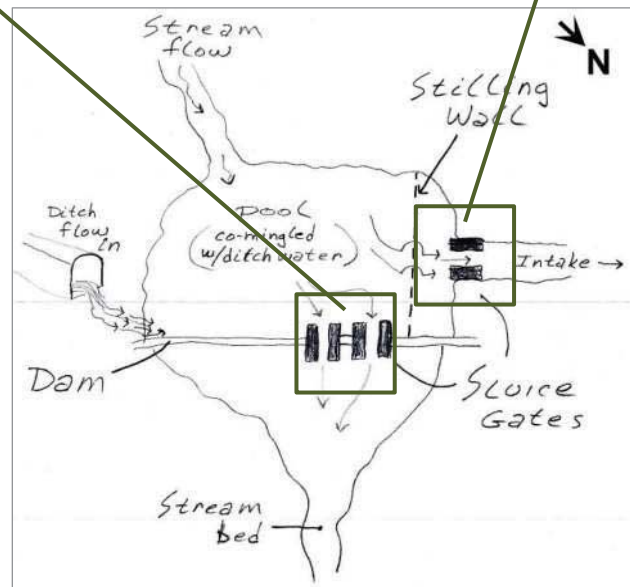
## KO PILIULA



Geared sluice gate at intake at Ko Piliula stream diversion DAM. View facing N.



Geared sluice gate at intake at Ko Piliula stream diversion. View facing NE.



## WAI O HUE



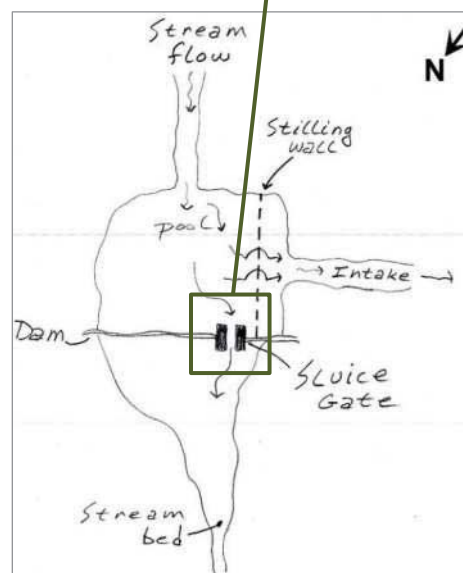
Board adjusted sluice gate throw-out at intake of Wai O Hue stream diversion. View facing SE.



Board adjusted sluice gate at intake of Wai O Hue stream diversion. View facing S.

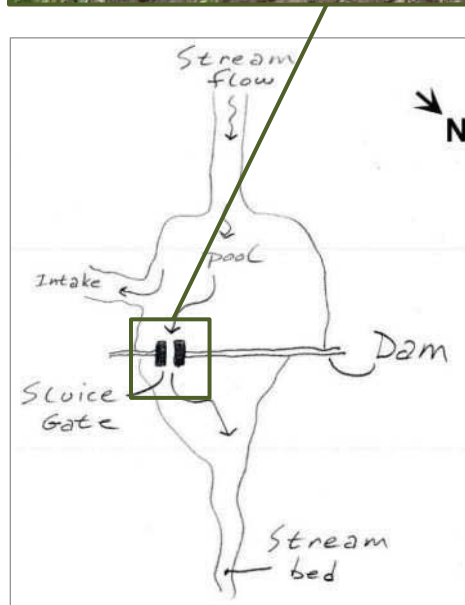
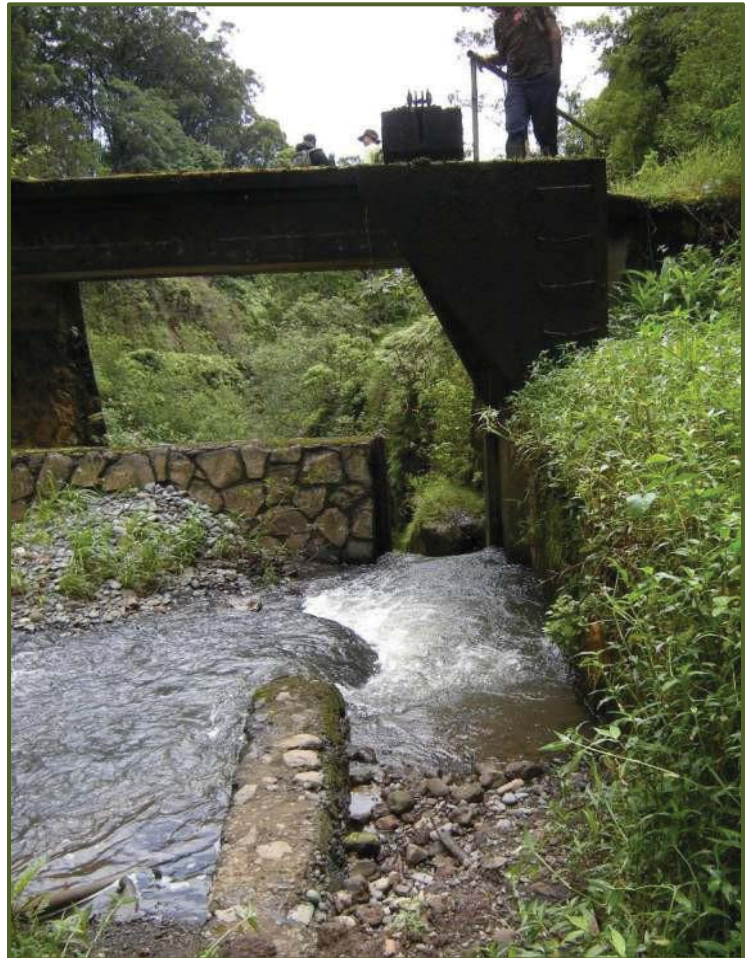


# NA ILI ILI HA ELE



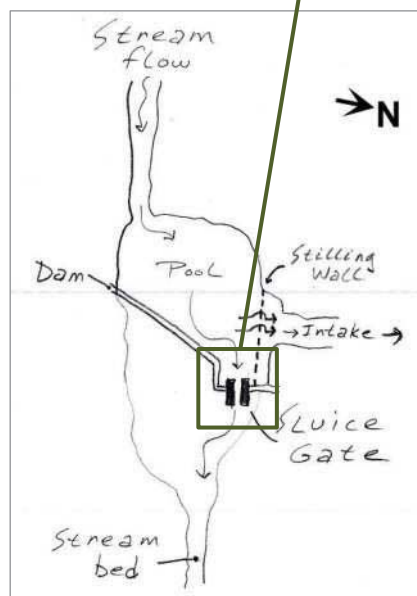
Ratchet sluice gate at  
Hanawi stream diversion  
dam. View facing SE.

## WAILUA NUI WEST



Removed sluice gate (ratchet) at Wailua Nui West stream diversion dam. View facing NE.

## WAILUA NUI EAST

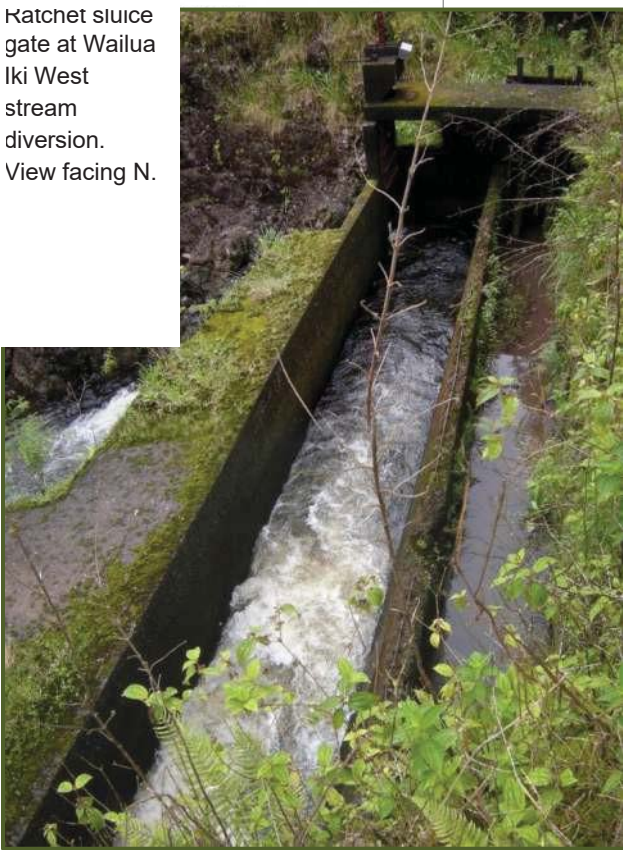


Removed sluice gate  
(ratchet) at Wailua Nui  
East stream diversion  
dam. View facing NE.



## WAILUA IKI WEST

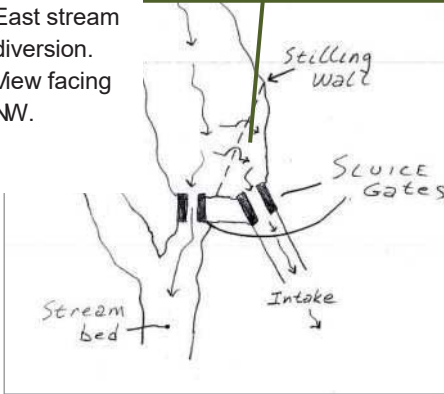
Ratchet sluice  
gate at Wailua  
Iki West  
stream  
diversion.  
View facing N.



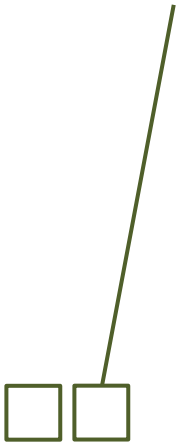
# WAILUA IKI EAST



Board  
adjusted  
sluice gate  
at intake of  
Wailua Iki  
East stream  
diversion.  
View facing  
NW.



Ratchet sluice  
gate at Wailua  
Iki East  
stream  
diversion dam.  
View facing  
NE.

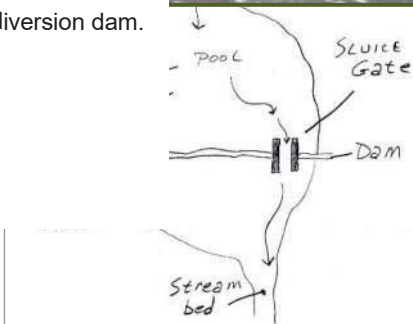




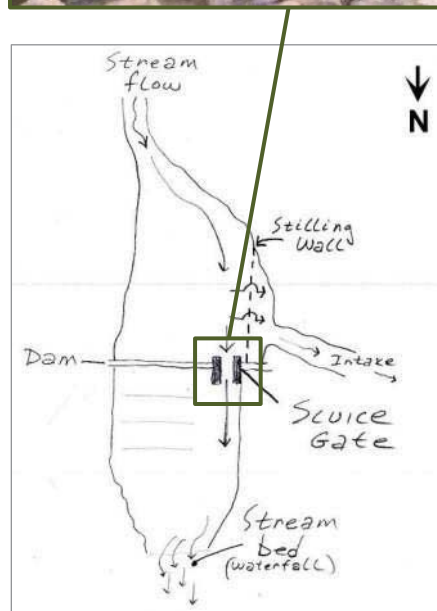
# HOOLAWA HAIKU



Geared sluice gate at  
Holawa  
Haiku stream  
diversion dam.



## BANANA INTAKE



Ratchet sluice gate at  
Banana Intake stream  
diversion dam. View  
facing NW.

## HONOMANU

Geared sluice gate at intake at Honomanu stream diversion. View facing E.

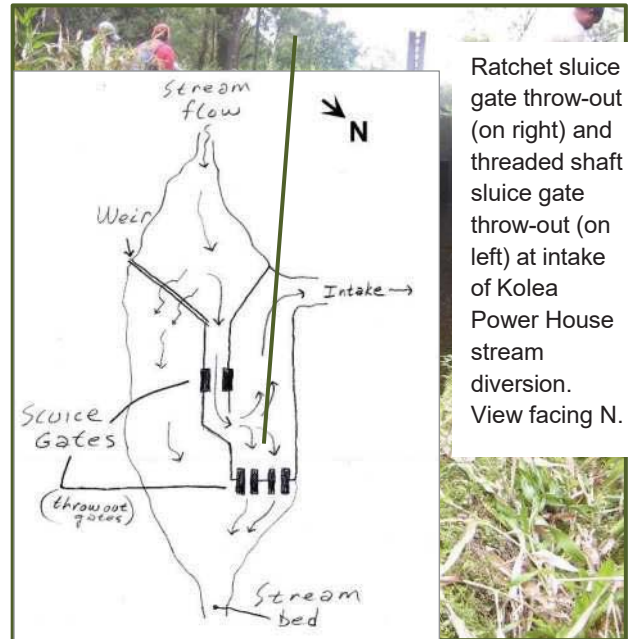
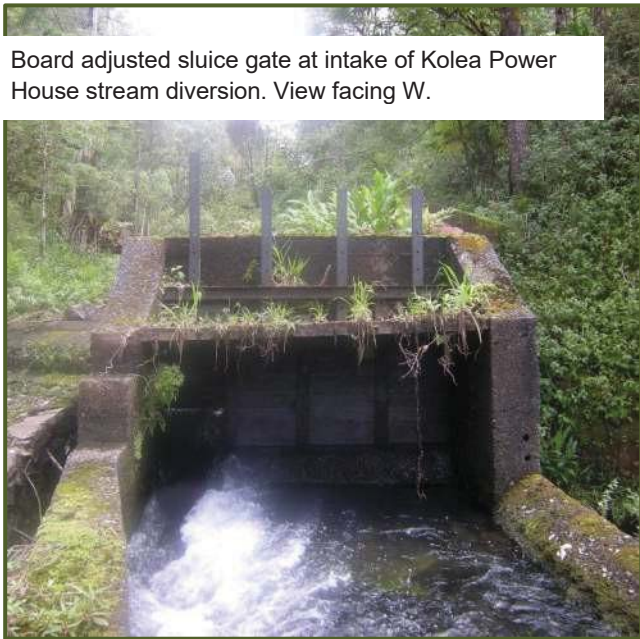


Geared sluice gate at Honomanu stream diversion dam. View facing N.





## KOLEA POWER HOUSE



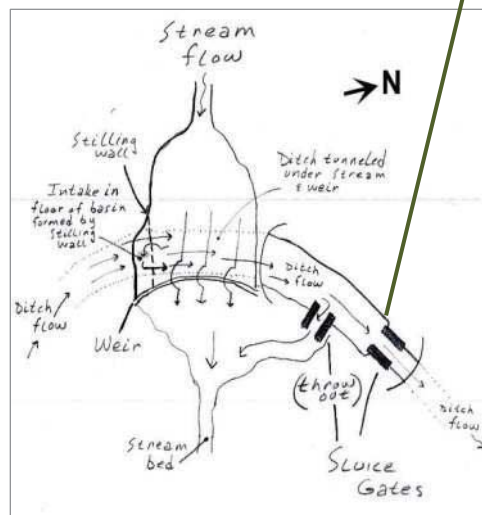
# KAAIEA



Ratchet sluice gate  
throw-out at Kaaiea  
stream diversion.  
View facing S

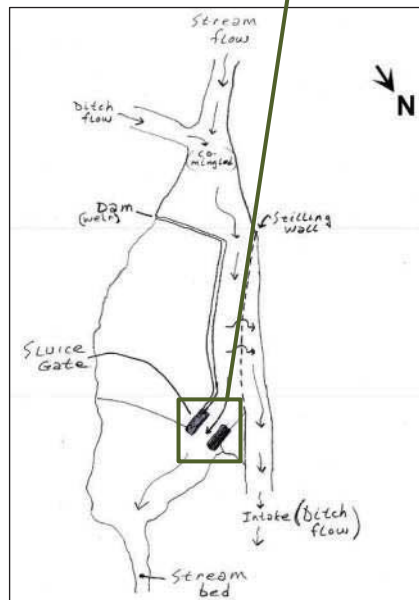
# HOALUA

Board adjusted  
sluice gate (on  
left) at intake of  
Hoalua stream  
diversion. View  
facing NE.



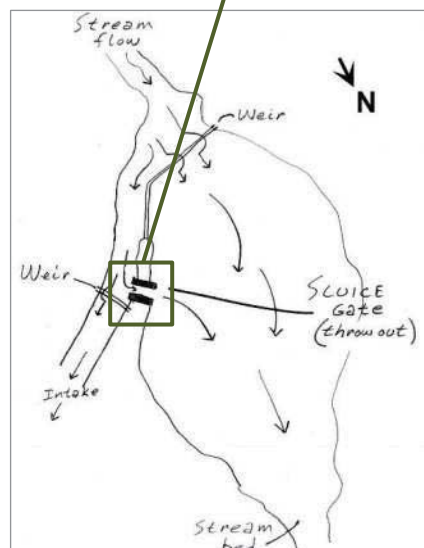


## HOOLAWA LII LII



Ratchet sluice gate at Hoolawa Lii Lii stream diversion dam. View facing NE.

# HOOLAWA NUI



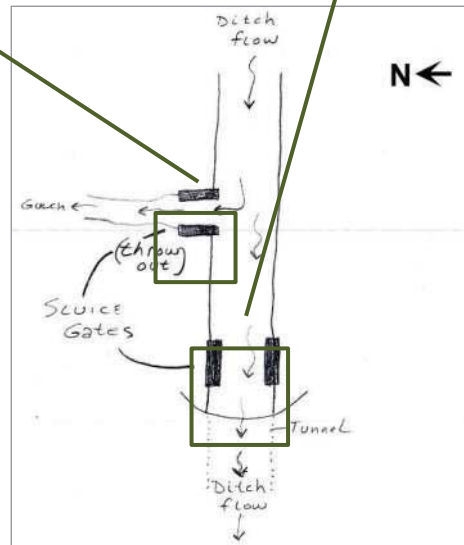
Ratchet sluice gate  
throw-out at intake  
of Hoolawa Nui  
stream diversion.  
View facing S.



## PII NAAU

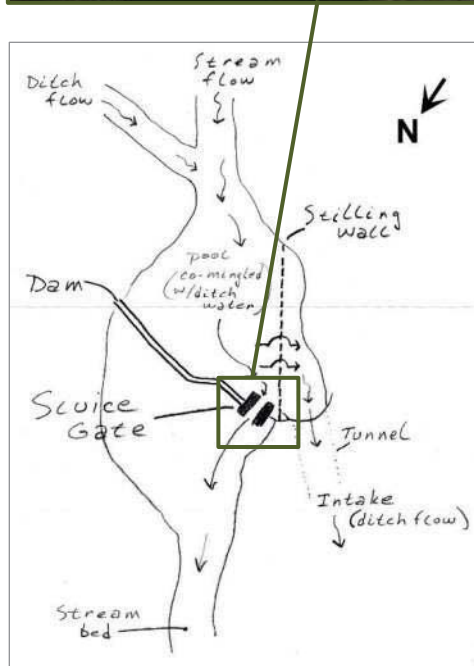


Board adjusted throw-out sluice gate at  
Piinaau throw-out. View facing NE.



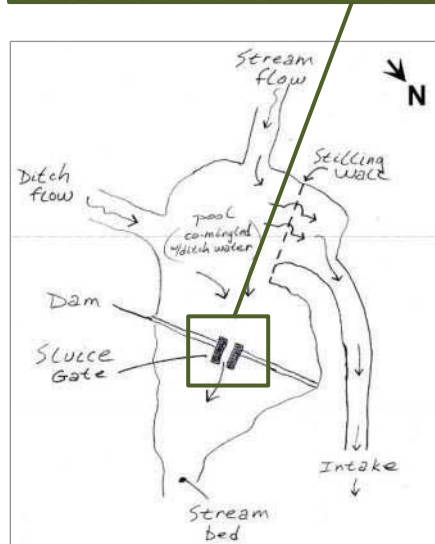
Ratchet  
sluice gate  
throw-out at  
intake of  
Hoolawa Nui  
stream  
diversion.  
View facing  
S.

# WAI KA MOI



Ratchet sluice gate at Wai Ka Moi stream diversion dam. View facing NW.

# KOLEA



Ratchet sluice gate at KOLEA stream diversion dam. View facing NE.



## Appendix D

Table 3: Basis for Estimated Dates of Construction

| #   | Feature Name      | Ditch     | Estimated year built | Year built date based on  |
|-----|-------------------|-----------|----------------------|---|
| 001 | Makapipi          | Koolau    | 1904                 | Date of ditch constriction, appearance of concrete and masonry work                 |
| 002 | Hanawi            | Koolau    | 1904                 | Date of ditch constriction, appearance of concrete and masonry work                 |
| 003 | Ko Piliula West   | Koolau    | 1914                 | Date of adjacent Hana Highway bridge construction, diversion uses bridge abutments. |
| 004 | Wai o Hue         | Koolau    | pre 1960             | Appearance of concrete and masonry work.  |
| 005 | Na ili ili Haele  | Lowrie    | 1920s                | Date of nearby Hana Highway construction.   |
| 006 | Wailua Nui West   | Koolau    | 1923                 | Date of nearby bridge construction on ditch trail.                                  |
| 007 | Wailua Nui East   | Koolau    | 1923-24              | Date of nearby bridge construction on ditch trail.                                  |
| 008 | Wailua Iki West   | Koolau    | 1923-24              | Date of nearby bridge construction on ditch trail.                                  |
| 009 | Wailua Iki East   | Koolau    | 1923-24              | Date of nearby bridge construction on ditch trail.                                  |
| 010 | Hoolawa Haiku     | Haiku     | 1923                 | Date of USGS benchmark on bridge, diversion uses bridge abutments.                  |
| 011 | Banana Intake     | Spreckles | 1924                 | Date of adjacent bridge construction, diversion uses bridge abutments.              |
| 012 | Main Honomanu     | Spreckles | 1923-24              | Date of nearby bridge construction on ditch trail.                                  |
| 013 | Kolea Power House | Koolau    | pre 1960             | Appearance of concrete and masonry work.  |
| 014 | Kaaiea            | Center    | 1928                 | Date of adjacent Hana Highway bridge construction.                                  |
| 015 | Hoalua            | Lowrie    | 1929                 | Date of adjacent Hana Highway bridge construction.                                  |
| 016 | Hoolawa Lii Lii   | Lowrie    | pre 1960             | Appearance of concrete and masonry work.  |
| 017 | Hoolawa Nui       | Lowrie    | pre 1960             | Appearance of concrete and masonry work.  |
| 018 | Pii Naau          | Koolau    | pre 1960             | Appearance of concrete and masonry work.  |
| 019 | Wai Kamoi         | Center    | pre 1960             | Appearance of concrete and masonry work.  |
| 020 | Kolea             | Center    | pre 1960             | Appearance of concrete and masonry work.  |





---

## **APPENDIX E:**

Archaeological Literature Review and Field  
Inspection for the Proposed Lease for the  
Nāhiku, Ke‘anae, Honomanū, and Huelo  
License Areas

Cultural Surveys Hawai‘i, Inc.



---

**Archaeological Literature Review and Field Inspection for  
the Proposed Lease (Water Lease) for the Nāhiku, Ke‘anae,  
Honomanū, and Huelo License Areas (East Maui Aqueduct  
System), Multiple Ahupua‘a, Makawao and Hāna District,  
Maui Island**

**TMKs: [2] 1-1-001:044, 50, 1-1-002:002, 1-2-004:005, 007  
(por.), 2-9-014:001, 005, 011, 012, 017**

**Prepared for  
Wilson Okamoto Corporation**

**Prepared by  
Trevor M. Yucha, B.S.,  
Zachariah D. Royalty, B.S.,  
and  
Hallett H. Hammatt, Ph.D.**

**Cultural Surveys Hawai‘i, Inc.  
Wailuku, Hawai‘i  
(Job Code: MAUI 26)**

**December 2018**

---

**O‘ahu Office  
P.O. Box 1114  
Kailua, Hawai‘i 96734  
Ph.: (808) 262-9972  
Fax: (808) 262-4950**

**[www.culturalsurveys.com](http://www.culturalsurveys.com)**

---

**Maui Office  
1860 Main St.  
Wailuku, Hawai‘i 96793  
Ph.: (808) 242-9882  
Fax: (808) 244-1994**

---

## Management Summary

|                                    |  |
|------------------------------------|--|
| <b>Reference</b>                   | Archaeological Literature Review and Field Inspection for the Proposed Lease (Water Lease) for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua‘a, Makawao and Hāna District, Maui Island, TMKs: [2] 1-1-001:044, 50, 1-1-002:002, 1-2-004:005, 007 (por.), 2-9-014:001, 005, 011, 012, 017 (Yucha et al. 2018)   |
| <b>Date</b>                        | December 2018  |
| <b>Project Number</b>              | Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: MAUI 26   |
| <b>Investigation Permit Number</b> | CSH completed the fieldwork component of this study under archaeological fieldwork permit number 18-15, issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-13-282.   |
| <b>Agencies</b>                    | Department of Land and Natural Resources (DLNR)  |
| <b>Land Jurisdiction</b>           | State of Hawai‘i   |
| <b>Project Proponent</b>           | Alexander & Baldwin (A&B) / East Maui Irrigation Company, Limited (EMI), collectively referred to as “A&B”   |
| <b>Project Funding</b>             | Private; A&B   |
| <b>Project Location</b>            | The proposed Water Lease includes the Nāhiku, Ke‘anae, Honomanū, and Huelo license areas (herein referred to as “License Area”) within the State of Hawai‘i Forest Reserve on the northern slope of Haleakalā. The License Area includes portions of the modern judicial districts of Makawao and Hāna, the traditional <i>moku</i> of Hāmākua Loa and Ko‘olau, and numerous <i>ahupua‘a</i> . The License Area is depicted on portions of the 1992a Haiku, 1992c Keanae, 1991 Kilohana, 1992d Nahiku, and 1992b Hana U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles.  |
| <b>Project Description</b>         | The Proposed Action constitutes the issuance of one long-term (30 years) Water Lease from the Board of Land and Natural Resources (BLNR) for the continued “ <i>right, privilege, and authority to enter and go upon</i> ” the License Area for the “ <i>purpose of developing, diverting, transporting, and using government owned waters</i> ” through the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease will enable the lessee to continue to go on lands owned by the State in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. It will allow continued operation of the EMI Aqueduct System to deliver water to the Maui County Department of Water Supply (MDWS) for domestic and agricultural |

|                                     |  |
|-------------------------------------|--|
|                                     | water needs in Upcountry Maui, including agricultural users at the Kula Agricultural Park (KAP), as well as the Nāhiku community. It also will allow for the continued provision of water to approximately 30,000 acres of agricultural lands in Central Maui.   |
| <b>Project Acreage</b>              | The License Area encompasses a total of approximately 33,000 acres (13,355 hectares).  |
| <b>Document Purpose</b>             | <p>A Chapter 6E-7 and 6E-42 historic preservation review letter dated 25 January 2017 (Log No. 2017.00026; Doc. No. 1701GC08) sent from the SHPD to the DLNR Land Division requested that, pursuant to HAR §13-284-5(b)(5)(A and C), an archaeological inventory survey (AIS) and architectural inventory survey would be required prior to issuance of the lease and that these surveys also be proceeded by inventory plans.</p> <p>Additional information regarding the lease was provided to the SHPD including the understanding that the proposed water lease will not involve any ground disturbance and that the potential impact of flooding from abandoning the diversion on five streams will not be greater than periodic naturally occurring events. A subsequent Chapter 6E-8 historic preservation review letter (Log No. 2017.00026; Doc. No. 1706MBF11) sent from the SHPD to the DLNR Land Division updated the previous correspondence to no longer request the completion of an AIS plan or AIS in the project area in conjunction with the proposed lease.</p> <p>This investigation was designed to determine the likelihood that historic properties (any building, structure, object, district, area, or site over 50 years old) may be affected by the project and, based on findings, consider cultural resource management recommendations. This document is intended to facilitate the project's planning and support the project's environmental review compliance. This investigation does not fulfill the requirements of an AIS investigation, per HAR §13-13-276.</p> |
| <b>Fieldwork Effort</b>             | Fieldwork was conducted between 15 and 18 May 2018 by Trevor Yucha, B.S. (project manager), Nicole Ishihara, B.A., Jonas Madeus, B.A., Aulii Mitchell, M.A., and Zachariah Royalty, B.S., under the general supervision of Hallett H. Hammatt, Ph.D. This work required approximately 16 person-days to complete.  |
| <b>Consultation</b>                 | As part of the project, CSH has completed a cultural impact assessment that included consultation with Native Hawaiian Organizations, agencies, groups, and community members in East, Central, and Upcountry Maui.  |
| <b>Analysis and Recommendations</b> | <b>Proposed Action:</b> The Proposed Action will not include partial or total destruction or alteration of historic properties, detrimental  |



|  |  |
|--|--|
|  | <p>alteration of the surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with chance of resulting damage, nor neglect resulting in deterioration or destruction. The Proposed Action does not include project-related ground disturbance or changes in water flow greater than periodic natural stream freshets. As such, the Proposed Action will have no impact to archaeological historic properties.</p> <p><b>No Action Alternative:</b> If the No Action alternative includes the continued maintenance and repair of the existing EMI Aqueduct System regardless of the issuance of the subject Water Lease, then the No Action alternative will not include partial or total destruction or alteration of historic properties, detrimental alteration of the surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with chance of resulting damage, nor neglect resulting in deterioration or destruction. Therefore, the No Action alternative with continued maintenance will have no impact to archaeological historic properties.</p> <p>If the No Action alternative does not include continued maintenance and repair of the existing EMI Aqueduct System, then the No Action alternative has the potential to pose an impact to historic properties. Components of the aqueduct system that deteriorate and begin to fail, such as broken ditch walls or collapsed tunnels, have the potential to alter natural drainage patterns and increase erosion in downstream areas that are outside of established stream channels. These areas have the potential to contain surface and subsurface historic properties that could be affected by flooding and erosion. As an architectural resource, the EMI Aqueduct System would also be affected by “neglect resulting in deterioration or destruction” if maintenance and repair of the system are discontinued</p> <p><b>Water Sources Alternative:</b> The construction of new wells, desalinization facilities, and reservoirs is assumed to include some level of project-related ground disturbance on Maui Island. Project-related ground disturbance has the potential to include partial or total destruction or alteration of historic properties, detrimental alteration of the surrounding environment, and/or detrimental visual, spatial, noise or atmospheric impingement. Therefore, the Water Sources alternative has the potential to impact historic properties that may be located within the footprint of new wells, desalinization facilities, and reservoirs. Consultation with the SHPD is recommended in order to determine the appropriate historic preservation requirements for the construction of new wells, desalinization facilities, and reservoirs.</p> <p><b>Water Lease Volume Alternative:</b> A reduction in the volume of water diverted from East Maui streams will not include partial or total</p> |
|--|--|

|  |  |
|--|--|
|  | <p>destruction or alteration of historic properties, detrimental alteration of the surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with chance of resulting damage, nor neglect resulting in deterioration or destruction. As such, the Water Lease Volume alternative will have no impact to archaeological historic properties.</p> <p><b>Lease Terms Alternative:</b> The duration of the Water Lease will not include partial or total destruction or alteration of historic properties, detrimental alteration of the surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with chance of resulting damage, nor neglect resulting in deterioration or destruction. As such, the Lease Terms alternative will have no impact to archaeological historic properties.</p> <p><b>Management Alternative:</b> A change in management will not include partial or total destruction or alteration of historic properties, detrimental alteration of the surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with chance of resulting damage, nor neglect resulting in deterioration or destruction. As such, the Management alternative will have no impact to archaeological historic properties.</p> <p><b>Public Access:</b> An increase in unmanaged public access to the License Area as part of any proposed project alternative is identified as having the potential to impact historic properties. Potential impacts from unmanaged access could include looting and “rock-robbing” of surface and subsurface historic properties, littering, harvesting of archaeologically-associated flora such as ti (<i>Cordyline fruticosa</i>), trampling or erosion from pedestrian/vehicular access, and unpermitted ground disturbance. Consultation with the SHPD is recommended in order to determine the appropriate historic preservation requirements if project alternatives that present an increase in vehicular/pedestrian traffic or uncontrolled public access within the License Area are selected.</p> |
|--|--|

# Table of Contents

|   |            |
|---|------------|
| <b>Management Summary .....</b>                               | <b>i</b>   |
| <b>Section 1 Introduction .....</b>                           | <b>1</b>   |
| 1.1 Project Background .....                                  | 1          |
| 1.2 Document Purpose .....                                    | 1          |
| 1.3 Environmental Setting .....                               | 11         |
| 1.3.1 Natural Environment.....                                | 11         |
| 1.3.2 Built Environment .....                                 | 21         |
| <b>Section 2 Background Research .....</b>                    | <b>22</b>  |
| 2.1 Research Methods.....                                     | 22         |
| 2.2 Traditional Background of Hāmākua Loa.....                | 22         |
| 2.2.1 Place Names of Hāmākua Loa.....                         | 24         |
| 2.2.2 Legends of Hāmākua Loa Moku .....                       | 28         |
| 2.2.3 Open Ocean Fishing Traditions of East Maui.....         | 29         |
| 2.3 Traditional Background of Ko‘olau Moku .....              | 31         |
| 2.3.1 Place Names of Ko‘olau, Maui.....                       | 33         |
| 2.3.2 Legends of Ko‘olau Moku .....                           | 40         |
| 2.3.3 Trails and Access .....                                 | 41         |
| 2.3.4 Agriculture and Habitation .....                        | 42         |
| 2.3.5 Heiau.....  | 47         |
| 2.4 Historic Background of East Maui .....                    | 60         |
| 2.4.1 Early Historic Period (1778 to Mid-1800s) .....         | 60         |
| 2.4.2 The Māhele and Kuleana Act .....                        | 64         |
| 2.4.3 Mid- to Late 1800s.....                                 | 66         |
| 2.4.4 1900s.....  | 96         |
| 2.4.5 Modern Land Use .....                                   | 124        |
| 2.5 Previous Archaeological Research .....                    | 127        |
| 2.5.1 Early Maui Island Surveys.....                          | 127        |
| 2.5.2 Hāna Highway Archaeological Studies .....               | 127        |
| 2.5.3 Huelo License Area Archaeological Studies .....         | 129        |
| 2.5.4 Honomanū License Area Archaeological Studies .....      | 140        |
| 2.5.5 Ke‘anae License Area Archaeological Studies.....        | 140        |
| 2.5.6 Nāhiku License Area Archaeological Studies .....        | 149        |
| <b>Section 3 Field Inspection.....</b>                        | <b>155</b> |
| 3.1 Field Methods .....                                       | 155        |
| 3.1.1 Pedestrian/Vehicular Inspection .....                   | 155        |
| 3.1.2 Fieldwork Documentation .....                           | 155        |
| 3.1.3 GPS Location.....                                       | 155        |
| 3.2 Laboratory Methods.....                                   | 155        |
| 3.3 Disposition of Materials.....                             | 155        |
| 3.4 Results of Field Inspection .....                         | 155        |
| <b>Section 4 Summary, Analysis, and Recommendations .....</b> | <b>167</b> |
| 4.1 Summary.....  | 167        |
| 4.2 Analysis and Recommendations .....                        | 169        |

|   |            |
|---|------------|
| 4.2.1 Defining Project Impacts .....        | 169        |
| 4.2.2 Proposed Action.....                  | 169        |
| 4.2.3 No Action Alternative.....            | 170        |
| 4.2.4 Water Sources Alternative .....       | 170        |
| 4.2.5 Water Lease Volume Alternative .....  | 170        |
| 4.2.6 Lease Terms Alternative.....          | 171        |
| 4.2.7 Management Alternative.....           | 171        |
| 4.2.8 Public Access.....                    | 171        |
| <b>Section 5 References Cited .....</b>     | <b>172</b> |
| <b>Appendix A SHPD Correspondence .....</b> | <b>193</b> |

## List of Figures

|   |    |
|---|----|
| Figure 1. Portions of the 1992a Haiku, 1992c Keanae, 1991 Kilohana, 1992d Nahiku, and 1992b Hana USGS 7.5-minute topographic quadrangles showing the location of the License Area (Nāhiku, Ke'anae, Honomanū, and Huelo License Areas) (U.S. Geological Survey 1991, 1992a, b, c, d).....                   | 2  |
| Figure 2. Tax Map Key (TMK): [2] 1-1-001 showing a portion of the Huelo and Honomanū License Areas (Hawaii TMK Service 2014).....   | 3  |
| Figure 3. TMK: [2] 1-1-002 showing the Ke'anae License Area (Hawaii TMK Service 2014).....  | 4  |
| Figure 4. TMK: [2] 1-2-004 showing the Nāhiku License Area (Hawaii TMK Service 2014).....   | 5  |
| Figure 5. TMK: [2] 2-9-014 showing a portion of the Huelo License Area (Hawaii TMK Service 2014).....   | 6  |
| Figure 6. Aerial photograph showing the Huelo License Area (Esri 2009).....   | 7  |
| Figure 7. Aerial photograph showing the Honomanū License Area (Esri 2009).....  | 8  |
| Figure 8. Aerial photograph showing the Ke'anae License Area (Esri 2009).....   | 9  |
| Figure 9. Aerial photograph showing the Nahiku License Area (Esri 2009).....  | 10 |
| Figure 10. Overlay of <i>Soil Survey of the State of Hawaii</i> (Foote et al. 1972), indicating soil types within and surrounding the Huelo License Area (U.S. Department of Agriculture 2001) 13   |    |
| Figure 11. Overlay of <i>Soil Survey of the State of Hawaii</i> (Foote et al. 1972), indicating soil types within and surrounding the Honomanū License Area (U.S. Department of Agriculture 2001).....  | 16 |
| Figure 12. Overlay of <i>Soil Survey of the State of Hawaii</i> (Foote et al. 1972), indicating soil types within and surrounding the Keanae License Area (U.S. Department of Agriculture 2001).....  | 17 |
| Figure 13. Overlay of <i>Soil Survey of the State of Hawaii</i> (Foote et al. 1972), indicating soil types within and surrounding the Nāhiku License Area (U.S. Department of Agriculture 2001).....  | 20 |
| Figure 14. 1908 photograph by Sam Dowdle of a section of the Pi'ilani Alaloa, the King's Highway, as it appeared in East Maui.....  | 43 |
| Figure 15. Walker's plan view map of Pi'ilanihale Heiau, reprint from Sterling (1998:123).....  | 50 |
| Figure 16. Portions of the 1992a Haiku, 1992c Keanae, 1991 Kilohana, 1992d Nahiku, and 1992b Hana U.S. Geological Survey 7.5-minute topographic quadrangle series showing Walker <i>heiau</i> sites 64 through 102 with overlay of project License Areas (U.S. Geological Survey 1991, 1992a, b, c, d)..... | 51 |
| Figure 17. Portion of the Keanae (1992c) U.S. Geological Survey 7.5-minute topographic quadrangle series showing the approximate location of Pu'u o Koholā <i>heiau</i> (Walker Site 89), roughly corresponding to the location of Ashdown's unnamed <i>heiau</i> near Kaumahina Wayside Park.....          | 59 |
| Figure 18. LCAs near the Huelo License Area (U.S. Geological Survey 1992a, c).....  | 67 |
| Figure 19. LCAs near the Honomanū License Area (U.S. Geological Survey 1991, 1992a, c, d).....  | 68 |
| Figure 20. LCAs near the Ke'anae License Area (U.S. Geological Survey 1992c, d).....  | 69 |
| Figure 21. LCAs near the Nāhiku License Area (U.S. Geological Survey 1992b, c, d).....  | 70 |
| Figure 22. Announcement of port closure published in a Honolulu paper resulting from a cholera outbreak (Macfarlane 1892:2).....  | 79 |



|   |     |
|---|-----|
| Figure 23. Epidemic mortality rates within the Hawaiian Archipelago demonstrating insufficiencies in detailed documentation prior to the late 1800s, from Schmitt (1977:58).....  | 82  |
| Figure 24. Advertisement from <i>The Polynesian</i> (1851a:1) for L. L. Torbert's sale of commissioned potato cargo from Honua'ula.....   | 84  |
| Figure 25. Surface water collection along the walls of Honomanū Valley (Wilcox 1996).....   | 91  |
| Figure 26. Koolau Ditch water diversion at Piinaau stream (Courtesy of EMI) .....   | 92  |
| Figure 27. Wailoa forebay, a section of Wailoa Canal that drops into a low-head hydro-electric power plant (Wilcox 1996:118).....   | 93  |
| Figure 28. Collection of water at Hanawi Dam near Ke'anae (Courtesy of EMI) .....   | 95  |
| Figure 29. Nāhiku hillsides planted with rubber tree saplings; plantation manager's house visible on the ridge (Pacifc Commercial Advertiser 1910).....   | 103 |
| Figure 30. Seedlings being planted at the Nahiku Rubber Company (Pacifc Commercial Advertiser 1910) .....   | 104 |
| Figure 31. Nahiku Rubber Company Manager C. H. Anderson riding among his rubber tree saplings (The Honolulu Advertiser 1908).....   | 105 |
| Figure 32. Historic Rice Mill (SIHP # 50-50-07-1510) in the Ke'anae Historic District (The Honolulu Advertiser 1910) .....  | 109 |
| Figure 33. Portraits of Ke'anae homesteaders and their residences (The Honolulu Advertiser 1910:13) .....   | 110 |
| Figure 34. A group of Maui County Supervisors pose with Governor Farrington in Ke'anae. Left to right: R.A. Drummond, W.F. Kaae, County Engineer P. Low, Sheriff C. Crowell, Governor W. Farrington, Chairman S. Kalama and D.T. Fleming (The Maui News 1926) ..... | 112 |
| Figure 35. 1958 Photo of Ke'anae Protestant Church (CSH Archives). .....  | 114 |
| Figure 36. Mrs. Apolonia Day teaching her students at Ke'anae School in 1978 (Honolulu Advertiser 1978) .....   | 116 |
| Figure 37 Ke'anae School students playing football (Honolulu Star Bulletin 1969).....   | 116 |
| Figure 38. 2013 Photograph of Ke'anae School (Wikimedia 2016) .....   | 117 |
| Figure 39. Portion of the Haiku (1992a), Kilohana (1991), Keanae (U.S. Geological Survey 1992c) USGS topographic quadrangles depicting historic bridge locations in East Maui .....   | 121 |
| Figure 40. Hāhālawe Bridge, a characteristic masonry arch style bridge (Wilson Okamoto & Associates 2001) .....   | 122 |
| Figure 41. Papahawahawa Stream Bridge, a concrete beam and slab style bridge (Wilson Okamoto & Associates 2001) .....   | 122 |
| Figure 42. Hāna Belt Road near Waiele Bridge, illustrating the narrow roadway tightly encroached upon by bedrock ridges and jungle vegetation (Wilson Okamoto & Associates 2001) .....  | 123 |
| Figure 43. Previous archaeological studies within or near the Huelo License Area (U.S. Geological Survey 1991, 1992a, c, d).....  | 130 |
| Figure 44. Previous archaeological studies within or near the Honomanū License Area (U.S. Geological Survey 1991, 1992a, c, d).....   | 141 |
| Figure 45. Previous archaeological studies within or near the Ke'anae License Area (U.S. Geological Survey 1991, 1992a, c, d).....  | 142 |

|  |     |
|--|-----|
| Figure 46. Previous archaeological studies with or near the Nāhiku License Area (U.S. Geological Survey 1991, 1992a, c, d).....  | 150 |
| Figure 47. Portions of the Haiku (1992a), Keanae (1992c), Kilohana (1991), Nahiku (1992d), and Hana (1992b) USGS 7.5-minute topographic quadrangles showing the location of the sluice gates visited during the field inspection (note that the field inspection also included the access roads and trails connecting these locations to Hāna Highway) ..... | 156 |
| Figure 48. General view of the 4WD access road to the Makapipi sluice gate showing vegetation cover, including large quantities of <i>ti</i> , view to northeast.....  | 158 |
| Figure 49. General view of the ditch trail in the vicinity of the Banana sluice gate showing the steep terrain above and below the trail as well as the extend of vegetation cover, view to southeast.....   | 159 |
| Figure 50. General view of the surface of the ditch trail in Honomanū Valley that was inspected by archaeologists showing nearly vertical valley walls on the upslope and downslope edges of the trail, view to south .....  | 159 |
| Figure 51. View of archaeologist inspecting the Honomanū Stream bed in the vicinity of the Honomanū sluice gate, view to south .....   | 160 |
| Figure 52. General view of a cut and faced mortared basalt retaining wall located at the West Wailuanui sluice gate, view to northeast .....   | 160 |
| Figure 53. General view of the West Wailuanui diversion dam showing basalt and mortar masonry, view to west.....   | 161 |
| Figure 54. Oblique profile view of a stacked basalt stone wall at the Banana sluice gate, view to south.....   | 162 |
| Figure 55. General view of a stacked basalt stone wall on the western edge of Na‘ili‘ili Haele Stream and adjacent to a diversion dam, view to west .....  | 162 |
| Figure 56. General view of concrete ditches at the Ho‘olawali‘ili‘i sluice gate, view to south..   | 163 |
| Figure 57. Close-up view of a concrete grate at the East Wailuanui Iki sluice gate, view to west .....   | 164 |
| Figure 58. General view of a metal walkway above a flume crossing Waiohue Stream, view to southeast.....   | 164 |
| Figure 59. Close-up view of an abandoned iron sluice gate mechanism located along the ditch trail near the Banana sluice gate, view to southeast.....  | 165 |
| Figure 60. General view of the bridge spanning Honomanū Stream showing “1924” inscribed on side, view to south.....  | 165 |
| Figure 61. General view of the bridge over Honomanū Stream showing construction that utilizes a massive boulder, view to northeast .....   | 166 |
| Figure 62. Close-up view of the “1924” date inscription on the bridge nearest to the East Wailua Iki sluice gate, view to west.....  | 166 |

## List of Tables

|  |     |
|--|-----|
| Table 1. Place Names within Hāmākua Loa Moku [from Pukui et al. (1974) unless otherwise noted] ..... | 25  |
| Table 2. Place Names within Ko‘olau Moku [from Pukui et al. (1974) unless otherwise noted] .....     | 34  |
| Table 3. Walker Heiau Sites Located Near the License Area, as Documented in Sterling (1998).....     | 52  |
| Table 4. LCAs near Huelo License Area (Waihona ‘Aina 2000).....                                      | 71  |
| Table 5. LCAs near the Honomanū License Area (Waihona ‘Aina 2000).....                               | 73  |
| Table 6. LCAs near the Ke‘anae License Area (Waihona ‘Aina 2000) .....                               | 73  |
| Table 7. LCAs near the Nāhiku License Area .....   | 76  |
| Table 8. Previous Archaeological Studies within Hāna Highway Historic District.....                  | 128 |
| Table 9. Previous Archaeological Studies within the Huelo License Area .....                         | 131 |
| Table 10. Previous Archaeological Studies within the Ke‘anae License Area.....                       | 143 |
| Table 11. Previous Archaeological Studies in the Vicinity of the Nāhiku License Area.....            | 151 |

## Section 1 Introduction

### 1.1 Project Background

At the request of Wilson Okamoto Corporation, Cultural Surveys Hawai'i, Inc. (CSH) has prepared this archaeological literature review and field inspection report (LRFI) for the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna District, Maui Island, TMKs: [2] 1-1-001:044, 50, 1-1-002:002, 1-2-004:005, 007 (por.), 2-9-014:001, 005, 011, 012, 017. The project includes the Nāhiku, Ke'anae, Honomanū, and Huelo license areas (License Area) that are located within State of Hawai'i Forest Reserve on the northern slope of Haleakalā. The License Area includes portions of the modern judicial districts of Makawao and Hāna, the traditional *moku* of Hāmākua Loa and Ko'olau, and numerous *ahupua'a*. The License Area encompasses approximately 33,000 acres (13,355 hectares) of land owned by the State of Hawai'i. The License Area is depicted on portions of the 1992a Haiku, 1992c Keanae, 1991 Kilohana, 1992d Nāhiku, and 1992b Hana U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles (Figure 1), tax map plats (Figure 2 through Figure 5), and aerial photographs (Figure 6 through Figure 9).

The Proposed Action constitutes the issuance of one long-term (30 years) Water Lease from the Board of Land and Natural Resources (BLNR) for the continued "*right, privilege, and authority to enter and go upon*" the License Area for the "*purpose of developing, diverting, transporting, and using government owned waters*" through the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease will enable the lessee to continue to go on lands owned by the State in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. It will allow continued operation of the EMI Aqueduct System to deliver water to the County of Maui Department of Water Supply (DWS) for domestic and agricultural water needs in Upcountry Maui, including agricultural users at the Kula Agricultural Park (KAP), as well as the Nāhiku community. It also will allow for the continued provision of water to approximately 30,000 acres of agricultural lands (formerly in sugarcane) in Central Maui.

### 1.2 Document Purpose

A Chapter 6E-7 and 6E-42 historic preservation review letter dated 25 January 2017 (Log No. 2017.00026; Doc. No. 1701GC08; Appendix A) sent from the SHPD to the DLNR Land Division requested that, pursuant to HAR §13-284-5(b)(5)(A and C), an archaeological inventory survey (AIS) and architectural inventory survey would be required prior to issuance of the Water Lease and that these surveys also be proceeded by inventory plans.

Additional information regarding the proposed Water Lease was provided to the SHPD including the understanding that the proposed Water Lease will not involve any significant ground disturbance within undisturbed areas. Moreover any streams from which diversions will be removed as a result of the Interim Instream Flow Standard (IIFS) established by the Commission on Water Resource Management will not increase flooding potential beyond periodically occurring natural events. A subsequent Chapter 6E-8 historic preservation review letter (Log No. 2017.00026; Doc. No. 1706MBF11; Appendix A) sent from the SHPD to the DLNR Land Division



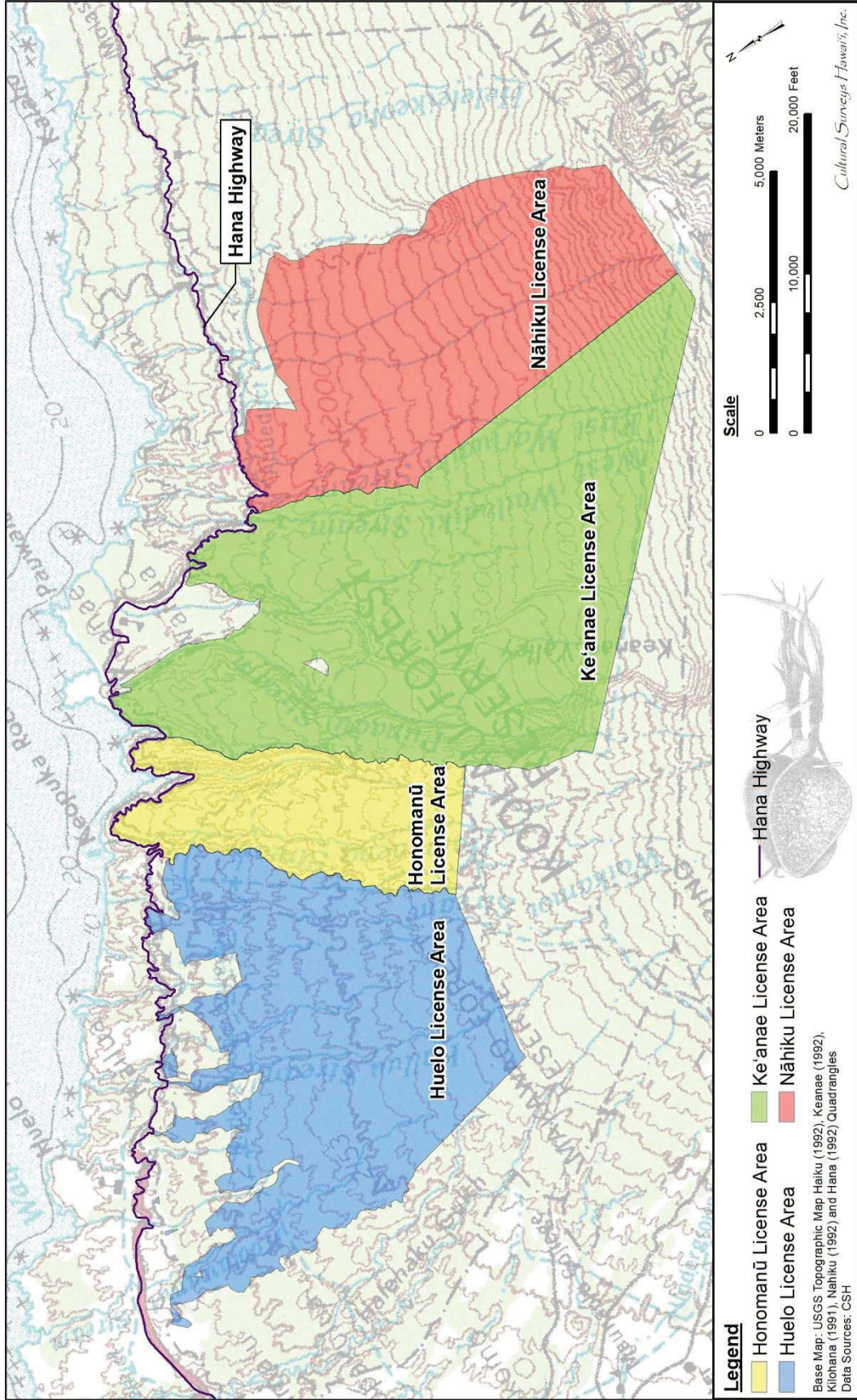


Figure 1. Portions of the 1992a Haiku, 1992c Keanae, 1991 Kilohana, 1992d Nahiku, and 1992b Hana USGS 7.5-minute topographic quadrangles showing the location of the License Area (Nāhiku, Keʻanae, Honomanū, and Huelo License Areas) (U.S. Geological Survey 1991, 1992a, b, c, d)

LRFI for Nāhiku, Keʻanae, Honomanū, and Huelo License Areas, Multiple Ahupuaʻa, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004-005, 007 (por.), and 2-9-014:(various parcels)





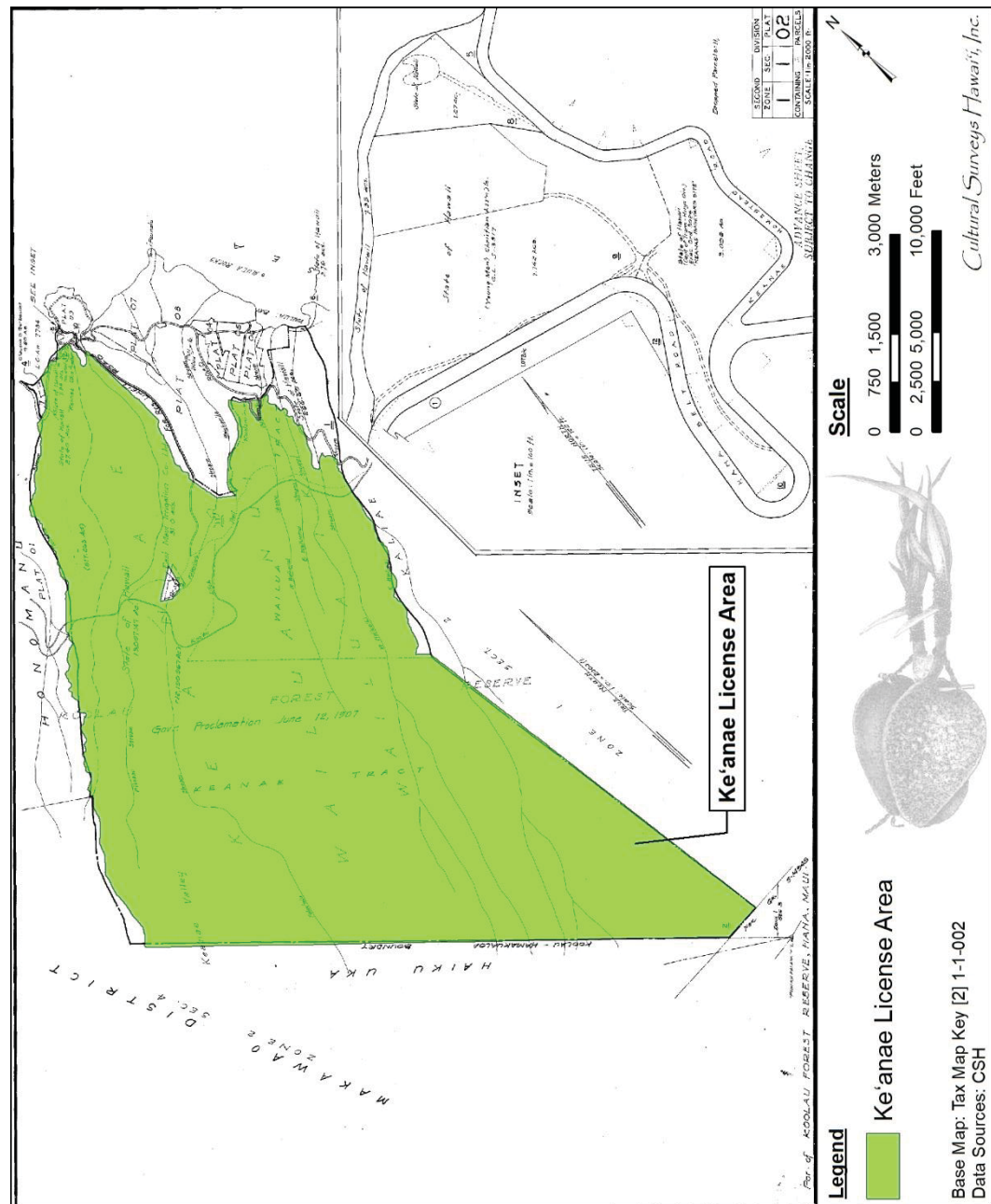


Figure 3. TMK: [2] 1-1-002 showing the Ke‘anae License Area (Hawaii TMK Service 2014)

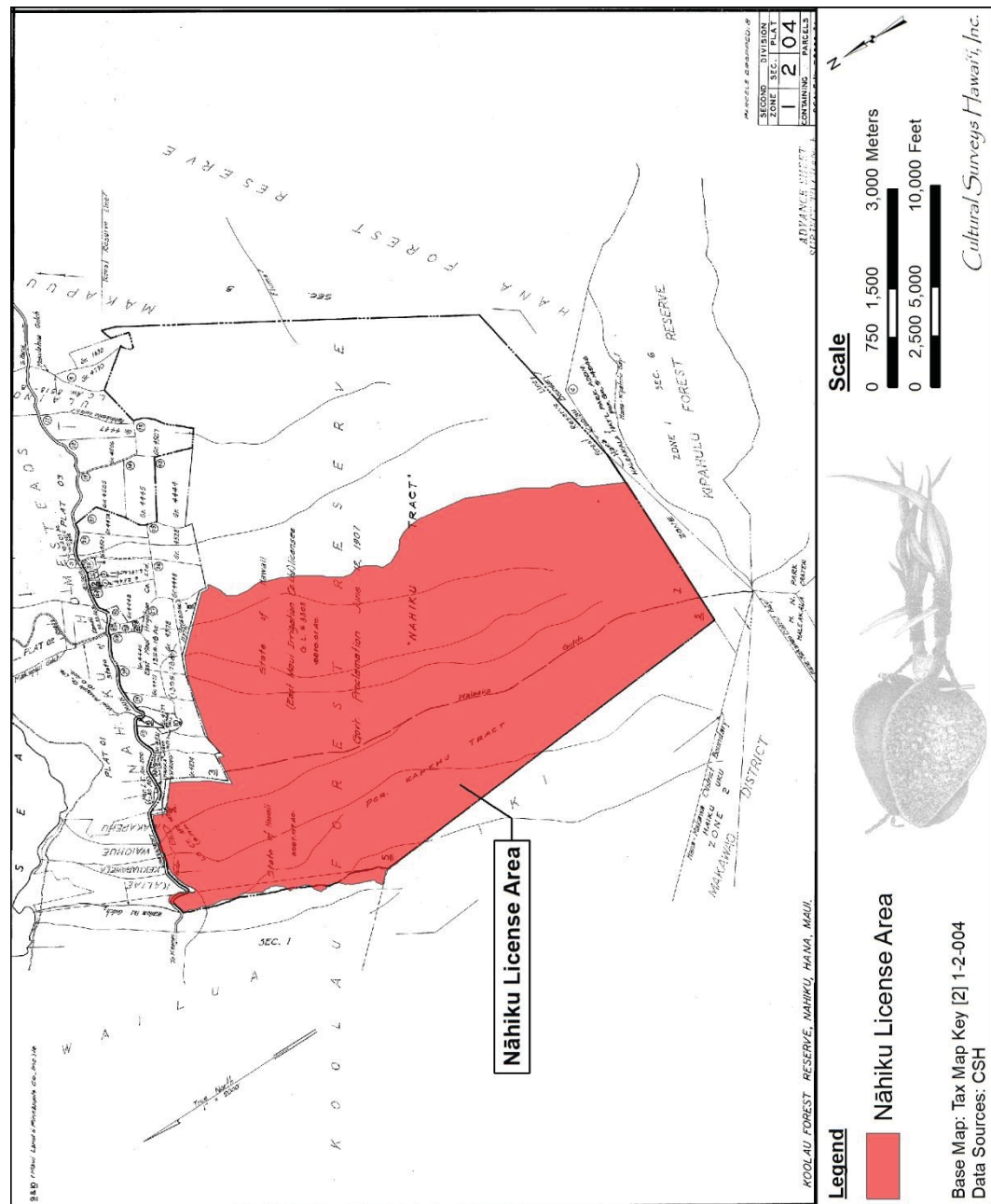


Figure 4. TMK: [2] 1-2-004 showing the Nāhiku License Area (Hawaii TMK Service 2014)



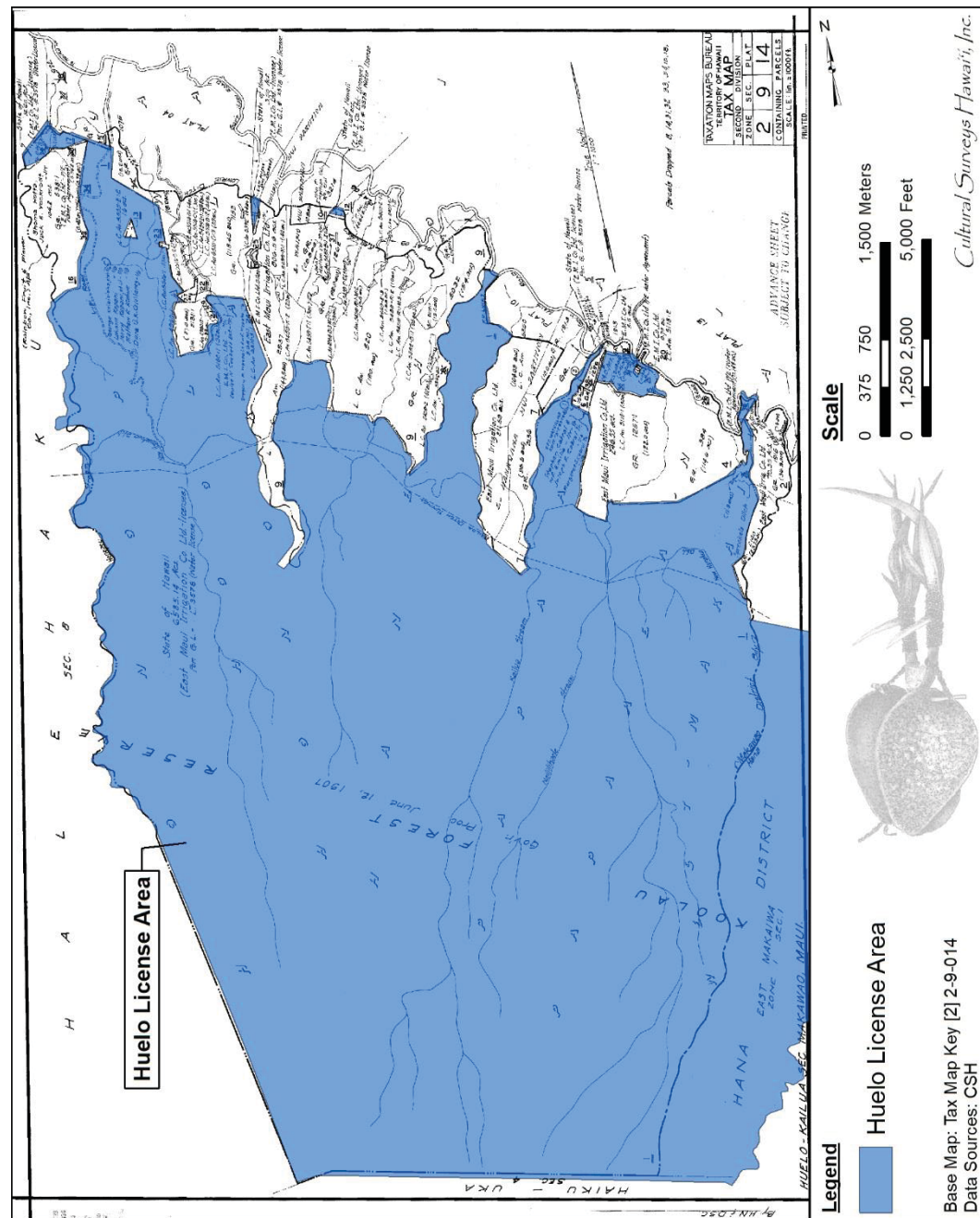


Figure 5. TMK: [2] 2-9-014 showing a portion of the Huelo License Area (Hawaii TMK Service 2014)

LRFI for Nāhiku, Ké'anae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKS: [2] 1-1 (various plats and parcels), 1-2-004:005, 007 (por.), and 2-9-014:(various parcels)

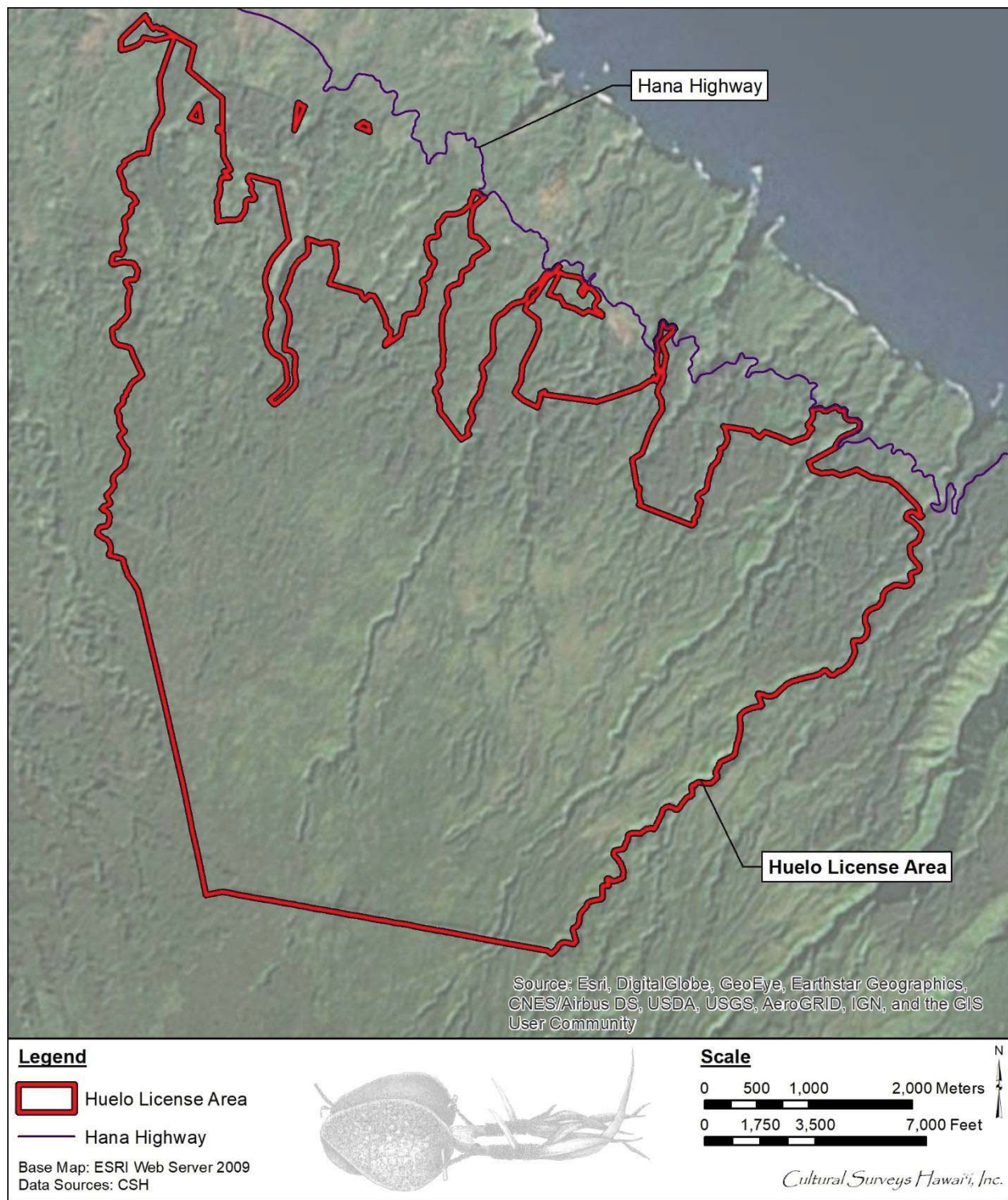


Figure 6. Aerial photograph showing the Huelo License Area (Esri 2009)



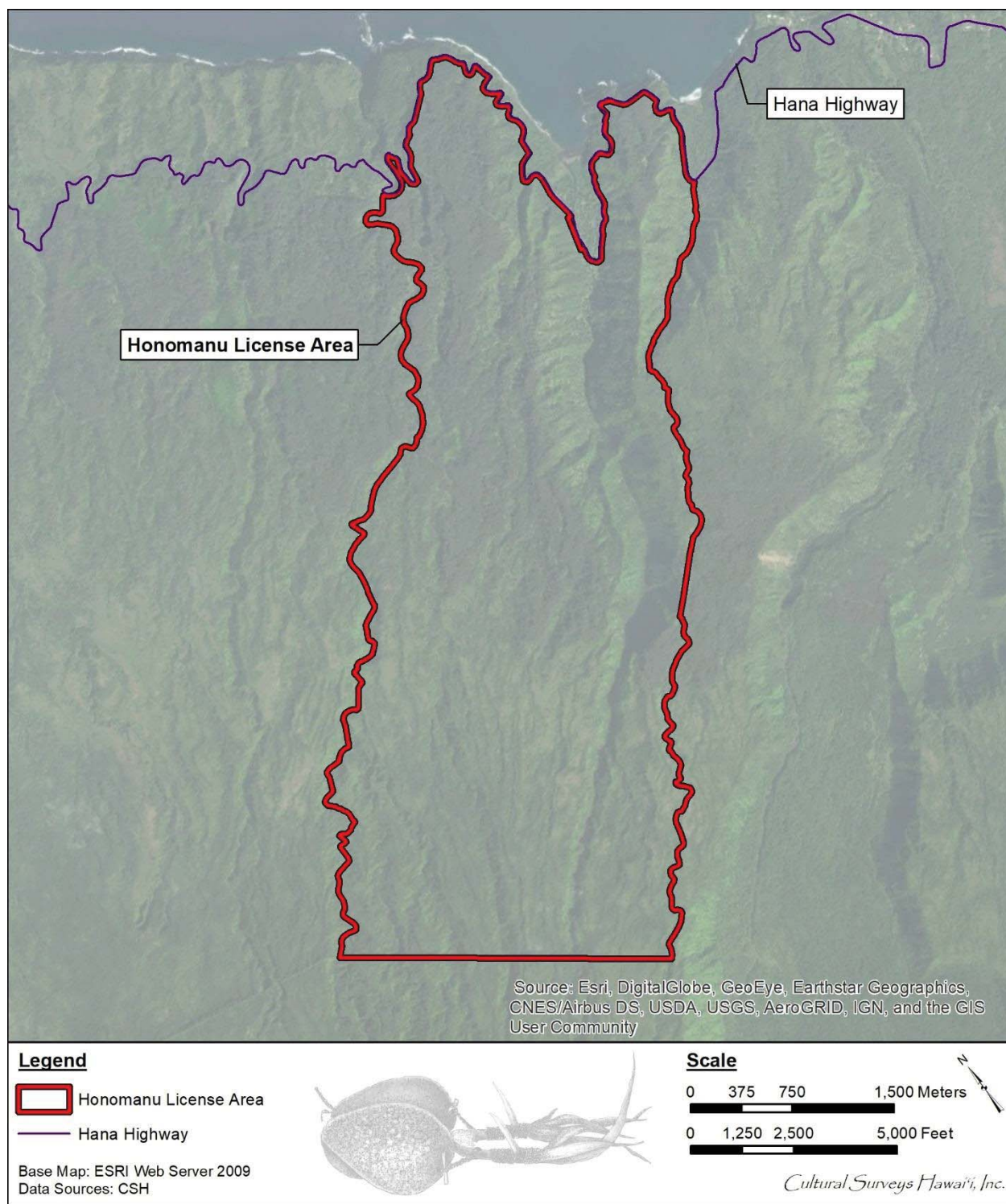


Figure 7. Aerial photograph showing the Honomanū License Area (Esri 2009)

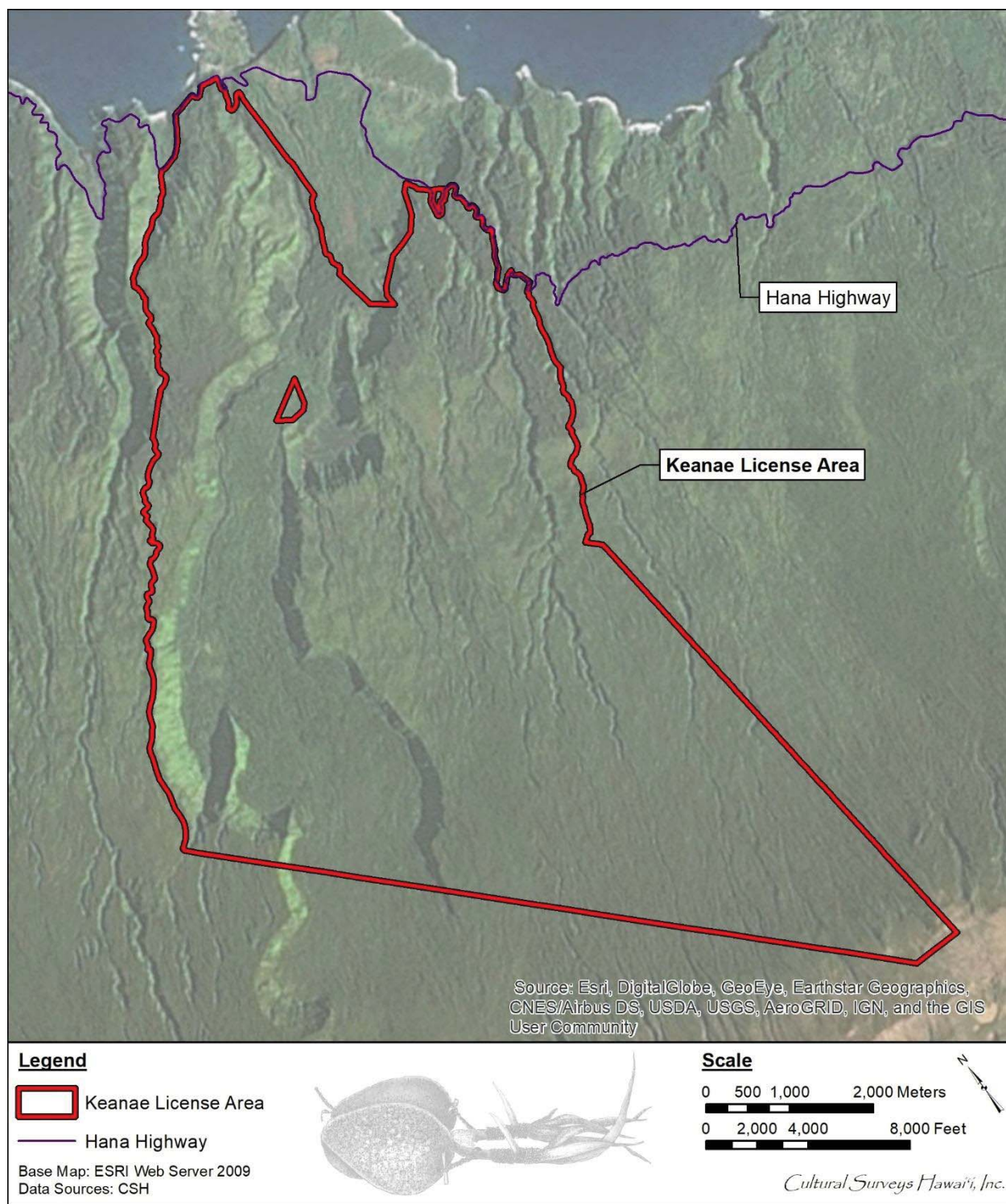


Figure 8. Aerial photograph showing the Ke'anae License Area (Esri 2009)



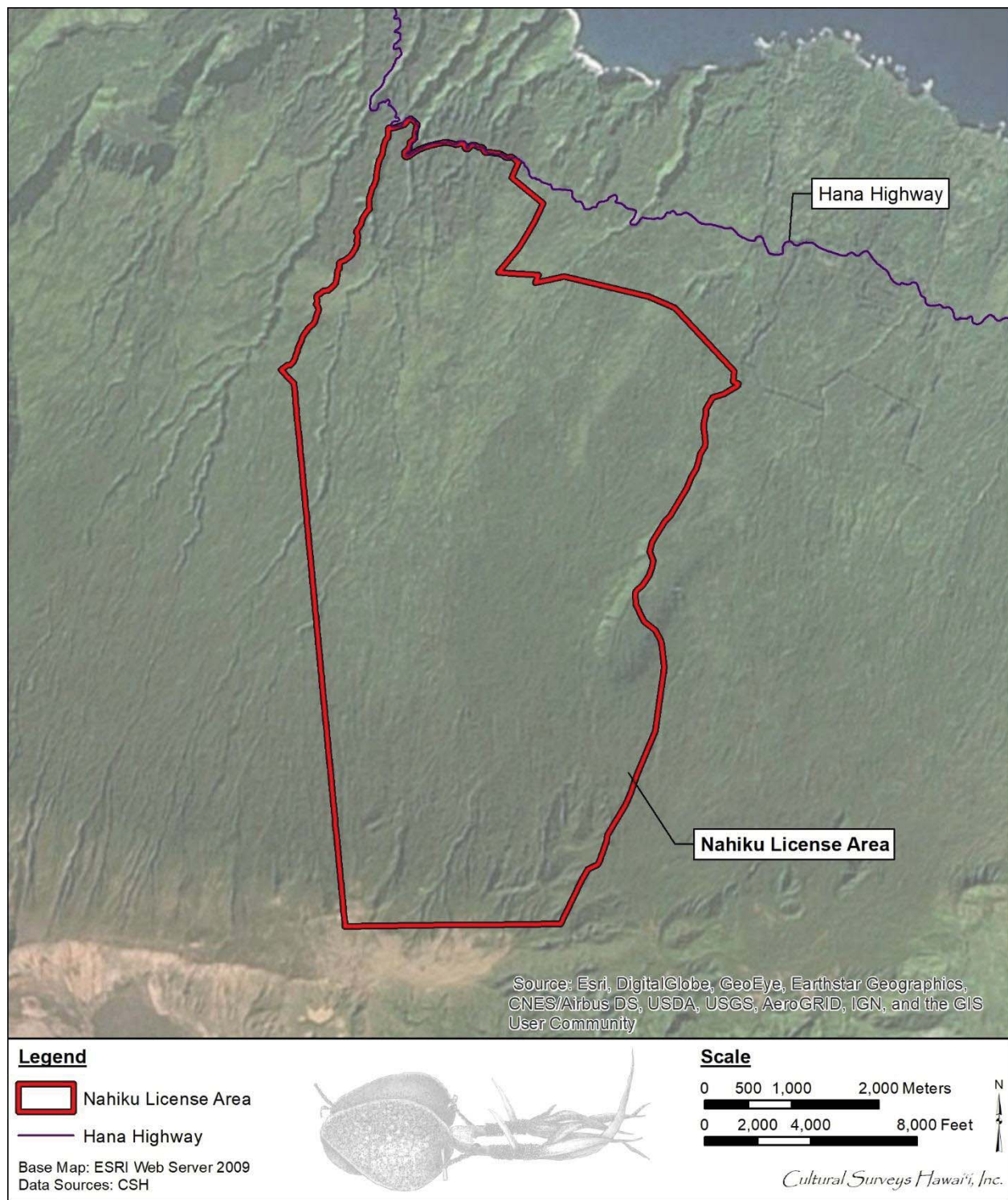


Figure 9. Aerial photograph showing the Nahiku License Area (Esri 2009)

on 6 October 2017 updated the previous correspondence to no longer request the completion of an AIS plan or AIS in the License Area in conjunction with the proposed Water Lease.

This investigation was designed to determine the likelihood that historic properties (any building, structure, object, district, area, or site over 50 years old) may be affected by the project and, based on findings, consider cultural resource management recommendations. This document is intended to facilitate the project's planning and support the project's environmental review compliance. This investigation does not fulfill the requirements of an AIS investigation, per HAR §13-13-276.

## 1.3 Environmental Setting

### 1.3.1 Natural Environment

#### 1.3.1.1 Hydrology

The License Area includes 37 named streams, of which 35 have historically been subject to water diversion into the EMI Aqueduct System. In 2007, all water diversion by A&B of Waiokamilo Stream was terminated and stream flow was fully restored. Presently, full and permanent stream flow restoration is planned for additional streams within the License Area.

#### 1.3.1.2 Rainfall

According to the University of Hawai'i 2011 *Online Rainfall Atlas of Hawaii*, between 1978 and 2007, the annual rainfall along the length of the License Area ranged from approximately 3199.6 mm to 6731.8 mm (approximately 125.97 in to 265.03 in) (Giambelluca et al. 2013). In 2014, the annual average air temperature within the License Area ranged from approximately 15.962 °C to 21.556 °C (approximately 60.73 °F to 70.81 °F) (Giambelluca et al. 2014). The elevation within the project area ranges from approximately 30.48 m to 2286 m (100 ft to 7500 ft) above mean sea level.

#### 1.3.1.3 Vegetation

According to the Terrestrial Flora and Fauna Technical Report for the Proposed East Maui Water Lease (SWCA Environmental Consultants 2018) 19 different vegetation cover types exist within the License Area. Vegetation cover types include Open “uluhe” ‘Ōhi‘a Forest (10,934 ac., 33% Lic. Area), Closed ‘Ōhi‘a Forest (8,575 ac., 26% Lic. Area), Alien Forest (7,658 ac., 23% Lic. Area), Closed “uluhe” ‘Ōhi‘a Forest (1,527 ac., 5% Lic. Area), Uncharacterized Open-Sparse Vegetation (1,430 ac., 4% Lic. Area), Uluhe Shrubland (658 ac., 2% Lic. Area), Closed “uluhe” Koa-‘Ōhi‘a Forest (611 ac., 2% Lic. Area), Uncharacterized Shrubland (579 ac., 2% Lic. Area), Alien Grassland (209 ac., 1% Lic. Area), Uncharacterized Forest (172 ac., 1% Lic. Area), Native Wet Cliff Vegetation (145 ac., < 1% Lic. Area), Closed “native shrub” Koa-‘Ōhi‘a Forest (139 ac., < 1% Lic. Area), Native Shrubland/Sparse “native shrub” ‘Ōhi‘a (82 ac., < 1% Lic. Area), Deschamsia Grassland (22 ac., < 1% Lic. Area), Native “alien grasses” Shrubland (22 ac., < 1% Lic. Area), Open “native shrub” ‘Ōhi‘a Forest (10 ac., < 1% Lic. Area), Very Sparse Vegetation to Unvegetated (8 ac., < 1% Lic. Area), Kikuyu Grass Grassland/Pasture (2 ac., < 1% Lic. Area), and Low Intensity Development (1 ac., <1% Lic. Area). These vegetation cover types span a diverse variety of ecosystems and each have their own representative species within each cover type. Generally, each vegetation zone contains a mix of indigenous and introduced species of flora.

There area also 21 endangered or threatened species present within and near the License Areas (SWCA Environmental Consultants 2018:10-11, A-11 through D-12).

#### 1.3.1.4 Soils within Huelo License Area

According to the U.S. Department of Agriculture (USDA) (2001) Soil Survey Geographic (SSURGO) database and soil survey data gathered by Foote et al. (1972), soils within the Huelo License Area portion of the project area include Kailua silty clay (3 to 25 percent slopes) (KBID), Pauwela clay (15 to 25 percent slopes) (PfD), Rough broken land (rRR), Honomanu-Amalu association (rHR), Rough mountainous land (rRT), Amalu peaty silty clay (3 to 20 percent slopes) (rAMD), and water > 40 acres (W) (Figure 10).

Kailua silty clay (3 to 25 percent slopes) (KBID) soils are described as follows:

This soil is on low uplands. Included in mapping were areas of Honomanu and Makawao soils. Also included were small, steep areas near cinder cones.

In a representative profile the surface layer is dark brown silty clay about 9 inches thick. The upper part of the subsoil, about 18 inches thick, is dark-brown and dark reddish-brown silty clay that has subangular blocky structure. The lower part of the subsoil is very dark gray silty clay loam. The substratum is soft, weathered basic igneous rock. The soil is very strongly acid in the surface layer and strongly acid or medium acid in the subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. In places roots penetrate to a depth of 4 feet or more...

This soil is used for pasture, woodland, and wildlife habitat. (Capability classification IVe, nonirrigated; pasture group 11; woodland group 8). (Foote et al. 1972:53)

Pauwela clay (15 to 25 percent slopes) (PfD) soils are described as follows:

On this soil runoff is medium and the erosion hazard is moderate. Included in mapping were areas that are steep and moderately eroded. This soil is used for pasture and woodland. (Capability classification IVe, nonirrigated; pineapple group 8; pasture group 8; woodland group 7). (Foote et al. 1972:112)

Rough broken land (rRR) is described as follows:

Rough broken land (rRR) consists of very steep land broken by numerous intermittent drainage channels. In most places, it is not stony. It occurs in gulches and on mountainsides on all the Islands except Oahu. The slope is 40 to 70 percent. Elevations range from nearly sea level to about 8,000 feet. The local relief is generally between 25 and 500 feet. Runoff is rapid, and geologic erosion is active. The annual rainfall amounts to 25 to more than 200 inches.

These soils are variable. They are 20 to more than 60 inches deep over soft, weathered rock. In most places some weathered rock fragments are mixed with the soil material. Small areas of rock outcrop, stones, and soil slips are common. Included in mapping were areas of colluvium and alluvium along gulch bottoms.



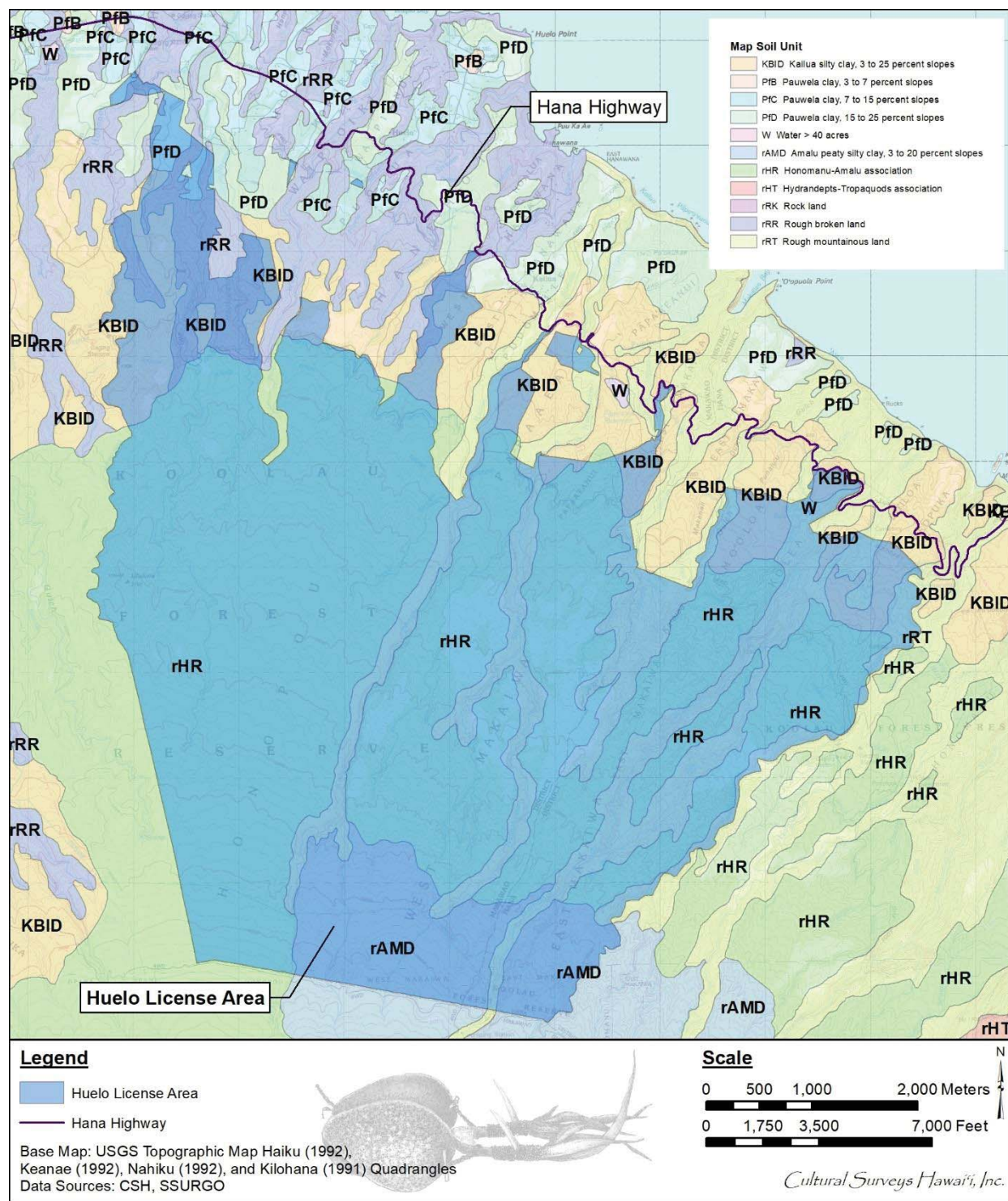


Figure 10. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the Huelo License Area (U.S. Department of Agriculture 2001)

This land type is used primarily for watershed and wildlife habitat. In places, it is used also for pasture and woodland. The dominant natural vegetation in the drier areas consists of guava, lantana, natal redtop, bermudagrass, koa haole, and molasses grass. Ohia, kukui, koa, and ferns are dominant in the wetter areas. Puakeawe, aalii, and sweet vernal grass are common at the higher elevations. (Capability classification Vile, nonirrigated). (Foote et al. 1972:119)

Honomanu-Amalu association (rHR) soils are described as follows:

The soils in this association have the profiles described as typical of their respective series. The areas are almost inaccessible by vehicle or on foot. They are on gently sloping to moderately steep, intermediate uplands on East Maui. The Honomanu soils occupy the more sloping, better drained side slopes. The Amalu soils occur on the less sloping tops of ridges and interfluvies. The Honomanu soils are well drained; the Amalu soils are poorly drained. Runoff is slow to very slow, and the erosion hazard is slight.

Honomanu soils make up about 60 percent of the association, and Amalu soils about 40 percent. Included in mapping were small areas of Kailua soils and many small, very steep gulches. This association is used for water supply and wildlife habitat. It is covered with dense min forest vegetation. (Honomanu part is in capability classification IVe, nonirrigated; woodland group 8. Amalu part is in capability classification VIIw, nonirrigated). (Foote et al. 1972:43)

Rough mountainous land (rRT) is described as follows:

Rough mountainous land (rRT) occurs in mountainous areas on all islands in the survey area. It consists of very steep land broken by numerous intermittent drainage channels. In most places it is not stony. Elevations range from nearly sea level to more than 6,000 feet. The annual rainfall amounts to 70 to more than 400 inches. Over much of the area, the soil mantle is very thin. It ranges from 1 inch to 10 inches in thickness over saprolite. In most places the saprolite is relatively soft and permeable to roots and water.

The land surface is dominated by deep, V-shaped valleys that have extremely steep side slopes and narrow ridges between the valleys. In most places, the local relief exceeds 500 feet. The soil material on the narrow ridgetops is similar to that of the Amalu and Olokui series. Rock land, rock outcrop, soil slips, and eroded spots make up 20 to 40 percent of the acreage.

This land type is used for water supply, wildlife habitat, and recreation. The natural vegetation consists of ohia, false staghorn fern, tree fern, yellow foxtail, lantana, kukui, and puakeawe. (Capability classification Vile, nonirrigated) (Foote et al. 1972:119)

Amalu peaty silty clay (3 to 20 percent slopes) (rAMD) soils are described as follows:

This soil is on high ridges and mountaintops. Included in mapping were small areas of Honomanu and Olokui soils and of steep gulches. In a representative profile an organic layer of black peat, about 8 inches thick, overlies a layer of gray massive

clay about 8 inches thick. The substratum is soft, weathered basic igneous rock capped by a horizontal ironstone sheet 1/8 to 1 inch thick. The soil is extremely acid above the ironstone layer.

Permeability is restricted by the ironstone sheet, which is impermeable except for cracks. Runoff is very slow, and the erosion hazard is no more than slight. Roots penetrate to a depth of 8 to 15 inches in places...

This soil is used for water supply and wildlife habitat. (Capability classification Vllw, nonirrigated; woodland group 16). (Foote et al. 1972:28)

### 1.3.1.5 Soils within Honomanū License Area

According to the U.S. Department of Agriculture (2001) Soil Survey Geographic (SSURGO) database and soil survey data gathered by Foote et al. (1972), soils within the Honomanū License Area portion of the project area include Kailua silty clay (3 to 25 percent slopes) (KBID), Stony alluvial land (rSM), Honomanu-Amalu association (rHR), Rough mountainous land (rRT), and Amalu peaty silty clay (3 to 20 percent slopes) (rAMD) (Figure 11).

Stony alluvial land (rSM) soils are described as follows:

Stony alluvial land (rSM) consists of stones, boulders, and soil deposited by streams along the bottoms of gulches and on alluvial fans. In most places, the slope is 3 to 15 percent. Elevations range from nearly sea level to 1,000 feet. The annual rainfall amounts to 15 to 200 inches.

This land type is suited to pasture in the dry areas and to pasture and woodland in the wet areas. The natural vegetation consists of kiawe, klu, ilima, piligrass, and lantana in the dry areas and guava, kukui, hilograss, and Christmas berry in the wet areas. Improvement of this land is difficult because of the stones and boulders. (Capability classification VIIs, nonirrigated). (Foote et al. 1972:120)

### 1.3.1.6 Soils within Keʻanae License Area

According to the U.S. Department of Agriculture (2001) Soil Survey Geographic (SSURGO) database and soil survey data gathered by Foote et al. (1972), soils within the Keʻanae License Area portion of the project area consist of Kailua silty clay (3 to 25 percent slopes) (KBID), Stony alluvial land (rSM), Honolua silty clay (7 to 15 percent slopes) (HwC), Honomanu-Amalu association (rHR), Rough mountainous land (rRT), Honomanu silty clay (5 to 25 percent slopes) (rHOD), and Hydrandepts-Tropaquods association (rHT) (Figure 12).

Honolua silty clay (7 to 15 percent slopes) (HwC) is described as follows:

This soil is on smooth interfluvies on uplands. Included in mapping were small areas of Alaeloa and Olelo soils. Also included were small, gently sloping areas and small, eroded spots.

In a representative profile, the surface layer is dark-brown silty clay about 12 inches thick. The subsoil, about 58 inches thick, is dark reddish-brown and reddish-brown silty clay that has subangular blocky structure. The substratum is soft, weathered basic igneous rock. The soil is strongly acid in the surface layer and subsoil.



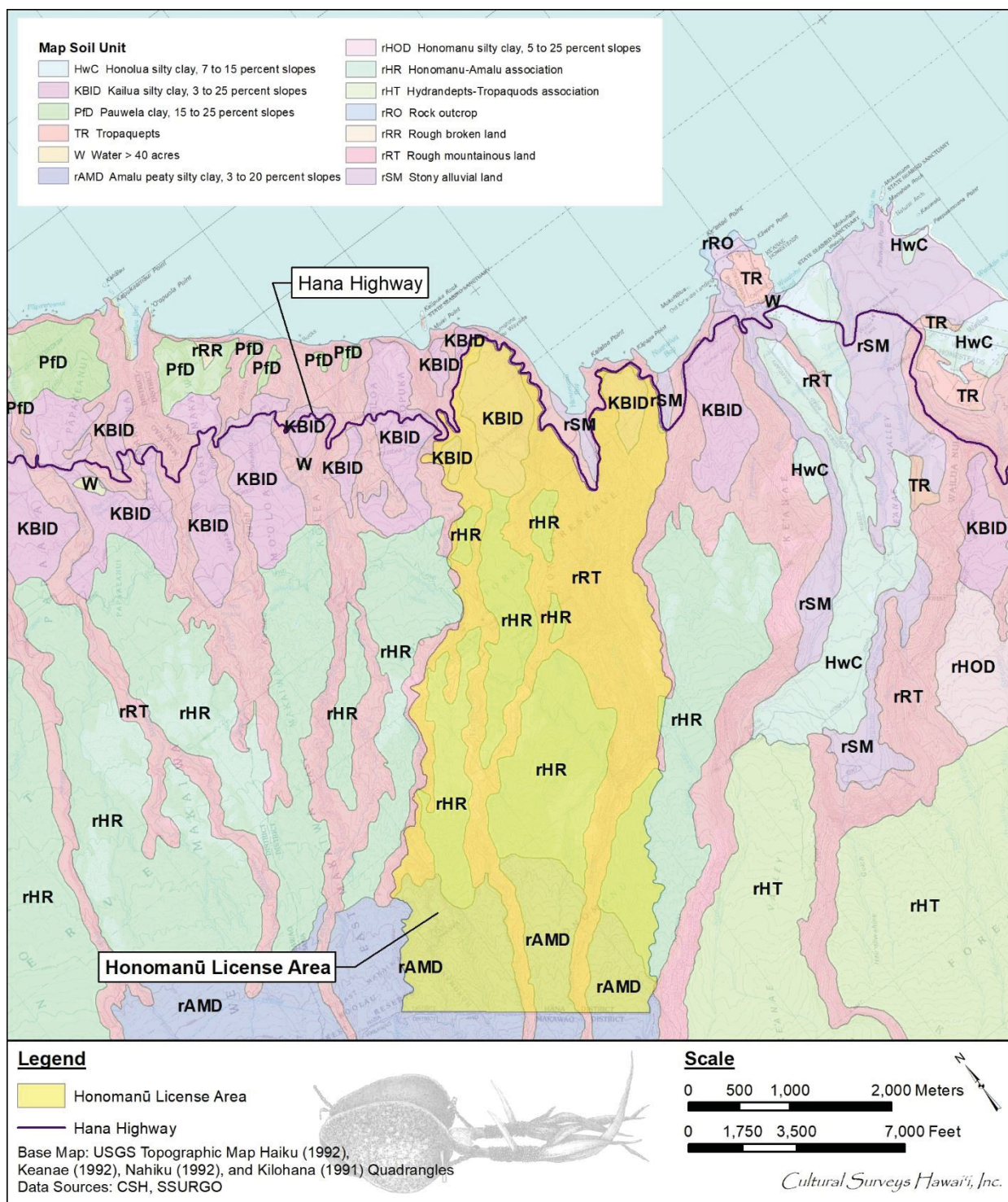


Figure 11. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the Honomanū License Area (U.S. Department of Agriculture 2001)



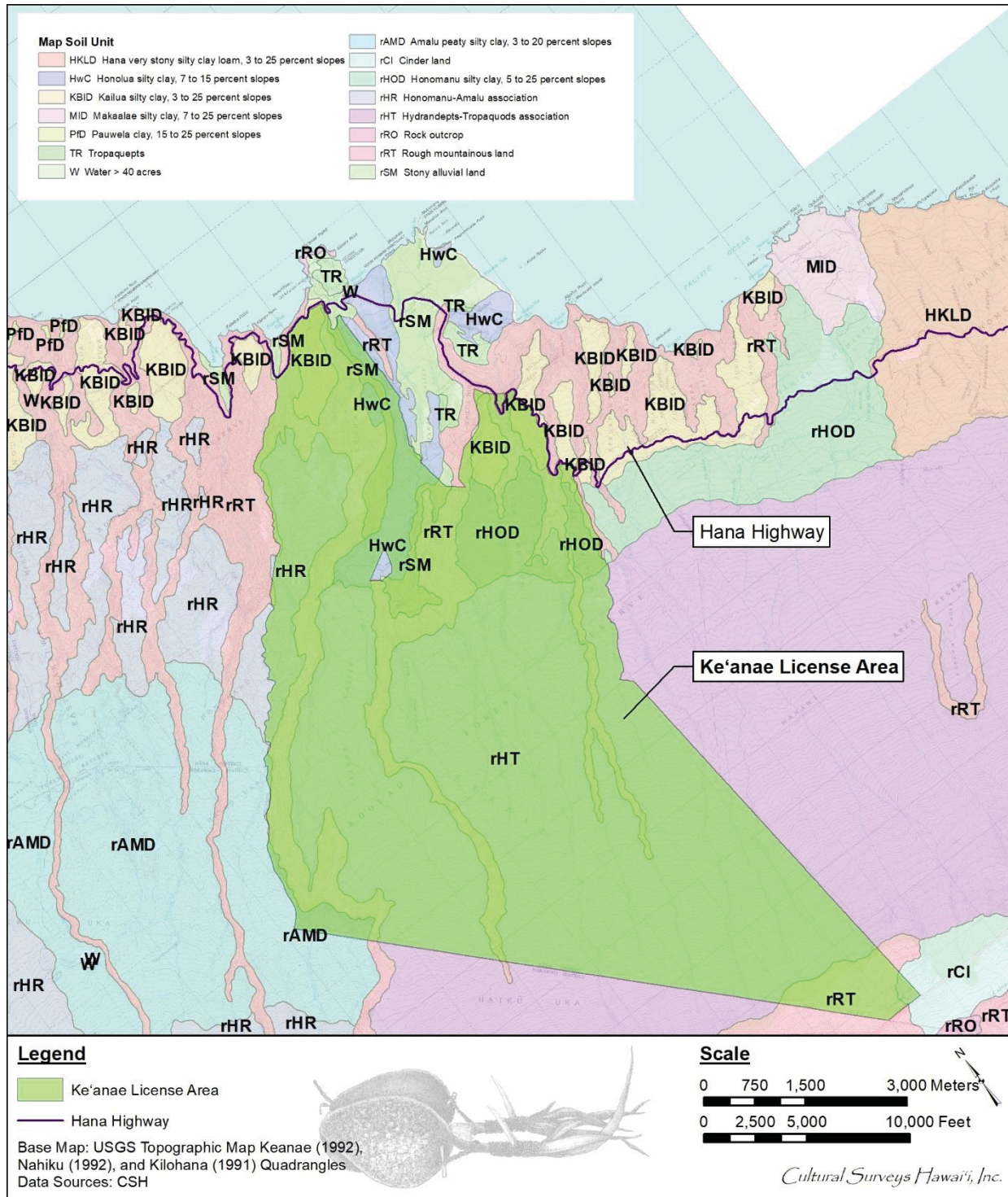


Figure 12. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the Keanae License Area (U.S. Department of Agriculture 2001)



Permeability is moderately rapid. Runoff is slow to medium, and the erosion hazard is slight to moderate. The available water capacity is about 1.2 inches per foot in the surface layer and about 1.4 inches per foot in the subsoil. In places roots penetrate to a depth of 5 feet or more...

This soil is used for pineapple, pasture, and woodland. (Capability classification IIIe, nonirrigated; pineapple group 3; pasture group 8; woodland group 7). (Foote et al. 1972:42)

Honomanu silty clay (5 to 25 percent slopes) (rHOD) soils are described as follows:

This soil is on the wettest parts of the northeastern slopes of Haleakala. Included in mapping were small areas of Amalu and Kailua soils and rock outcrops.

In a representative profile the surface layer is very dark brown silt loam and dark yellowish-brown silty clay about 11 inches thick, capped with an organic layer about 3 inches thick. The subsoil, about 26 inches thick, is dark yellowish-brown and brown silty clay that has subangular blocky structure. The substratum is dark yellowish-brown loam and fragmental basic igneous rock. The soil is extremely acid in the surface layer and subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. In places roots penetrate to a depth of 4 feet or more...

This soil is used for water supply and wildlife habitat. (Capability classification IVe, nonirrigated; pasture group 11; woodland group 8). (Foote et al. 1972:43)

Hydrandepts-Tropaquods association (rHT) soils are described as follows:

Areas mapped as Hydrandepts-Tropaquods association (rHT) consist of well-drained to poorly drained soils on uplands. These soils are on the northern slopes of West Maui and the northern and eastern slopes of East Maui. They developed in volcanic ash and in material weathered from cinders and basic igneous rock. They are moderately sloping to steep. Elevations range from 1,000 to 6,000 feet. The annual rainfall amounts to 100 to 350 inches. The mean annual soil temperature is 60° F. This association is geographically associated with soils of the Amalu, Honomanu, and Olelo series.

Hydrandepts make up about 60 percent of the association, and Tropaquods 40 percent. Included in mapping were small areas of Rough mountainous land. Also included were small peat bogs.

Hydrandepts are the steeper areas of the association. These are well drained to moderately well drained soils that are similar to those of the Honomanu series. The surface layer is high in organic-matter content. The subsoil is dark-brown or dark yellowish-brown, smeary silty clay loam or silty clay. The substratum consists of volcanic ash and cinders or weathered basic igneous rock. These soils dehydrate irreversibly into fine pebble size aggregates.

Tropaquods are poorly drained soils that are similar to those of the Amalu and Olokui series. They have a peaty or mucky surface layer that overlies a dark gray

to very dark gray, mottled layer. The mottled layer rests on an ironstone sheet  $\frac{1}{4}$  to 1 inch thick. The ironstone is at a depth of 10 to 20 inches. It normally caps highly weathered basic igneous rock.

The soils in this association have low bearing capacity and low shear strength. They are slippery and difficult to traverse. Because of their ability to absorb water and to transmit it rapidly, these soils are important for maintenance of ground water for domestic use and irrigation.

This association is used for water supply and wildlife habitat. The natural vegetation consists of ohia, puakeawe, sedges, false staghorn fern, tree fern, and other rain forest vegetation. (Hydrandepts soils are in capability classification VIIe, nonirrigated. Tropaquods soils are in capability classification VIIw, nonirrigated). (Foote et al. 1972:46)

### 1.3.1.7 Soils within Nāhiku License Area

According to the U.S. Department of Agriculture (2001) Soil Survey Geographic (SSURGO) database and soil survey data gathered by Foote et al. (1972), the soils within the Nāhiku license area consist of Kailua silty clay (3 to 25 percent slopes) (KBID), Honomanu silty clay (5 to 25 percent slopes) (rHOD), Hana very stony silty clay loam (3 to 25 percent slopes) (HKLD), Rough mountainous land (rRT), Hydrandepts-Tropaquods association (rHT), and Cinder land (rCl) (Figure 13).

Hana very stony silty clay loam (3 to 25 percent slopes) (HKLD) soils are described as follows:

This soil is on smooth, low mountain slopes. Included in mapping were small areas of Honomanu soils. Also included were small, steep areas near cinder cones.

In a representative profile, the surface layer is very dark-brown and very dark grayish-brown silty clay loam about 12 inches thick. The subsoil, about 22 inches thick, is dark-brown silty clay loam that has subangular blocky structure. The substratum is moderately weathered, pebble-size cinders overlying a'a lava. The soil is strongly acid to medium acid in the surface layer and slightly acid in the subsoil.

Permeability is moderately rapid. Runoff is slow to medium, and the erosion hazard is slight to moderate. In places roots penetrate to a depth of 3 to 4 feet. The available water capacity is about 1.2 inches per foot in the surface layer and 1.4 inches per foot in the subsoil...

This soil is used for pasture. (Capability classification VIs, nonirrigated; pasture group 11; woodland group 8). (Foote et al. 1972:37)

Cinder land (rCl) is described as follows:

Cinder land (rCl) consists of areas of bedded magmatic ejecta associated with cinder cones. It is a mixture of cinders, pumice, and ash. These materials are black, red, yellow, brown, or variegated in color. They have jagged edges and a glassy appearance and show little or no evidence of soil development.

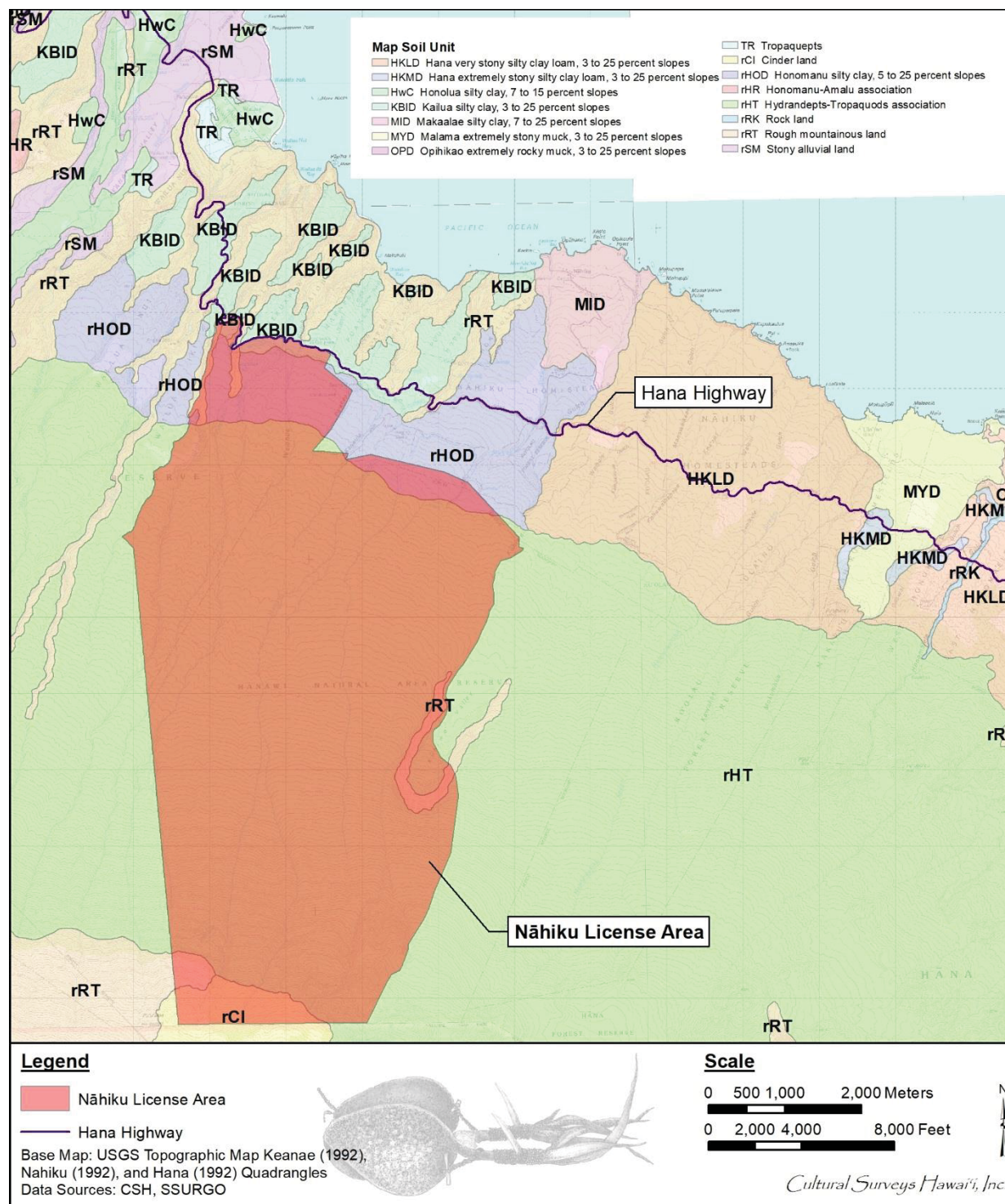


Figure 13. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the Nāhiku License Area (U.S. Department of Agriculture 2001)

Cinder land occurs on the islands of Maui and Oahu. On Maui, it is mainly at elevations between 8,000 and 10,000 feet in the Haleakala National Park. On Oahu, it is mainly at elevations between 200 and 2,000 feet, near Mount Tantalus. The annual rainfall amounts to 20 to 30 inches on Maui and 60 to 100 inches on Oahu.

Although Cinder land commonly supports some vegetation, it has no value for grazing, because of its loose nature and poor trafficability; It is used for wildlife habitat and recreational areas. (Capability classification VIIIs, nonirrigated). (Foote et al. 1972)

### **1.3.2 Built Environment**

The built environment of the License Area includes the EMI Aqueduct System comprised of approximately 50 miles of tunnels, 24 miles of ditches, 13 inverted siphons, and approximately 388 intakes. In addition, the system is served by approximately 62 miles of private roads and a solar-powered radio telemetry system to monitor ditch flows (ASCE 2001). The License Area is located upslope from Hāna Highway, the only major thoroughfare that extends through East Maui. The highway itself includes 56 bridges or culverts in the vicinity of the License Area. Several coastal communities are located on the seaward side of Hāna Highway and outside of the License Area.



## Section 2 Background Research

---

### 2.1 Research Methods

Background research included a review of previous archaeological studies on file at the SHPD; review of documents at Hamilton Library of the University of Hawai‘i, the Hawai‘i State Archives, the Mission Houses Museum Library, the Hawai‘i Public Library, and the Archives of the Bishop Museum; study of historic photographs at the Hawai‘i State Archives and the Archives of the Bishop Museum; study of historic maps at the Survey Office of the Department of Land and Natural Resources; and study of online historic newspaper databases. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona ‘Aina (2000) database.

Background research for this investigation is presented as a chronology and is further subdivided to present information related to specific events, topics, or locations. Prior to the current study, extensive research has been conducted throughout East Maui with varied foci (Duensing 2005; Group 70 International et al. 1995; E. S. C. Handy et al. 1991; Soehren 1963; Thrum 1909b; Walker 1931). This archaeological investigation will often cite many of these previous studies as well as supportive primary source material whenever possible.

In addition to the archaeology-focused research conducted as part of this investigation, the Environmental Impact Statement for the current project will include architectural history of the EMI Aqueduct System within the context of a historic architecture report, cultural history of the License Area within the context of a cultural impact assessment, and numerous other multidisciplinary perspectives including, among other things, studies of social impacts, hydrology, and marine/terrestrial biota.

### 2.2 Traditional Background of Hāmākua Loa Moku

The division of Maui’s lands into political districts first occurred during the rule of Kaka‘alaneo under the direction of his *kahuna* (priest) Kalaiha‘ōhi‘a (Beckwith 1970:383). The *moku o loko*, or *moku* as it is most commonly called, literally means “to cut across, divide, separate” (Lucas 1995:77). When used as a term of traditional land tenure, a *moku* is similar to a political district that can contain smaller divisions of land such as *‘okana*, *kalana*, *ahupua‘a*, *‘ili*, and *mo‘o*.

According to Mary Pukui et al. (1974:49), the literal translation of Hāmākua Loa is “long Hāmākua, where Hāmākua means corner.” There are several place names in the various *ahupua‘a* which make up this *moku* that are recorded by Pukui et al. (1974). Much of the historical and traditional information is related to adjacent *ahupua‘a* and is recounted here briefly because of the close relationship to the adjacent *moku* of Ko‘olau.

Given the state of warfare between Maui and Hawai‘i Islands in the late pre-Contact period, there are storied accounts of the actions of passing armies in their disputes over ownership of the resources of East Maui. One such legend comes from the late 1700s when Kalani‘ōpu‘u, high chief from Hawai‘i Island, was involved in a campaign against Kahekili of Maui. In an excerpt from *Account of the Polynesian Race* taken from Sterling (1998:102), Fornander describes the account of Kalani‘ōpu‘u landing on Maui to reprovision after a successful military campaign on Lāna‘i:



Then, rounding Kahakuloa, he stood to the eastward, and landed at Hamakualoa, on Maui, where he plundered the country and committed fearful barbarities on the people, until Kahekili came to their support with his forces, and after several encounters, drove Kalaniopuu on board of his fleet. Foiled in Hamakualoa, Kalaniopuu made his next descent in the Koolau district, committing similar depredations and barbarities there. While there, he was joined by Mahihelelima, the Hawaii [Island] governor of the adjoining Hana district, with a select force of warriors, and being thus enabled to rally and hold his ground against Kahekili, he again attempted the invasion of Hamakualoa, where the war was protracted, with varying success, for several months. (Fornander in Sterling 1998:102)

It was during this extended period of warfare between Kahekili and Kalani'ōpu'u that the advent of Western contact came upon the Hawaiian Islands, with Kalani'ōpu'u at the fore of its arrival off the coast of Maui. In 1778, when Capt. James Cook's ships returned from their North American explorations, they stopped off shore of East Maui but could not land. In *Exalted Sits the Chief*, Ross Cordy (2000:294) places Kalani'ōpu'u at this first point of contact between Hawai'i and the West:

Kalani'ōpu'u had regrouped and again invaded Maui ca. 1778—pillaging Kaupō and Kaho'olawe ... and raiding and engaging Kahekili's forces in Ko'olau and Hāmākualoa. It was during this campaign when Captain Cook arrived off Maui's Hāmākualoa in November 1778. Kalani'ōpu'u went on board briefly, wearing a helmet with yellow and black feathers and a long feathered cloak. (Cordy 2000:294)

Kalani'ōpu'u and Kamehameha I (then, in the war company of Kalani'ōpu'u) both visited Cook's ships, indicating who controlled the East Maui region. The Kahekili and Kalani'ōpu'u saga was not the last war to leave its marks upon the lands of Hāmākua Loa. Less than two decades later the first king of a unified Hawai'i, Kamehameha I, would also pass through this region on his campaign to create a unified Hawaiian Kingdom.

Excerpts of Fornander's *Account of the Polynesian Race* in Sterling (1998:103) also mention places that were visited by Kamehameha I during his campaign to take the fertile stream-fed valleys of Wailuku:

Of the campaign in Hamakualoa some mementos are still pointed out. The fortified position at Puukoae [*Puukaae on later maps*] on Hanawana, which was attacked and taken by Kamehameha, who had brought his fleet round from Hana. The hill is known as "Kapuai-o-Kamehameha," to the west of the Halehaku stream, where he encamped for the night after taking Puukoae. Here his war god Kukailimoku was paraded around the camp, to ascertain by the usual auguries—the more or less erect position of the feathers, &—the issue of the campaign. ... the Maui forces were routed and fled as far as Kokomo, where a final stand was made. Fighting desperately, and with hardly a hope of retrieving the fortune of the day, Kapakahili encountered Kamehameha on the field ... Kapakahili was killed, the Maui men fled and dispersed, and the road to Wailuku lay open to Kamehameha. (Fornander in Sterling 1998:103)

Another account mentions Kamehameha I presence on a hill located on the shore just west of Halehaku Bay. An excerpt of an article by John H. Wise in the 6 December 1911 issue of *Ke Au Hou*, translated by and included in Sterling (1998:104) bears this account:

The battle forces of Kamehameha moved on from there in Koolau to Hamakuapoko and that was the place where Kamehameha battle companies were forced back a little by Maui's sons, however, because of the excessive bravery and strength of Kamehameha, the Maui people's losses were severe at the stream of Kapiki [*Kakipi?*] in Halehaku and the imprint of Kamehameha's foot remains on the face of one of the hills to this day (J.H. Wise in Sterling 1998:104)

Though the author attributes this place to Hāmākua, the traditional *moku* east of Hāmākua Loa, the actual stream of Halehaku lies in the center of Hāmākua Loa. In this way, many landmarks and natural features of the Hāmākua Loa region have been witness to the various social and political currents of the Island by bearing names and stories associated with local history and lore.

### 2.2.1 Place Names of Hāmākua Loa

E. S. C. Handy et al. (1991:23-24,42) summarizes the relationship that traditional Hawaiians have had with the natural environment in the following passage:

The sky, sea, and earth, and all in and on them are alive with meaning indelibly impressed upon every fiber of the unconscious as well as the conscious psyche. Hawaiian poetry and folklore reveal this intimate rapport with the elements, (E. S. C. Handy et al. 1991:23-24)

... the relationship which existed from very early times between the Hawaiian people ... is abundantly exemplified in traditional *mele* (songs), in *pule* (prayer chants), and in genealogical records which associate the ancestors, primordial and more recent, with their individual homelands, celebrating always the outstanding qualities and features of those lands. (E. S. C. Handy et al. 1991:42)

These subtle observations of the interconnectedness of people, places, and deeds figure largely in the naming of places of note, also called *wahi pana*. The regional place names below, along with the environmental data, indicate that the lands within Hāmākua Loa Moku were widely used for many purposes relevant to traditional Hawaiian subsistence, habitation, and history. The perennial and seasonal watersheds on this side of the island bear many names associated with agricultural, domestic, and recreational uses of the local streams and pools. Sometimes these place names are references to the actions of historic individuals, and at other times to the deeds of legendary or mythological figures, but often are rich with the symbolic associations to the point of encompassing a comprehensive history of a place that can combine all these elements. Literal translations of many of the place names for land areas and divisions in Hāmākua Loa Moku are listed in Table 1 and may provide insight into this area prior to Western contact. Unless otherwise noted, translations are cited from Pukui et al. (1974) *Place Names of Hawaii*.

Table 1. Place Names within Hāmākua Loa Moku [from Pukui et al. (1974) unless otherwise noted]

| Name        | Translation/Association   |
|-------------|---|
| Āwiki       | <i>ʻIli</i> place name in Halehaku; <i>lit.</i> , “swift” (Ulukau 2006)   |
| Ha‘i-kū     | <i>Ahupua‘a</i> , town, and reservoir; <i>lit.</i> , “speak abruptly” or “sharp break” (p. 34); known location of hills of fine dune sand, some of which bore the bleached bones of past battles (H.T. Cheever in Sterling 1998:97) |
| Hakakaupueo | Congregational church at Huelo in Ha‘ikū; <i>lit.</i> , “owl-resting perch”; owls perched in a pandanus grove here (p. 35)  |
| Halapē      | <i>Heiau</i> on the boundary between Waipio, Komohana, and Mokupapa; <i>lit.</i> , “crushed” or “missing” (Ulukau 2006)   |
| Hala‘ula    | <i>ʻIli</i> <i>ʻāina</i> place name in Honopou; <i>lit.</i> , “red pandanus” (Ulukau 2006)  |
| Hālauolōlo  | <i>ʻIli</i> <i>ʻāina</i> place name in Halehaku; <i>lit.</i> , “long, narrow house” (Ulukau 2006)   |
| Halehaku    | <i>Ahupua‘a</i> , bay, point, stream, and gulch; <i>lit.</i> , “master house” (Ulukau 2006)   |
| Haleola     | <i>ʻIli</i> <i>ʻāina</i> in Mo‘oloa Ahupua‘a; <i>lit.</i> , “house of life” (Ulukau 2006)   |
| Hāmākua Loa | One of 12 ancient districts ( <i>moku</i> ) of Maui Island; <i>lit.</i> , “long hāmākua” where <i>hāmākua</i> means corner (p. 39)  |
| Hanawana    | <i>Ahupua‘a</i> , point, and stream; <i>lit.</i> , “sea urchin bay” (p. 41)   |
| Honokalā    | <i>Ahupua‘a</i> , point, gulch, and stream; <i>lit.</i> , “the sun bay” (p. 49)   |
| Honopou     | <i>Ahupua‘a</i> , point, and stream; <i>lit.</i> , “post harbor” (p. 50)  |
| Ho‘olawa    | <i>Ahupua‘a</i> , bay, point, and stream; <i>lit.</i> , “to supply sufficiently” (Ulukau 2006)  |
| Ho‘olawanui | Stream in Ha‘ikū; <i>lit.</i> , “make great sufficiently” (p. 51)   |
| Huelo       | <i>Ahupua‘a</i> , village, stream, and point; a game, originated by Papio, was played here; <i>loulou</i> palm leaves were woven into hammocks upon which players were laid and then tossed into the sea (p. 53)                    |
| Ka‘aiea     | Stream and gulch in Punaluu Ahupua‘a; <i>lit.</i> , “the ‘aiea tree” (Ulukau 2006)  |
| Ka‘alukanu  | <i>ʻIli</i> <i>ʻāina</i> in Honopou; <i>lit.</i> , “the planting depression” (Ulukau 2006)  |

|                       |   |
|-----------------------|---|
| <b>Kaholo</b>         | <i>'Ili 'āina</i> place name near Peahi; <i>lit.</i> , “the running” (Ulukau 2006)  |
| <b>Kahouiki</b>       | <i>'Ili 'āina</i> in Honopou; <i>lit.</i> , “the small <i>hau</i> tree” (Ulukau 2006)   |
| <b>Kailiili</b>       | Place name in Hāmākua Loa; <i>lit.</i> , “the pebble” (Ulukau 2006)   |
| <b>Kākipi</b>         | Stream and gulch; a type of <i>poi</i> made from soggy taro (Ulukau 2006)   |
| <b>Kaohekanu</b>      | Stretch of land between Kawahinepee and Papaaea; known as a “place of robbers” for the treacherous passage through the region prior to being paved by Kihaapiilani (Moses Manu in Sterling 1998:101)  |
| <b>Kapahi</b>         | <i>'Ili 'āina</i> in Honopou Ahupua'a; <i>lit.</i> , “the knife” (Ulukau 2006)  |
| <b>Kapeku</b>         | <i>'Ili 'āina</i> in Honopou Ahupua'a; <i>lit.</i> , “the kick” (Ulukau 2006)   |
| <b>Kapua</b>          | <i>'Ili 'āina</i> in Hāmākua Loa; <i>lit.</i> , “the flower” (Ulukau 2006)  |
| <b>Kauhihale</b>      | <i>Heiau</i> in Pu'u o Maile Ahupua'a; <i>lit.</i> , “house of Kauhi” (Ulukau 2006)   |
| <b>Kaulanapueo</b>    | Church and place name in Hāmākua Loa; <i>lit.</i> , “owl perch” (p. 93)   |
| <b>Kawahaokapua'a</b> | <i>'Ili 'āina</i> in Huelo; <i>lit.</i> , “mouth of the pig” (Ulukau 2006)  |
| <b>Keali'i</b>        | Gulch and stream; <i>lit.</i> , “the chief” (p. 102)  |
| <b>Keali'i Iki</b>    | <i>Ahupua'a</i> ; <i>lit.</i> , “small <i>keali</i> ” (p. 102)  |
| <b>Keali'i Nui</b>    | <i>Ahupua'a</i> ; <i>lit.</i> , “large <i>keali</i> ” (p. 102)  |
| <b>Kokomo</b>         | Historic saw mill; said to have been originally <i>Koa-komo</i> , <i>lit.</i> , “ <i>koa</i> tree entering” (p. 116), because a huge tree spread out its branches beside the trail and travelers went through under the <i>koa</i> branches (Ulukau 2006) |
| <b>Lālāola</b>        | <i>Heiau</i> once located on an <i>'ili</i> of the same name; <i>lit.</i> , “living branch” (Ulukau 2006)   |
| <b>Liliko'i</b>       | Gulch and stream; a passion fruit said to have been named after where it was first grown, Liliko'i, on Maui Island (Ulukau 2006)  |
| <b>Makaīwa</b>        | <i>Ahupua'a</i> and bay; <i>lit.</i> , “mother-of-pearl eyes” (p. 140)  |
| <b>Makawao</b>        | <i>Moku</i> and <i>ahupua'a</i> ; <i>lit.</i> , “forest beginning” (p. 142)   |
| <b>Māliko</b>         | Bay, stream and gulch; <i>lit.</i> , “Budding” (p. 144)   |

|                     |  |
|---------------------|--|
| <b>Mokupapa</b>     | <i>Ahupua'a</i> , gulch, and stream; <i>lit.</i> , “flat island” (p. 156); also name of Walker Heiau Site 70 in Ha'ikū, Moku-papa-akua (Ulukau 2006) |
| <b>Mo'oloa</b>      | <i>Ahupua'a</i> ; <i>lit</i> “long <i>mo'o</i> ” where <i>mo'o</i> can mean either lizard or land parcel/ridge (Ulukau 2006)                         |
| <b>Nalowale</b>     | Unknown <i>heiau</i> ; <i>lit.</i> , “lost, forgotten” (Ulukau 2006)   |
| <b>'O'opuola</b>    | Cove, point, and stream; a stroke in <i>lua</i> fighting, another name for Makaīwa Bay (Ulukau 2006)   |
| <b>Pa'akea</b>      | <i>Ahupua'a</i> , stream, and gulch; <i>lit.</i> , “coral bed, limestone” (Ulukau 2006)  |
| <b>Pālama</b>       | Stream and gulch; <i>lit.</i> , “ <i>lama</i> wood enclosure” (Ulukau 2006)  |
| <b>Pāpa'a'ea</b>    | <i>Ahupua'a</i> and reservoir; <i>lit.</i> , “turtle shell piece”; Kiha-a-Pi'ilani made a long paved road beginning here (p. 179)                    |
| <b>Pa'uwela</b>     | <i>Ahupua'a</i> , point, gulch, stream, and reservoir; <i>lit.</i> , “hot soot” (p. 182)   |
| <b>Pi'ilani</b>     | <i>Heiau</i> in Halehaku; named after famous Maui chief (p. 184)   |
| <b>Pōhaku</b>       | <i>'Ili 'aina</i> in Honopou <i>Ahupua'a</i> ; <i>lit.</i> , “rock, stone” (p. 186)  |
| <b>Pōhaku'ele</b>   | <i>'Ili 'āina</i> in Halehaku; <i>lit.</i> , “black rock” (Ulukau 2006)  |
| <b>Pōhakuokai'a</b> | <i>Heiau</i> ; <i>lit.</i> , “stone of the fish” (Sterling 1998:106)   |
| <b>Pualoalo</b>     | <i>'Ili 'āina</i> in Hāmākua Loa; short for <i>pua aloalo</i> , <i>lit.</i> , “hibiscus flower” (Ulukau 2006)  |
| <b>Wai'alaea</b>    | <i>'Ili 'āina</i> in Huelo; <i>lit.</i> , “red earth water” (Ulukau 2006)  |
| <b>Wailua</b>       | <i>Ahupua'a</i> , stream, village, homestead, and cove; <i>lit.</i> , “two waters” (Ulukau 2006)   |
| <b>Waiohiwa</b>     | <i>'Ili 'āina</i> in Honopou; <i>lit.</i> , “Hiwa's water” (Ulukau 2006)   |
| <b>Waipi'o</b>      | <i>Ahupua'a</i> , gulch, and bay; <i>lit.</i> , “curved water” (p. 227)  |



### 2.2.2 Legends of Hāmākua Loa Moku

With its location between the wetter *moku* of Ko‘olau and Nā Wai Eha with their perennial watersheds, the Hāmākua Loa region has been associated with several figures from Hawaiian lore. Being surrounded by regions with flowing water as well as containing some of its own in seasonal intervals, there are local associations with the Hawaiian god of flowing water, Kāne, and fresh water springs in Hāmākua Loa. In a Hawaiian language newspaper titled *Ka Nupepa Kuokoa* in Sterling (1998:101), the author John Waiamau details a legendary shore visit to Hāmākua Loa from the gods Kāne and Kanaloa on their tour of Hawai‘i after arriving from Kahiki (Tahiti):

Kaneloa [*sic*] said to Kane, “We have circled Hawaii let us go to Maui.” They sailed to and landed on Maui. They toured Maui until they reached Hamakua. They drank awa but because there was no water they caused the fresh water to flow and drank all of the awa. They continued on and the water which they caused to flow was called the water of Kaneloa. This water flows unto this day. (Waiamau in Sterling 1998:101)

It is uncertain whether the water of Kanaloa in this anecdote refers to a specific place in Hāmākua Loa or whether it refers to all the springs in the Hāmākua districts. It is not surprising that Kāne and Kanaloa would have left their mark in Hāmākua Loa as they did in similar fashion at other watersheds in East Maui. Kāne and Kanaloa are not the only legendary figures to have been associated with Hāmākua Loa. The legends surrounding the abduction of Hina, the floating hill of Hā‘upu, and the abduction and sequestering of the former on the latter on the island of Moloka‘i also make mention of the *moku* of Hāmākua Loa.

The myth of Kana, firstborn of Hākalani and his wife, Hina, begins on Maui in the region of Hāmākua Loa, where Kana’s grandmother, Uli lived. Kana was born with extraordinary and mysterious powers. At the birth of Kana, he was in the form of a piece of rope; and had no human form. His grandmother, Uli, took the rope and kept it until it assumed a human form, then she brought the child up. In this legend, Kana grew to be very tall and large. Another son was born to Hina, Niheu, who also grew to be very large and powerful. Hina was abducted by Kapepe‘ekauila, the chief of the hill of Hā‘upu, and she was borne away to Moloka‘i on a magical hill, in the form of a giant turtle; that floated her to Hā‘upu, in Pelekunu Valley on Moloka‘i. Hākalani went to Kana to ask for his help to retrieve their mother. Those throughout Hawai‘i who could build canoes were called to service. The only canoe worthy to carry Kana to Moloka‘i was found at Paliuli, at Ka‘u; where Kana’s grandmother told him to procure a large double canoe there. The canoe was produced through the magical powers of Uli. The magical canoe, named Kaumai‘eli‘eli, was brought to Hāna from Puna. Warriors were seated in the canoe, with the prominent places taken by Kana and Niheu. Sailing to Moloka‘i, the magical canoe of Kana and Niheu met with a seaborne attack by Kapepe‘ekauila’s warriors. The attackers were swiftly destroyed by Niheu and his war club. Kana, with his great strength, stopped great boulders from rolling down the cliffs of Waikolu Bay, thus averting disaster. Niheu jumped from the canoe to the hill of Hā‘upu to rescue his mother. The floating hill of Hā‘upu was magical, and tried many devices to keep Niheu at bay. Although he had found Hina, he had lost her while beating back an attack by Kapepe‘ekauila. Kana told Niheu to protect the canoe. Kana then assumed the form of a giant spider’s web. He stretched and bent himself over Moloka‘i, and over the mountain of Haleakalā, in order to visit his grandmother Uli in Kona on the island of Hawai‘i. She fed him food, so that he would be strong enough to fight

for the return of Hina. Kana was successful in his attack, and Hina was returned to Kana's father, Hākanileo (Fornander 1916:436-444).

Other references suggests there may be a connection between Hāmākua Loa, Hina, and 'Ai'ai, both legendary figures associated with East Maui. Hina is one of the most widely known goddesses of Polynesia and is said to have resided on East Maui (E. S. C. Handy et al. 1991:206). She is most popularly associated with the demi god Maui, who was one of her sons who lived on Haleakalā in East Maui and performed legendary feats such as snaring the sun, fishing up the islands, and lifting the sky, among other feats. However, Hinapukui'a is recognized as a goddess who gives abundance of fish and in the story of Ku'ula, she appears as the mother of 'Ai'ai (Beckwith 1970:20).

In one version of the story of Ku'ula, also known as Ku'ulakai, is said to originate from the Hāna area, Maui. There he lived with his wife Hinapukui'a, his brother Ku'ulauka (god of cultivators) and Ku'ulauka's wife Hinaulu'ohi'a (sister of Hinapukui'a and goddess of forest growth). Ku'ula lived during the reign of Kamohoali'i under which he served as head fisherman. At the time of his death, Ku'ula prepares for the future by instructing his son 'Ai'ai on the powers of attracting fish, on establishing fishing stations in the islands and gives 'Ai'ai his magic objects including "a decoy stick called Pahiakukahuoi (kahuai), a cowry called Leho-ula, a hook called Manai-a-ka-Iani, and a stone called Ku'ula which, if dropped into a pool, had the power to draw the fish thither" (Beckwith 1970:19).

'Ai'ai follows in the footsteps of his father, using his knowledge and power and his magic objects to set up new fishing grounds around the islands. In his travels, several fishing grounds are noted on East Maui:

The first fishing ground marked out by Aiai is that of the Hole-of-the-ulua where the great eel hid. A second lies between Hamoa and Hanao in Hana, where fish are caught by letting down baskets into the sea. A third is Koa-uli in the deep sea. A fourth is the famous akule fishing ground at Wana-ula mentioned above. At Honomale he places three pebbles and they form a ridge where aweoweo fish gather. At Waiohue he sets up on a rocky islet the stone Paka to attract fish. From the cliff of Puhi-ai he directs the luring of the great octopus from its hole off Wailua nui by means of the magic cowry shell and the monster is still to be seen turned to stone with one arm missing, broken off in the struggle. Leaving Hana, he establishes fishing stations and altars along the coast all around the island as far as Kipahulu ... (Wahiako in Beckwith 1970:21-23)

No fishing ground in Hamakualoa is mentioned in this legend, however it is likely fishing grounds existed there. A record of two fishing temples in or near Hanawana suggests that, as in other areas of East Maui, this area also held a strong fishing tradition (Ashdown 1971:53).

### 2.2.3 Open Ocean Fishing Traditions of East Maui

As a life near the shore would suggest, Native Hawaiians depended heavily on their access to ocean resources just as they depended upon the products of the land. In *Tales and Traditions of the People of Old: Nā Mo'olelo a ka Po'e Kahiko*, Hawaiian historian Samuel Kamakau (1991:78) states:

Ka po'e kahiko [the people of the old days] had many ways of catching fish. Perhaps there are no other people in the world like Hawaiians in doing this. The

people of Maui, at Ko'olau, worshipped sharks – in order to be saved from being eaten by a shark when they went fishing. (Kamakau 1991:78)

Documentation regarding Native Hawaiian tenancy, land use practices, and fishing rights are also found in the records of the Māhele 'Āina. The Māhele 'Āina gave *hoa'aina* [common people engaged in agriculture] an opportunity to acquire fee-simple property interest on land which they lived and actively cultivated. The lands awarded to the *hoa'aina* became known under the title of *kuleana* lands. Claims for some fishery resources made to the Land Commission of the Kingdom of Hawai'i were given Land Commission Award (LCA) numbers, some of which remain in use today. First-hand accounts from native tenants generally spanning the period from ca. 1819 to 1855 have become an important part of recognizing the traditional significance of these land use practices and fishing rights (Waihona 'Aina 2000).

In a series of articles about fishing from 1902 recounted in *Ka 'Oihana Lawai'a: Hawaiian Fishing Tradition* by Daniel Kahā'ulelio (2006), an open ocean type of fishing was the preferred method of fishing used in deep waters along the coast of East Maui. In waters of ten or more fathoms deep the use of *kākā* line fishing and the *kūkaula* line fishing techniques were developed and employed, which are defined by Kahā'ulelio (2006:45) as:

In this [*kākā*] kind of fishing, no stone weight was needed to anchor the canoe and it drifted to and fro moving with the current. The line was five *ka'au* in length, which was the equivalent of 200 fathoms, and that was about the depth of the fishing grounds desired to reach. Two or three men was enough for this type of fishing and each man had from forty to fifty hooks on his line.

This is the way in which it was done. The leader that fastened the hook to the line was a yard or so in length, and it would be tied along with a coconut stem to keep it firmly in place. The hooks were fastened at intervals the length of each coconut stem, lest the hooks be mixed up and entangled. This was done until all forty or fifty hooks were fastened on. Bait was secured in the evening and the hooks of all the fishermen baited before time. When all was ready, then, just about daylight they set out, arriving at the fishing grounds when it was light. The man in the rear would release his line first, then the next man and so on. With a stone weight at the bottom of the line, to make it sink correctly, As the second man began lowering his line, the first already felt a jerking on his and as soon as he knew that all of his hooks had been taken he hauled in the line. They all did this. Then the sails were set up and the Ma'a'a breeze did the work of bringing them home. (Kahā'ulelio 2006:45)

Kahā'ulelio continues and defines *kūkaula* fishing:

This is still in use, and only where the fishing ground is shallow, from fifty, sixty to seventy fathoms deep and not any deeper than that. If at the depth of eighty fathoms, then only small fish will be caught such as the *'ukikiki* [A species of snapper fish (*Apsilus brighami*)] and small *'ula'ula* [red snapper (*Etelis coruscans*)]. At sixty or fifty fathoms in depth, the fish would snatch at the hook if the current is right.

The line is 80 or 120 fathoms in length and to it we tie coconut husks for signals when the hook is taken. It is made in this way; the first husk is tied on at forty

fathoms and that is called the *nuku*, or snout; at five more fathoms, another is fastened on, this is the *alo*, or face; at the next five fathoms, another is fastened on, called the *kua*, or back; at the next five fathoms, is the *manamana*, the branching; at the next five, the *i'aiki*, or little fish; the next is the *kuaokai'aiki*, the back of the little fish; the next is *moe*, the recumbent, and that is the last of the coconut husk signals. (Kahā'ulelio 2006:45)

Using these techniques Native Hawaiians were able to catch deep water fish from the waters off the north and east shores of Maui. This practice was not isolated to Hāmākua Loa Moku only, and represents techniques used across many deep sea fisheries including those located off the coast of neighboring Ko'olau Moku to the East.

## 2.3 Traditional Background of Ko'olau Moku

The *kālana*, or subregion, that forms the *moku* of Ko'olau has been defined as a collection of *ahupua'a*, including Honolulu Nui, Honolulu Iki, Honopou, Wailua, Honomanū, Kali'i, Kukui [Nāhiku], Ke'anae, Keopuka, [Ka] Pa'akea, Puakea, Kapehu, Kapā'ula, Kea'ā, Pauwalu [Ke'anae], Waiahole, Waiohue, Waianu, 'Ula'ino, and Makapipi [Nāhiku] that supported important population centers on the island of Maui. Handy stated that Ke'anae and Wailua Nui were regions that supported intensive and extensive wet-taro cultivation (E. S. C. Handy et al. 1991:272). It was further noted that, in this region of Maui, the *ahupua'a* are marked from stream to stream, rather than from ridge to ridge (McGregor 2007:83).

Ko'olau Moku, on the northeast coast of Maui is located in between Hāmākua Loa Moku to the west and Hāna Moku to the east. A literal translation of *Ko'olau* is "windward" (Pukui et al. 1974:117). Additionally the name Ko'olau traditionally has been applied to the districts located on the windward side of many Hawaiian Islands (Soehren 2002-2010). Although Ko'olau Moku extends from O'opuola Point to beyond Nāhiku, the lands from Wailua to Ke'anae are considered to be some of the denser areas of habitation throughout the region (E. S. C. Handy et al. 1991:499-501).

With regard to political influence and the course of pre-Contact Hawaiian history, it has been noted that there may have been some rivalry within Ko'olau Moku between the *ahupua'a* of Ke'anae and neighboring Wailuanui (C. E. S. Handy 1940:109-110). These interregional rivalries, however, would give way to larger political battles concerning the rule of Maui Island and the line of succession between the sons of Pi'ilani (Kamakau 1992:22-29), and later, the consolidation of power and unification of the Hawaiian Islands under Kamehameha I (Group 70 International et al. 1995).

Chief Pi'ilani united all of Maui under his rule between the sixteenth and seventeenth centuries. Pi'ilani's sons, Lonopi'ilani and Kiha-a-Pi'ilani, were contenders for control of Maui. Kiha-a-Pi'ilani eventually took refuge at Hāna while fleeing the warriors loyal to his brother. While in Hāna, Kiha-a-Pi'ilani took as his wife Koleamoku, who had been betrothed to Lonopi'ilani, which again put the two brothers to warring. Kiha-a-Pi'ilani was on the run from his brother across Maui until a ritual ceremony performed by the *kahuna nui* [high priest] revealed that he must flee Maui to preserve his life, but would eventually return to conquer and unify the island (Kirch 2012:208).

At this time, the reigning chief of Hawai'i Island, 'Umi-a-Liloa, was married to Pi'ikea, the daughter of Pi'ilani and sister to Lonopi'ilani and Kiha-a-Pi'ilani. This marriage had formerly

brought peace between the island polities of Hawai'i and Maui. Kiha-a-Pi'ilani and his wife Koleamoku fled Maui and set out to his sister's residence asking for help from 'Umi's household on Hawai'i Island. In response to this 'Umi "[h]aving received favorable auguries from the high priest, Kaoleioku, 'Umi summoned the chiefs of the various districts to prepare for the invasion of Maui" (Fornander 1880:98). 'Umi not only sided with Kiha-a-Pi'ilani and sent an invasion fleet to Hāna, but also sent along one of his most notorious warriors, Pi'imaiwa'a, who had been instrumental in the battles that won 'Umi all of Hawai'i Island. The campaign met with difficulty in taking Hāna before the Hawai'i Island men had even made ground on Maui. Samuel Kamakau (1992:293) relates the account:

When 'Umi-a-Liloa arrived with the later company he heard how his canoemen were unable to go ashore and how they were held at bay by the mighty Maui warrior, Ho'olae-makua. He asked Kiha-a-Pi'i-lani, "Is there no other way of getting the war canoes ashore? We can fight them better on shore, for our present position is an unstable one." Kiha-a-Pi'i-lani answered, "There is a small harbor at Ko'olau called Wailua-iki, and if all the canoes cannot land there, there is another landing at Wailua-nui." The blocked canoes turned about and sailed for Wailua-iki at Ko'olau. (Kamakau 1992:29)

In Hāna, at the fortress hill of Ka'uiki, Lonopi'ilani's forces under the command of Ho'olaemakua, withstood the Hawai'i forces until a nighttime raid overwhelmed them. In *A Shark Going Inland is my Chief*, Kirch (2012:210) tells that Kiha-a-Pi'ilani's men:

... fell upon the slumbering Maui forces. Many were killed, or leaped to their deaths off the steep cliffs encircling the hill. But in the darkness a few escaped, including Ho'olaemakua. Kiha sent Pi'imaiwa'a in search of Ho'olaemakua in the backlands of Hāna ... His hands were brought back to Kiha to confirm his death. (Kirch 2012:210)

With this battle Kiha-a-Pi'ilani gained control of East Maui. Kiha-a-Pi'ilani's brother, Lonopi'ilani, reportedly died of fright before his brother's campaign had a chance to reach Wailuku (Kirch 2012). The death of his brother left Kiha-a-Pi'ilani as the standing ruler of Maui.

In Fornander (1918:180) "Legend of Kihapiilani," after Kiha-a-Pi'ilani and 'Umi's forces conquered the fortress of Ka'uiki at Hāna, Kiha-a-Pi'ilani began to construct a "roadway from Kawaipapa to the forests of Oopulua [*sic*]," which, "was made and paved with smooth rocks". The roadway Kiha-a-Pi'ilani built was the Ke Alaloa o Maui, which his father (Pi'ilani) had begun some time earlier. The portions of the Alaloa that Kiha-a-Pi'ilani constructed extended one of the first continuous overland routes on the north shore of Maui to help connect the distant communities of the eastern districts to the central isthmus. The section built at this time began in Ko'olau and stretched all the way to Hāmākua Loa (Moses Manu in Sterling 1998:108). For Kiha-a-Pi'ilani, asserting his influence in the region by way of public works was important both socially and economically as the "Makanali, Waikamoi, Puohokamoa and Haipua'ena streams are found in this region of Ko'olau. Here, Native Hawaiian families settled and cultivated gardens in the narrow valleys fed by small streams" (McGregor 2007:91). By connecting the region via a paved trail, the agricultural and human resources became more accessible and could be mobilized in times of need



with greater ease. An additional advantage of the Ke Alaloe o Maui was that word could be sent between villages and ceremonial centers of any invading forces from either Maui or Hawai'i Island encroaching upon the region, which was especially valuable during the middle to late pre-Contact period when the north shore of Maui was changing hands frequently between polities from both Islands (Kirch 2012:206-216).

It was also during this time that Kiha-a-Pi'ilani is believed to have built the massive structure Pi'ilanihale in the Hāna region. This site would later be known as the tallest *heiau* in the entire archipelago. It was built to house the royal line of Pi'ilani in East Maui, and was likely the principal *luakini heiau* [war temple] of Kiha-a-Pi'ilani. Kiha-a-Pi'ilani also began restoring Honua'ula *heiau* just inland of Pu'u Ka'uiki around this time (Griffin 1987). Following this notable battle over the Hāna and Ko'olau districts were the pre-Contact wars between Kahekili and Kalani'ōpu'u recounted earlier in this report (see section 2.2 Traditional Background of Hāmākua Loa).

### 2.3.1 Place Names of Ko'olau, Maui

In the preface of Place Names of Hawaii (Pukui et al. 1974:x), Samuel Elbert states that:

Hawaiians named taro patches, rocks and trees that represented deities and ancestors, sites of houses and heiau, canoe landings, fishing stations in the sea, resting places in the forests, and the tiniest spots where miraculous or interesting events are believed to have taken place.

Place names are far from static ... names are constantly being given to new houses and buildings, land holdings, airstrips, streets, and towns and old names are replaced by new ones ... it is all the more essential, then to record the names and the lore associated with them [the ancient names] now. (Pukui et al. 1974:x)

The regional place names below, along with the environmental data, indicate that the lands within Ko'olau Moku were widely used for many purposes relevant to traditional Hawaiian subsistence, habitation, and history. The perennial watersheds that are abundant on this side of the island bear many names associated with agricultural, domestic, and recreational uses of the local streams and pools. Additionally, locations are named according to the type of resources associated with the area, such as Aihonu (eating of the turtle), which could be reflective either of the region as a harvesting area or as being associated with a specific notable instance of marine hunting and consumption. Along with references to food and resource gathering, many names are also present in the area that are names of fighting strokes in *ulua* fighting or in some other way indicate violent past times and incidences of warfare or strife. In this vein, some of the place names are also associated with conquering polities and bear the names of the chief that took on the construction of sacred *heiau* or other vital infrastructure, such as the Alaloe trail that connects the deep vales of the region to other distant *moku*. This is also not surprising given the long history of political struggles between Maui and Hawai'i Island chiefs for the wetter east-maui region stretching from Hāna to Na Wai Eha in the centuries leading into the period of Western contact. Other names simply exemplify the physical features of the named places in relation to common objects or stories. Some names also will remain elusive within the context of their meaning, obscured by the passage of time and the coveting or overall loss of the oral traditions that credit names to places of significance. Literal translations of many of the place names for land areas and divisions in Ko'olau Moku are listed in Table 2, and may provide some insight to what this area was like prior to Western contact.

Table 2. Place Names within Ko'olau Moku [from Pukui et al. (1974) unless otherwise noted]

| Name                  | Translation/Association  |
|-----------------------|--|
| <b>Āhole</b>          | Islet; <i>lit.</i> , “fish”; specifically <i>Kuhlia Sandvicensis</i> (p. 6)  |
| <b>Aihonu</b>         | Place name in Pauwalu along Waikamilo stream; <i>lit.</i> , “eating of turtle” (Soehren 1963)  |
| <b>Alaloa</b>         | Ancient paved trail; <i>lit.</i> , “long road” also known as Pi'ilani Trail; paved trail that ran around both east and west Maui (E. S. C. Handy et al. 1991:490)                                    |
| <b>Aluea</b>          | Islet; <i>lit.</i> , “sagging” (Soehren 1963:194)  |
| <b>Hahāhā</b>         | Bay east of Pauwalu Point; <i>lit.</i> , “pant, breathe hard”; noted as a place for shell fish gathering (Soehren 1963:192)  |
| <b>Hāmau</b>          | Stream flowing behind Lakini and into Waiokamilo Stream, within Wailuanui; <i>lit.</i> , “silent, silence, hush” (Pukui and Elbert 1986:55)  |
| <b>Hanawī</b>         | Stream; <i>lit.</i> , “seeking freshwater shellfish” (E. S. C. Handy et al. 1991:110)  |
| <b>Hau'oli Wahine</b> | Gulch, stream, and waterfall in Ke'anae; <i>lit.</i> , “feminine happiness” (Soehren 1963:192)   |
| <b>Ho'okuli</b>       | Place name in Ke'anae; <i>lit.</i> , “to feign deafness” (Pukui and Elbert 1986:80)  |
| <b>Ho'olio</b>        | Hill used as a marker in Wailua; <i>lit.</i> , “horse” or “horse like”; sometimes the noun, <i>lio</i> , is used as a general term for quadrupeds (dogs, pigs, etc.) (Pukui and Elbert 1986:80, 207) |
| <b>Huo</b>            | Astrological name of an unidentified star (Pukui and Elbert 1986:91)   |
| <b>Ka'alani</b>       | Place name of trigonometrical station used in geodetic surveys; <i>lit.</i> , “Those about the chief, members of the royal court” (Pukui and Elbert 1986:107)  |
| <b>Ka'aunaku</b>      | <i>'Ili 'āina</i> ; <i>lit.</i> , “separate” (Soehren 1963:194)  |
| <b>Kahukahu</b>       | Trigonometrical station located on northeast Ke'anae Park; <i>lit.</i> , “dedicate with prayer” (Soehren 1963:192)   |
| <b>Kake'e</b>         | <i>'Ili 'āina</i> ; <i>lit.</i> , “abrupt turn” (Soehren 1963:194)   |
| <b>Kaki'i</b>         | Land area name in Wailua; <i>lit.</i> , “to strike at, aim at, smite” or “to brandish threateningly, as in a war club” (Pukui and Elbert 1986:120)   |
| <b>Kala'alaea</b>     | <i>'Ili 'āina</i> in Wailua; <i>lit.</i> , “remove red ochre” (Soehren 1963:194)   |

| Name              | Translation/Association   |
|-------------------|---|
| <b>Kaleiomanu</b> | Stream in upper Keʻanae Valley; <i>lit.</i> , “a <i>lua</i> fighting stroke” (Pukui and Elbert 1986:122)  |
| <b>Kalihi</b>     | <i>ʻIli ʻāina</i> in Wailua; <i>lit.</i> , “the edge” (p. 77)   |
| <b>Kaliʻi</b>     | Land area <i>makai</i> of Pauwalu; the act of hurling spears at a chief as he landed from a canoe, in order that he might exhibit his dexterity and courage in dodging them, almost ritualistic (Pukui and Elbert 1986:123)   |
| <b>Kaluanui</b>   | Ditch and <i>heiau</i> ; <i>lit.</i> , “the big pit” (p. 79); the pig god, Kama-puʻa, was born here, as a foetus; he was thrown away by an older brother but rescued by his mother, Hina (Westervelt in Pukui et al. 1974:79) |
| <b>Kalunapuhi</b> | <i>ʻIli ʻāina</i> in Wailua; <i>lit.</i> , “the high place” (Soehren 1963:194)  |
| <b>Kamaʻino</b>   | Trigonometrical station and ridge in Keʻanae; <i>lit.</i> , “naughty child” (p. 80)   |
| <b>Kamilo</b>     | Point, stream, and <i>heiau</i> ; <i>lit.</i> , “the <i>milo</i> tree” (p. 81)  |
| <b>Kano</b>       | Stream and falls in upper Keʻanae; <i>lit.</i> , “large, hard stem (as on a banana bunch)” (Pukui and Elbert 1986:129)  |
| <b>Kaʻōiki</b>    | Place name in upper Pauwalu; <i>lit.</i> , “small thrust” (p. 86)   |
| <b>Kapaʻakea</b>  | Land division and stream in Keʻanae; <i>lit.</i> , “the coral/limestone surface” (p. 86)  |
| <b>Kāpae</b>      | <i>ʻIli ʻāina</i> in Keʻanae; <i>lit.</i> , “to set aside/deviate from” (Pukui and Elbert 1986:131)   |
| <b>Kapāʻula</b>   | Trigonometrical station between Waiohue and Paʻea stream, boundary marker between Keʻanae and Wailua Ahupuaʻa; <i>lit.</i> , “the red enclosure” (p. 89)  |
| <b>Kaulanamoā</b> | Place name on Keʻanae flats; <i>lit.</i> , “chicken roost” (Soehren 1963:192)   |
| <b>Kaulani</b>    | <i>Mauka</i> lands in Keʻanae flats; <i>lit.</i> , “to rely on/support the chief” (Pukui and Elbert 1986:136)   |
| <b>Kaumakani</b>  | Hill forming the boundary of Wailua; <i>lit.</i> , “place (in) wind” (p. 94)  |
| <b>Kauwalu</b>    | Islet; <i>lit.</i> , “eight landed” (Soehren 1963:192)  |
| <b>Kaweʻe</b>     | Point of Keʻanae Park; no translation, formerly named Kahukahu, <i>lit.</i> , “to offer food and prayers to a god, or to the spirit of a dead person” (Pukui and Elbert 1986:114)   |

| Name                | Translation/Association   |
|---------------------|---|
| <b>Ke‘anae</b>      | Land section, village, stream, point, valley, peninsula; <i>lit.</i> , “the mullet (fish)”; here, the god Kāne, accompanied by Kanaloa, thrust his <i>kauila</i> staff into solid rock, and water gushed forth (p. 103) |
| <b>Ke‘anae Uka</b>  | Land section; <i>lit.</i> , “upland Ke‘anae” (p. 103)   |
| <b>Ke‘elaimaka</b>  | Land section in upper Ke‘anae; <i>lit.</i> , “fascinates the eyes” (Soehren 1963:192)   |
| <b>Keōpuka</b>      | Islet; <i>lit.</i> , “the perforated sand” (p. 109)   |
| <b>Kī‘apu</b>       | <i>‘Ili ‘āina</i> ; <i>lit.</i> , “ti-leaf drinking cup” (p. 109)   |
| <b>Ki‘inemakua</b>  | <i>‘Ili ‘āina</i> ; possible mistranslation of Kanemiiku‘e, meaning “dark brown Kāne (god)”; area known for growing <i>olona</i> (Soehren 1963:192)   |
| <b>Ki‘ioli‘olio</b> | Place name in Ke‘anae; <i>lit.</i> , “loud cries of birds” (Soehren 1963:192)   |
| <b>Kīkahō</b>       | Small ridge in Kupa‘u; <i>lit.</i> , “to splash” or “to speak/interrupt rudely” (Soehren 1963:148)  |
| <b>Kīkau</b>        | Hill forming boundary between Ha‘ikū and Wailua south of Honomanū; <i>lit.</i> , “to give freely and with good will” (Soehren 1963:149)   |
| <b>Kikokiko</b>     | Place name in Ke‘anae; <i>lit.</i> , “dotted, spotted, or speckled” also “to peck or nibble” (Pukui and Elbert 1986:150)  |
| <b>Kilo</b>         | Area near base of Waianu Valley; <i>lit.</i> , “stargazer, seer, to watch closely” (Soehren 1963:151)   |
| <b>Kīpapa</b>       | <i>‘Ili</i> in Ke‘anae; <i>lit.</i> , “placed prone (as in a slain warrior)” (p. 112-113)   |
| <b>Koleamoku</b>    | <i>‘Ili ‘āina</i> in Ke‘anae; named in honor of the first Hawaiian to learn the use of herbs in healing and was subsequently deified after death (Pukui and Elbert 1986:162)  |
| <b>Ko‘oiki</b>      | Land area in Ke‘anae flats; <i>lit.</i> , “small prop or support” (Soehren 1963:192)  |
| <b>Ko‘olau</b>      | <i>Moku</i> , gap, stream, ditch, gulch, and falls; <i>lit.</i> , “windward” (Pukui and Elbert 1986:166)  |
| <b>Kūālani</b>      | <i>Heiau</i> and trigonometric station above Pu‘uililua; <i>lit.</i> , “sour, as in unclean calabashes that have previously held <i>poi</i> ” (Pukui and Elbert 1986:170)   |
| <b>Kūāpōhaku</b>    | <i>‘Ili ‘āina</i> in Ke‘anae; <i>lit.</i> , “turn to stone” (p. 119)  |

| Name              | Translation/Association   |
|-------------------|---|
| <b>Kukuilono</b>  | Trigonometric station near Ke'anae Point; <i>lit.</i> , "light of Lono (god)" (p. 122)  |
| <b>Kūpau</b>      | <i>Heiau</i> above the road in Ke'anae Valley; <i>lit.</i> , "entirely finished" or "fearful, shrinking, rare" (Pukui and Elbert 1986:185)  |
| <b>Lo'iloa</b>    | <i>Ahupua'a</i> ; <i>lit.</i> , "long taro patch" (p. 133)  |
| <b>Ma'ino</b>     | Land section near Nāhiku; <i>lit.</i> , "defacement" (p. 139)   |
| <b>Makahuna</b>   | Land section in Ke'anae flats; <i>lit.</i> , "hidden point" or "hidden eyes" (p. 140)   |
| <b>Makoloaka</b>  | Islet; <i>lit.</i> , "creeping shadows" (Soehren 1963:194)  |
| <b>Mii'ulu</b>    | <i>'Ili 'āina</i> in Wailua; <i>lit.</i> , "stiff from exercise" (Soehren 1963:194)   |
| <b>Moana</b>      | Land area above Kupa'u; <i>lit.</i> , "ocean, open sea" (Pukui and Elbert 1986:249)   |
| <b>Mokuhala</b>   | Islet; <i>lit.</i> , "pandanus island" or "island passed by" (p. 155)   |
| <b>Mokuhōlua</b>  | Islet; <i>lit.</i> , "sled island" (p. 155)   |
| <b>Mokuhuki</b>   | Islet; <i>lit.</i> , "pulling island" (p. 155)  |
| <b>Mokumana</b>   | Islet; <i>lit.</i> , "divided island" or "divided district" (p. 155)  |
| <b>Nāhiku</b>     | Land section, village, ditch, and landing; <i>lit.</i> , "the sevens" in reference to the districts of the area (p. 160)  |
| <b>‘Ōhi‘a</b>     | <i>'Ili 'āina</i> in Waianu; <i>lit.</i> , "‘ō‘hia tree", location of two famous springs called Waiakāne and Waiakanaloa, where Kāne thrust his staff into two rocks to procure water for himself and Kanaloa (p. 168)                              |
| <b>Pa‘akamaka</b> | <i>'Ili 'āina</i> in Wailua; <i>lit.</i> , "close the eye" (Soehren 1963:194)   |
| <b>Pa‘akea</b>    | Land section, gulch, and stream; <i>lit.</i> , "coral bed, limestone" (p. 173)  |
| <b>Paehala</b>    | <i>'Ili 'āina</i> in Ke'anae; <i>lit.</i> , "row/cluster of pandanus trees" (Soehren 1963:192)  |
| <b>Pāhoa</b>      | <i>'Ili 'āina</i> or <i>ahupua'a</i> east of Ke'anae; <i>lit.</i> , "short dagger" (Pukui and Elbert 1986:300)  |
| <b>Pakanaloa</b>  | <i>Heiau</i> in Ke'anae Valley; Temple of Kahuna Kahekili, rumored descendent of the earliest "gods" (Ashdown 1971:45); upon his death, he was dismembered and distributed among other temples where his remains were deified (Beckwith 1970:48-49) |



| Name                   | Translation/Association  |
|------------------------|--|
| <b>Pāku'i</b>          | Trigonometric station near shore beneath Wailuanui Catholic Church; <i>lit.</i> , “attached/add on” (p. 176)   |
| <b>Pālaha</b>          | Place name where Pōhaku‘oki‘āina is found on brink of Haleakalā Crater; <i>lit.</i> , “spread out/extended/flattened” (Pukui and Elbert 1986:307)  |
| <b>Pālahulu</b>        | Stream in Ke‘anae; <i>lit.</i> , “to take all of a fish catch for a chief instead of dividing it” (Pukui and Elbert 1986:310)  |
| <b>Pali Kahekili</b>   | Leaping place above Waiohuli Pond in Ke‘anae; <i>lit.</i> , “precipice of Kahekili” (Pukui and Elbert 1986:312)  |
| <b>Paliuli</b>         | Cave near Hāna, where Queen Ka‘ahumanu was rumored to have been born; <i>lit.</i> , “green cliff”; a legendary paradise of plenty (p. 178)   |
| <b>Pana‘ewa</b>        | <i>‘Ili ‘āina</i> in Ke‘anae flats; named for the legendary home of a <i>mo‘o</i> destroyed by Hi‘iaka (p. 178)  |
| <b>Papihii</b>         | Promontory east of Wailuaiki; bears earlier name of Poahonu, <i>lit.</i> , “choked with debris” (Soehren 1963:194)   |
| <b>Pā‘ula</b>          | Land area by ocean near Kopili‘ula; <i>lit.</i> , “red enclosure” (p. 181)   |
| <b>Pauwalu</b>         | Point near Ke‘anae; <i>lit.</i> , “eight destroyed”; named after a Moloka‘i shark-man who killed seven of a family’s children, until he was caught and killed using the eighth as bait (p. 182)  |
| <b>Pōhakukane</b>      | <i>‘Ili ‘āina</i> in Ke‘anae; <i>lit.</i> , “Kāne’s stone” (Pukui and Elbert 1986:334)   |
| <b>Pōhaku‘oki‘āina</b> | Boundary <i>pu‘u</i> marking the corners of the current Makawao and Hāna districts, and the traditional Hāmākua Loa, Ko‘olau, Hāna, Kipahulu, Kaupo, Kahikinui, Honuaula, and Kula <i>Moku</i> ; <i>lit.</i> , “stone dividing land” (Ulukau 2006) |
| <b>Puakea</b>          | <i>Ahupua‘a</i> , <i>‘ili ‘āina</i> , stream and gulch in Ko‘olau; <i>lit.</i> , “white blossom” (Ulukau 2006)   |
| <b>Pueo</b>            | Hilltop on west rim of Ke‘anae Valley; <i>lit.</i> , “owl” (Soehren 1963:194)  |
| <b>Pu‘u‘alaea</b>      | Peak in Wailua on Haleakalā Crater; <i>lit.</i> , “red ochreous hill” (p. 195)   |
| <b>Pu‘u o Koholā</b>   | <i>Heiau</i> located in Honomanū; <i>lit.</i> , “hill of the whale” (Ulukau 2006)  |
| <b>Pu‘u Olu</b>        | Fishpond at southern end of Pauwalu Point; <i>lit.</i> , “restful place” (Soehren 1963:194)  |

| Name              | Translation/Association   |
|-------------------|---|
| <b>Waiaka</b>     | Pond; <i>lit.</i> , “reflection water” or “shadowy water” (p. 219)  |
| <b>Waiakamoi</b>  | Watershed in Ke‘anae; <i>lit.</i> , “water by the threadfish” (p. 219)  |
| <b>Waianu</b>     | <i>Ahupua‘a</i> between Ke‘anae and Wailuanui Streams; <i>lit.</i> , “cold water” (p. 221)  |
| <b>Waia‘ōlohe</b> | Pond located within Ke‘anae Stream; <i>lit.</i> , “water of, or used by, ‘ōlohe” where ‘ōlohe means bare, naked, or hairless (Pukui and Elbert 1986:285; Ulukau 2006) |
| <b>Wai‘āpuka</b>  | <i>‘Ili ‘āina</i> in Ke‘anae; <i>lit.</i> , “water coming out” (p. 221)   |
| <b>Wai‘eli</b>    | <i>‘Ili ‘āina</i> in Wailua; <i>lit.</i> , “dug water” (p. 221)   |
| <b>Waikamilo</b>  | Stream in Wailuanui; <i>lit.</i> , “water of the <i>milo</i> tree” (Soehren 1963:194)   |
| <b>Waikamoi</b>   | Land division, stream, and ridge trail; <i>lit.</i> , “water of the <i>mo‘i</i> taro” (p. 222)  |
| <b>Wailua</b>     | <i>Ahupua‘a</i> and <i>‘ili ‘āina</i> ; <i>lit.</i> , “two waters” (Soehren 1963:194)   |
| <b>Wailuaiki</b>  | Stream and land division in Wailua; <i>lit.</i> , “small two-waters” (p. 224)   |
| <b>Wailuanui</b>  | <i>‘Ili ‘āina</i> in Wailua; <i>lit.</i> , “large two-waters” (p. 225)  |
| <b>Waiokilo</b>   | Waterfall at base of Waiokamilo Stream in Wailuanui; <i>lit.</i> , “landmark water” (Soehren 1963:194)  |
| <b>Waiokukui</b>  | Waterfall on Waiokamilo Stream; <i>lit.</i> , “water of the candlenut tree” (Soehren 1963:194)  |
| <b>Waiokuna</b>   | Waterfall on Palauhulu Stream; <i>lit.</i> , “water of <i>kuna</i> (a freshwater eel)” (Soehren 1963:194)   |

### 2.3.2 Legends of Ko'olau Moku

Oral tradition passed from one generation to the next provides valuable insight into the pre-Contact cultural landscape of Ko'olau Moku. As with many of the named places in the archipelago, there is a rich oral tradition regarding the exploits of the legendary figures of Hawaiian mythology in the region.

The Ko'olau region of Maui was made famous as the part of the island that the demigod Māui chose to ascend to the top of Mauna Haleakalā to capture the rays of the sun-god Lā, in order that Lā would be forced to travel more slowly through the heavens during the day. This action would help his mother, Hina [wife of Akalana], to dry the *kapa* [tapa] that she had beaten out [traditional bark-cloth made of the *wauke* bark]. The eastern gap of the mountain of Haleakalā, named the Ko'olau Gap, was the place the demigod Māui mounted the summit. According to the legend, once Māui ascended the slope, he caught Lā in a noose, beat Lā into submission, and compelled him ever after to travel more slowly (Westervelt 1910:140).

Within the larger *moku* of Ko'olau lies the fertile region of Ke'anae. This region also bears the storied visits of gods and legends that passed through and reside in the region. The waters that feed Ke'anae were said to have been brought forth by the god Kāne, who thrust his *kauila* staff into solid rock to bring forth the waters of Ke'anae, similar to the flows of life giving water he is accredited with creating in a similar fashion in Hāmākua Loa while in the company of Kanaloa (Beckwith 1970:64; Sterling 1998:101). Beckwith (1970:65) further describes the site of this famous watershed in Ke'anae:

Two holes are pointed out just below the road across Ohia gulch beyond Keanae on Maui where Kane dug his spear first into one hole and then into the other with the words, "This is for you, that for me." The water gushing from these apertures is called "the water of Kane and Kanaloa. (Beckwith 1970:65)

According to the historian Samuel Kamakau, cited in Maly and Maly (2001), god-associated accounts in the lands of Pāpa'a'ea, 'O-opu'ola and Ke'anae centered around the god Kāne. Kāne's attributes also included *ka wai ola* – the waters of life, *kalo* [irrigated taro], sunlight, and a manifestation of thunder and lightning. These associations lend themselves to this wet, windswept, and sometimes stormy side of Maui. Kāne's attributes named Kānehekili, Kanewawahilani, Kahoalii, Kauilanuimakehaikalani, among many other gods belonging to the upper and lower strata of the firmament were called "gods of the heavens." The first *kahu* who observed the *kapus* [taboos] of these gods was named Hekili (Thunder). He lived at Pāpa'a'ea, where he was born in a place where thunder claps very loudly, with double claps, and where flashes of lightning smashed to pieces the forest of 'O-opu'ola (found between Hāmākua Loa and Ko'olau Moku) (Maly and Maly 2001:13).

According to Martha Beckwith (1970), Kāne-hekili was the god worshipped by those who claimed an *'aumakua* (family spirit) in the thunder. In the forest uplands within the proximity of the *heiau* "Pakanaloa," erected back of Ke'anae at a place where violent thunderstorms occur, thunder being the divine form of the god Kāne-hekili. This god was said to have been seen in his human form as having one side of his body black and the other side white. Kahekili, the last ruling chief of Maui, was tattooed black on one entire side of his body (termed *pahupū*, *lit.* 'cut in half') to show he belonged to the family of the thunder god (Kirch 2012:248; Maly and Maly 2001:13).

The stream heads in many of the deep valleys in the region also hold a special significance as sacred spaces in Hawaiian traditions. The region of Waikamoi in the uppermost [*mauka*] portions of Kalialianui Ahupua'a and Honomanū Ahupua'a, within the Pi'ina'au Stream valley situated *mauka* of Ke'anae, are lands that represent some of the most significant native forest resources remaining in the Hawaiian Islands. These forests are part of a unique cultural landscape in that the native flora, fauna, mist, rains, water, natural phenomena, and resources were believed to be *kino lau* (the myriad body-forms) of gods, goddesses, and lesser nature spirits of Hawaiian antiquity (Maly and Maly 2001:ii). The reluctance of the *maka'āinana* (common folk) to venture into these inland sacred spaces is further documented in Honomanū. J. C. Elliott in Sterling (1998:109) provides an account of a *kapu* (taboo) surrounding Honomanū Valley:

I have heard from various sources that there are a lot of burials in the upper part of this Valley and there still seems to be a certain amount of superstition attached to the place; I am told that quite a number of people do not like to be in the Valley after dark, and that the [spirits of] ali'i are said to walk there at such times. (Sterling 1998:109)

The deep valleys of East Maui are not the only geographic spaces with gods and spirits residing within them. Many common features of the landscape such as caves, hills, gulches, and streams are also known to have legendary associations. Another tale tells of a famous shark of Ko'olau called Hi'u (the tail of a fish) (Sterling 1998:109). In *On the Hana Coast*, Youngblood et al. (1983:92) relates the tale:

According to this story, two families in the area used to exchange food, a common practice, the couple living seaside at Ke'anae giving fish and the couple living upland giving garden produce.

One day the woman from the shore gave her sister-in-law on the hillside nothing but a fishtail in exchange for bananas and sweet potatoes. The woman took the fishtail home in her calabash, saying nothing about the scanty trade.

That night both she and her husband dreamed of a shark, and when they woke up in the morning they found a live shark swimming around in the calabash, where only a tail had been the night before.

The excited couple freed the shark in an upland pool and made offerings to it. During a heavy rain, the shark was washed down to the ocean, where ... it lives to this day in an underground cave near Ke'anae wharf. (Youngblood et al. 1983:92)

### 2.3.3 Trails and Access

The initial occupation of this portion of Maui first occurred along the coastal region about AD 1200 (A. E. Haun et al. 2004). Of great importance to the reign of Pi'ilani, and to his subjects, was the creation of a network of roads extending throughout Maui. Each road was laboriously constructed of hand-fitted, adze-trimmed, basalt blocks laid in a mosaic to form paths four to six feet wide. One of these roads extended approximately 60 miles and connected Wailuku with Hāna. Around AD 1480, Pi'ilani's son, Kiha-a-Pi'ilani, had the road extended beyond Hāna: through the Kaupō Gap and across the Haleakalā Crater (Duensing 2005).

According to Fornander, Pi'ilani's son, Kiha-a-Pi'ilani, upon becoming *mo'i* of Maui, devoted himself to the improvement of his island:

Kiha, who thus forcibly succeeded his brother as Mo'i of Maui, had been brought up by his mother's relatives in the court of Kukaniloko of Oahu ... Having, as before related, through the assistance of his brother-in-law 'Umi obtained the sovereignty, he devoted himself to the improvement of his island. He kept peace and order in the country, encouraged agriculture, and improved and caused to be paved the difficult and often dangerous roads over the Palis of Kaupo, Hana, and Koolau – a stupendous work for those times, the remains of which may still be seen in many places, and are pointed out as the “Kipapa” of Kihapiilani. His reign was eminently peaceful and prosperous, and his name has been reverently and affectionately handed down to posterity

Kihapiilani had two wives – Kumaka, who was of the Hana chief families, and a sister of Kahuakole, a chief at Kawaipapa, in Hana. With her he had a son named Kamalalawalu, who succeeded him as Mo'i of Maui. Koleamoku, who was the daughter of Hoolae, the Hana chief at Kauwika ... with her he had a son called Kauhiokalani, from whom the Kaupo chief families of Koo and Kaiuli descended. Kamalalawalu followed his father as Mo'i of Maui. He enjoyed a long and prosperous reign until its close, when his sun set in blood and disaster (when Kahekili lost to Kamehameha I) (Fornander 1880:206-207).

A 1908 photograph depicts an unknown portion of the *alaloa* (long trail) in East Maui, paved with sub-angular and rounded basalt stone as it meanders through thick vegetation (Figure 14). This *alaloa* (or “long road”) was studied and described by anthropologist Martha Foss Fleming as follows:

... the method of building this paved roadway consisted of a line of men standing from the sea and handing stones one to the other until they reached the required place. Here the stones were placed into position. The trail was paved with flat, hard beach stones. (Fleming 1933:5)

Sections of the trail remained at Ka'elekū and between Wailua and Ke'anae in the 1930s (Fleming 1933:5). At the turn of the century, in the early 1900s, portions of the trail remained usable between Nāhiku, Kailua and Halehaku (Dodge 1916:347).

Maly and Maly (2001:398) further note that in addition to *alalele* (trails) and *alaloa* (regional thoroughfares) that extend generally parallel to the shoreline, there were also trails that connected the near shore areas with the uplands in each *ahupua'a*. In this fashion the *ahupua'a* and *moku* were connected to each other, while also containing roads that enabled access to the *'ili*, *lele*, and other constituent small-scale land divisions within the individual *ahupua'a*.

### 2.3.4 Agriculture and Habitation

The earliest estimation of the initial occupation of East Maui highlights settlement along the coastal region about AD 1200 (A. E. Haun et al. 2004). The abundance of traditional land divisions and place names between Hāmākua Loa and Hāna are suggestive that this period of habitation was extensive after initial establishment. C. E. S. Handy (1940:109) observed that “the minute *ahupua'a* characteristic of this coast indicates a dense population.”



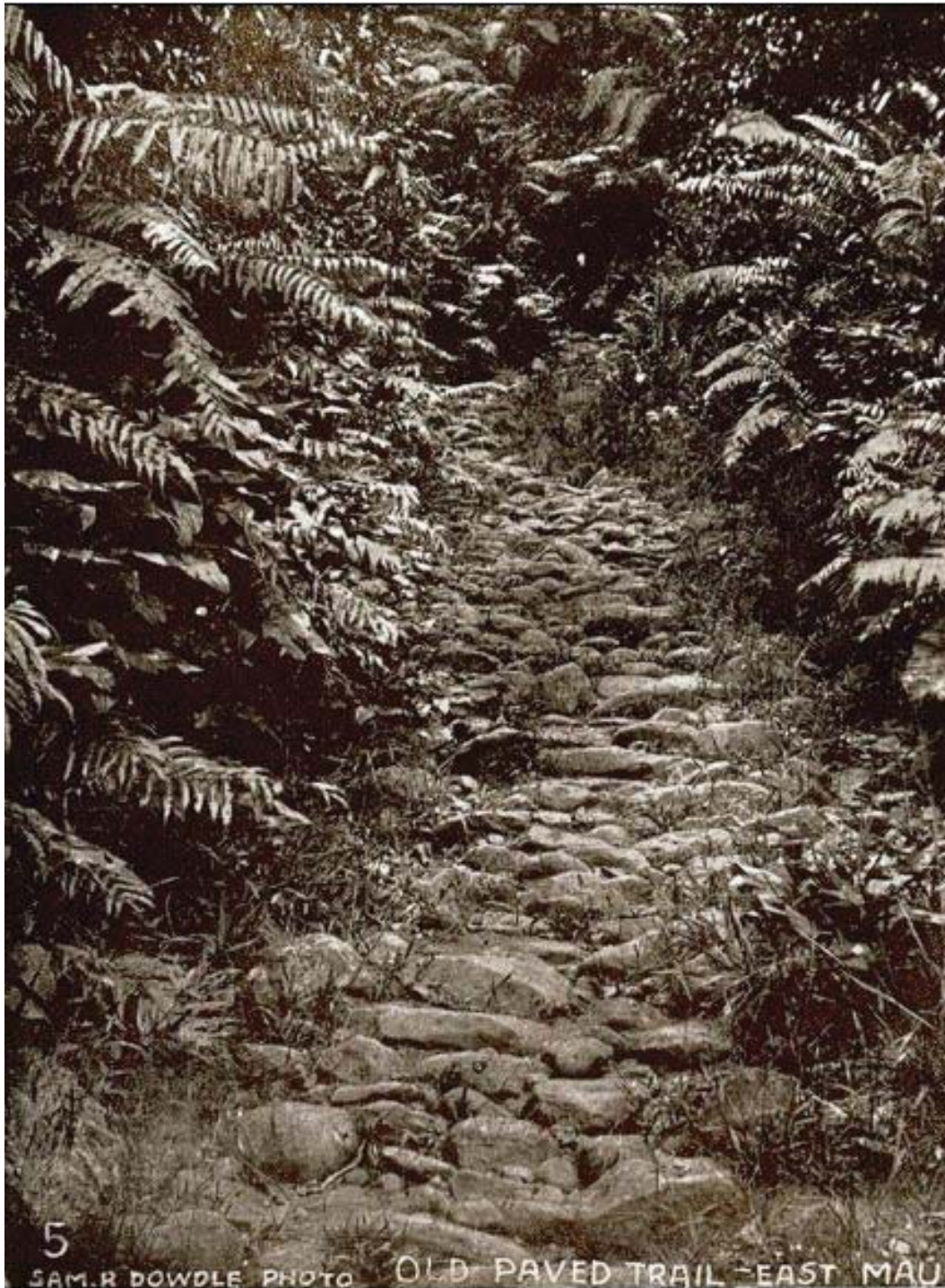


Figure 14. 1908 photograph by Sam Dowdle of a section of the Pi'ilani Alaloa, the King's Highway, as it appeared in East Maui

E.S. Craighill Handy provided some of the earliest observations of habitation and cultivation within the Hāmākua Loa Moku. Sterling (1998:100) relates observations made by Handy regarding cultivation near perennial watersheds in Peahi:

Shallow Kuiaha Gulch was not explored, but its stream must have watered a few taro patches on flats near the sea. According to Henry Ikoa and George Akiu, there were small terraced areas watered by Hoolawa, Waipio, Hanehoi, Hoalua, Kailua, and Nailiilihaele streams. These all have abundant water, but flow in deep gulches having practically no flatland suitable for terracing. Presumably stream taro used to be planted along the beds of these water courses well into the uplands, and forest taro throughout the lower forest. (Handy in Sterling 1998:100)

Cultivation in this region was not entirely dependent on perennial water and further utilized dry-zone agriculture on the slopes of Haleakalā above the coast. Sterling (1998:101) references Handy's account from local informants:

On eastern Maui the semi-dry slopes of Hamakua must have been planted with sweet potatoes by the people living along the coast from Maliko to Waipio. Samwell says, probably referring to this region: "This island is mountainous, the sides of the hills are covered with trees, from thence to the water side are large open plains on which stood their houses and where they have their plantations of sweet potatoes, taro, etc." (Handy in Sterling 1998:101)

Within this area there are also several *heiau* that appear associated with agricultural practices (see section 2.3.5 Heiau, for more detailed discussion) and rituals. This seems suggestive of the extent of traditional cultivation practices within Hāmākua Loa where both wetland and dryland techniques were utilized to maximize food diversity and harvests and where ceremonial centers like *heiau* would help to ensure the harvests sought by Native Hawaiians. Evidence of similar activities increase the farther one travels east along the coast toward Hānā.

From Keʻanae to Hānā, evidence of Hawaiian cultivation and habitation have been noted extensively. According to Kirch (1996:72), the geologically younger region of East Maui was once densely populated. The fertile volcanic soils in the region of Hānā included extensive tracts of dryland sweet potato (*Ipomoea batatas*) augmented by dryland taro, yams (*Dioscorea* spp.), sugar cane (*Saccharum officinarum*), and breadfruit (*Artocarpus altilis*). Irrigated taro was raised in *lo ʻi* [fields] in the narrow valleys. Prior to Western contact, the irrigated taro fields of the Keʻanae Peninsula, the *heiau* at Waiʻānapanapa, and the Piʻilanihale Heiau were each major edifices physically attesting to the importance of the district of Hānā (Kirch 1996:69-71).

Evidence of cultivation in Koʻolau starts as far west as Oʻopuola Gulch that marks the traditional boundary between Koʻolau and Hāmākua Loa Moku. Sterling (1998:108) references Handy's description of the gulch whos "stream, and likewise Waikamoi, Puohokamoa, and Haipuena streams watered small patches." A little further east, the valley of Honomanū affords yet more evidence of stream cultivation. Honomanū Valley is best characterized as a large stream with a broad deep valley and a good beach for fishing canoes. In ancient times, Honomanū was said to have supported a sizable population. Terrace walls attesting to this were observed by E. S. C. Handy et al. (1991:498):

... as far as the level land goes – a little less than a mile. Above the valley, on elevated flatlands, there used to be some terraces and houses. These upland slopes were doubtless planted with all the plants that flourish where there is much rain, but they were too wet for sweet potatoes. (E. S. C. Handy et al. 1991:498)

Sterling (1998:110) further cites Handy regarding the attributes of pre-Contact Honomanū Valley that made it suitable for such habitation:

This valley anciently supported a large population, having a fishing bay of first rank, and a deep, flat valley bottom watered by a large stream. Only one family still raises taro in the old patches near the sea, but abandoned terraces extends up into the valley. (Handy in Sterling 1998:110)

Additional testament to the productivity of the region comes from neighboring Nuua'ilua Stream to the east, such that "This smaller, flat-bottomed valley between Honomanū and Ke'ānae, now uninhabited, was formerly the site of a settled community which raised wet taro in terraces" (Handy in Sterling 1998:111). Continuing east of Nuua'ilua Stream, the region of Ke'ānae offers abundant evidence of traditional Hawaiian subsistence activities.

The accepted pre-Contact settlement pattern for the region of Ke'ānae and Wailua Nui centers on the series of occupational episodes that utilized the Palauhulu Stream for taro (*Colocasia esculenta*) cultivation. A cultural landscape study by Group 70 International et al. (1995) recorded the intensive use of the Ke'ānae and Wailua Nui region for taro, identified three separate field systems, and noted the processes by which community cooperation led to the field system operation. Studies of the history of land use indicate that flat and terraced lands within Ko'olau Moku were intensively and continuously used for wetland taro cultivation or *lo'i* agriculture from the pre-Contact era through the present day (Group 70 International et al. 1995; E. S. C. Handy et al. 1991). In regards to pre-Contact development, C. E. S. Handy (1940:109-110) states:

In the extensive confines of Keanae Valley ... the old Hawaiians planted a great deal of dry- or forest-land taro; but it was only in the lower part of the valley, on the eastern side, that wet patches were developed, although a vast area in the remainder of the valley might have been capable of such development...It is on the broad flat peninsula of lava that extends for nearly a mile into the sea from the western line of the valley, that Keanae's famed taro patches are spread out in striking evidence of old Hawaii's ingenuity. (C. E. S. Handy 1940:109-110)

According to traditional accounts, Ke'ānae Valley was made suitable for agriculture by the hands of Native Hawaiians in service of their chief, thus providing testament to long-term habitation planning in pre-Contact times. C. E. S. Handy (1940:110) relates the tale:

Anciently, according to Henry Ikoa, the peninsula was barren lava. But a chief, whose name is not remembered, was constantly at war with the people of Wailua and determined that he must have more good land under cultivation, more food, and more people. So he set all his people to work (they were then living within the valley and going down to the peninsula only for fishing), carrying soil in baskets from the valley down to the lava point. The soil and the banks enclosing the patches were thus, in the course of many years, all transplanted and packed into place. Thus did the watered flats of Keanae originate. (C. E. S. Handy 1940:110)



It seems that the expansion into the valley floor may have been prompted by population pressure, hence the chief's desire to increase food yields and insulate against the periodic famine common to Maui and Hawai'i Island cultivation. Evidence of these famine cycles are seen in Honomanū Valley in the form of a *ka imu ki*, or *tī* leaf oven, used during times of shortage to render grated *tī* root into an edible famine food (C. E. S. Handy 1940:206).

Additional evidence of habitation within Ke'anae comes from the presence of a derelict fishpond, Pu'u Olu Pond, situated just off of Pauwalu Point (C. E. S. Handy 1940:208). In addition to the pond, there is also a habitation site closely associated with it, and the terrace comprising the platform of the residence is within a few feet of the Pu'u Olu Pond (C. E. S. Handy 1940:209). This residence shares a boundary wall with the pond and commands a view of a nearby natural arch beneath Pauwalu Point. A second platform, designated as a foundation for another thatch house, was observed on a slope of Paepaemoana Point. This foundation had its inner area paved with rough cobbles, with the exception of a smaller area delineated with larger stones containing finer internal paving between them (C. E. S. Handy 1940:210). It seems likely that the difference in paving within the inner areas reflect different spatial uses of the foundation.

East of Ke'anae are the terraced areas of Wailua, ranging between the boundaries of Wailuanui and Wailuaiki. C. E. S. Handy (1940:110) noted that:

Wailua-nui has even more extensive terracing than Keanae, sloping seaward from the base of the cliff around which the road winds. About half of the terraces are still cultivated by Hawaiians. On the whole, Wailua is today richer agriculturally than Keanae. Wailua-iki, Waiohue, and Hanawai Streams supported small terraces on diminutive flats near the sea. (C. E. S. Handy 1940:110)

The agricultural development of this region is attested to by the presence of at least four *heiau*. Two of these ceremonial structures, Heiau of Ohia (Walker Site 94) and Kaluanui Heiau (Walker Site 95), were identified within a third of a mile from the sea and were designated as agricultural in their associations and uses (Walker 1931:169-170).

The last of the intensified cultivation and habitation areas on East Maui before reaching Hāna is the Nāhiku region. This land area encompassed the *ahupua'a* from Kaliae to 'Ula'ino and their accompanying watersheds. According to E. S. C. Handy et al. (1991), Nāhiku was a fertile *ahupua'a*, which was cleared and terraced with irrigated taro cultivated in the tradition of Native Hawaiians. In ancient times, the settlement at Nāhiku spread over gently rising ground above the shore with a number of groups of *lo'i* watered from Makapipi Stream (E. S. C. Handy et al. 1991:501). There was a *hala* forest along the shore that extended from 'Ula'ino to Hāna (Wenkam 1970). The region above Nāhiku was traditionally forested with native trees such as *koa*, *ohia lehua*, and sandalwood. According to Handy, many plants that were used for native medicine also grew there (E. S. C. Handy et al. 1991:501). In regards to the Nāhiku region C. E. S. Handy (1940:175) states:

Nahiku has a number of terraces, some still under cultivation, below the village. The people of this genuinely Hawaiian community also cultivate dry taro patches about their houses.

Throughout wet Koolau, the wild taro growing along the streams and in the pockets high on the canyonlike walls of the gulches bespeaks former planting of stream taro

along the watercourses, on the sides of the gulches, and in the forest above. The same is true of the wild taros seen here and there in the present forest above the road and in protected spots on what was formerly low forest land, now used as pasture. (C. E. S. Handy 1940)

These lands represent the last significantly sized portion of agricultural land before reaching Hāna Moku. The area between the two was sparsely populated, but evidence of cultivation on a smaller scale exists in this area as well. According to C. E. S. Handy (1940:111):

From Ulaino to Hana extends a *hala* forest, growing upon recent lava flows which cover the coast from Ulaino to Hana Bay. At Ulaino and Honomaele there are a number of places where dry taro is still planted by Hawaiians together with other small subsistence plantings. Formerly there was scattered planting all along the coast and forest plantations inland, between Ulaino and Nahiku, which are connected by an old trail crossing the lowlands near the coastline. (C. E. S. Handy 1940:111)

Thus even the regions considered too arid for *lo 'i* cultivation still supported sporadic small scale cultivation of subsistence crops by isolated families. By looking at the spatial associations of cultivation, habitation and access to sites of significance to traditional Hawaiians (i.e., access trails, fish ponds, and *heiau*) a clear pattern of intensive, predominately coastal, occupation is seen throughout the lands of Hāmākua Loa and Ko'olau Moku.

### 2.3.5 Heiau

A *heiau* was a large ceremonial structure accompanying most larger pre-Contact Hawaiian settlements. The name literally means “place of worship” (Pukui et al. 1974:44). The *heiau* structure was an architectural feature as well as social institution of Hawaiian society and like many social institutions has served several functions over time. How *heiau* were used depended largely on the communities they served, the times during which they were actively built and used, and the types of subsistence practiced by the Native Hawaiians who used them. In *On the Road of the Winds*, Kirch (2000:290, 295) cites water availability and ecosystems as two significant primary factors affecting the development of *heiau* use:

The older islands of Kaua'i, O'ahu, Moloka'i, along with the western half of Maui, display deeply weathered and dissected landforms, with valleys and permanent streams well suited to irrigate terrace agriculture... In striking contrast, geologically younger East Maui and Hawai'i - while they account for 74 percent of the total land area - mostly lack permanent streams and have large tracts of young lava flows. (Kirch 2000:290)

Kirch (2000) stresses the relationship of these ecosystem characteristics to political and social organization in the archipelago through the production of agricultural surplus:

Irrigation works in the western isles, and dryland field systems in the eastern group, both constitute forms of landesque [*sic*] capital intensification, but with rather different socioeconomic outcomes... With irrigation, higher yields could be produced per unit of labor and greater surpluses could be extracted by the chiefs. In the dryland regions, greater labor inputs were required and the limits of



intensification were more quickly approached, making the extraction of a surplus that could be put to political use more contentious.

Two contrastive pathways to political (and ideological) transformation emerged. The chiefly elite of the western islands invested heavily in irrigation works, while their religious system emphasized Kane, god of flowing water and procreation. On Maui and Hawai'i Island, in contrast, the chiefs exercised a cycle of territorial conquest, promulgating a legitimating ideology based on the cult of Ku, a human sacrifice demanding god of war, who seasonally alternated with Lono, god of rain and thunder. (Kirch 2000:295)

The dependence on naturally existing streams for the creation of their agricultural surplus had a strong influence on scarcity and ultimately the stability of the local chiefdoms due to wet-dry fluctuations of the streambed. This, in turn, had an effect regarding which god or godly attribute was worshipped and honored at the *heiau* sites. This is reflected in the Makahiki religious cycles of Maui and Hawai'i Islands, where the war god (Kū) reigns for the eight driest months of the year, yielding to the agricultural god (Lono) of thunder and rain for the remaining four-month long wet season of cultivation (Kirch 2012:251-254). Since Hawaiian chiefdoms were dependent on the production of a surplus to support a non-laboring class such as the *ali'i*, in the event of the loss of "the continued ability of a system to yield sufficient surplus, chiefly power was undermined. When such conditions did arise ... a considerable struggle for power ensued" (Kirch 2000:323). In this manner, the limitations of the dryland agricultural systems of the eastern archipelago helped to develop a strong tradition of war and contention mingling with seasonal periods of ceremonial peace. Reflecting these cycles, *heiau* were constructed for both agricultural and political purposes, both of which were important to the peoples of the drier eastern islands.

As a younger island with fewer perennial watersheds, Maui was steeped in many struggles between warring chiefs before the archipelago was ultimately unified under Kamehameha I, the last of the invading chiefs from Hawai'i Island. Thus, many *heiau* were built upon the island of Maui along its northeastern shore, a route routinely used by both Hawai'i and Maui Island armies in their long struggle to gain control of the wet Hāna region of East Maui, one of the wettest and most productive regions between the two islands. In this respect, *heiau* were a necessary institution to legitimize the rule of any reigning or conquering chief. In *A Shark Going Inland is My Chief*, Kirch (2012:229) elaborates:

New systems of ideas and beliefs—such as those of kings as divine beings—get actively reinforced through the use of ritual symbols ... especially in ritualized public displays... The increasingly elaborate *heiau* rituals, carried out by full time priests on the impressive stone platforms, served to reinforce further the power and prestige of the chiefs and king. (Kirch 2012:229)

Despite this observation, *heiau* were not only intended for the use of chiefs and kings in establishing their legitimacy. Kamakau, cited in Kirch (2012:213), relates that "Heiaus were not all alike; they were made of different kinds according to the purpose for which they were made." Among these alternate types are the smaller coastal enclosures serving as *ko'a* (shrine) for fishermen, the *heiau ho'o'ulu'ai* located further inland for assuring crop fertility, and longer and later-built double court *heiau* which were usually much larger constructions with an elongated terrace overlooking a second lower-level terrace (Kirch 2012:213).

One of the earliest studies of Native Hawaiian architecture was conducted by Winslow Metcalf Walker (1931) on Maui in 1928 and 1929. In this study, Walker compiled and expanded upon the earlier works of Thomas G. Thrum (1909b) and J.F.G. Stokes (1916), in addition to completing a survey of Maui Island for the Bernice P. Bishop Museum (Walker 1931). By the time that Walker conducted his survey, many of the *heiau* previously observed on East Maui had been reduced in number from 182 to 134, citing that many structures had been destroyed by the cultivation of the sugarcane and pineapple industries (Walker 1931:97). In *Archaeology of Maui*, Walker (1931:97-98) details novelties of the *heiau* he observed:

No two of them are built according to the same plan, but the general appearance of many is similar. The *heiau* are all quite simple in construction, native rock from the vicinity are used without any attempt at cutting or facing. Platforms are built by extending the natural level of some hill or eminence of ground and thus producing a solid rock filled platform with a sheer or terraced front. (Walker 1931:97-98)

The largest of these terraced *heiau*, Pi'ilanihale (Walker Site 102) located in Hāna, is the largest in the state and is built over a large bluff, contributing to its massive 15-meter profile (Walker 1931).

About AD 1450 Pi'ilanihale was built at Honomā'ele near Hāna. The name of the structure translates to "Home of Pi'ilani" and likely refers to the *heiau* as the royal residence of the Pi'ilani Family, a long and storied dynasty of Maui chiefs from the sixteenth century (Sterling 1998:123). In *Sites of Maui*, Sterling (1998:123) cites Walker's plan view map (Figure 15) and describes the impressive structure:

It is a stone platform 340 x 415 feet terraced in several steps on the north and east sides. The north slope is the highest seen anywhere, five step terraces built up to a height of 50 feet from the bottom of the hill. The south and west sides are enclosed by a great wall 10 feet high and 8 to 10 feet thick... The only structures found [on top] were the low walls indicated in the plan... The top appeared to be entirely paved with small pebbles and chunks of lava. A few pieces of coral were found. A house site is located just beyond the west wall, and the ruins of other structures in the cane fields below indicate all that is left of a former village. (Sterling 1998:123)

Due to its striking features and large scale Pi'ilanihale is currently preserved within the Kahanu Garden pandanus forest in Hāna.

Of the 230 structures that Walker surveyed on Maui, 39 of the recorded *heiau* (Walker sites 64 through 102) were documented near the License Area of the current project and are depicted in Figure 16 and listed in Table 3. Walker (1931) identified 20 of the 39 *heiau* within the combined Hāna and Makawao Districts, leaving 19 of the *heiau* as either unidentified or presumed destroyed.

Of the 39 documented *heiau* in the region, only one has been reported as being within the License Area. This *heiau* is named Pu'u o Koholā and was presumed to be located within the current Honomanū License Area. According to Walker (1931), this site was not observed during his survey of Maui Island, thus not much can be said regarding its structure, size, or ceremonial purpose (Sterling 1998:109).

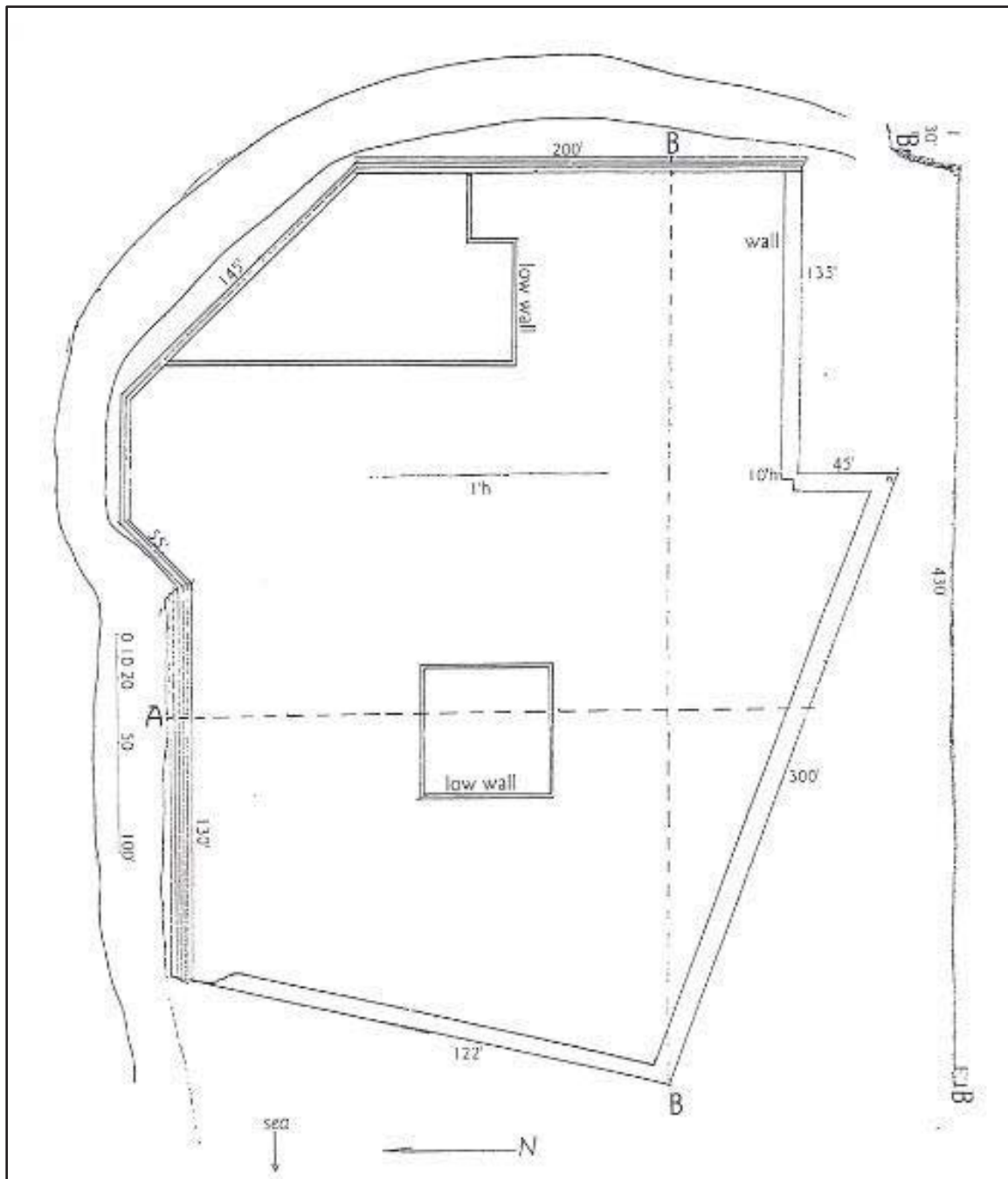


Figure 15. Walker's plan view map of Pi'ilanihale Heiau, reprint from Sterling (1998:123)



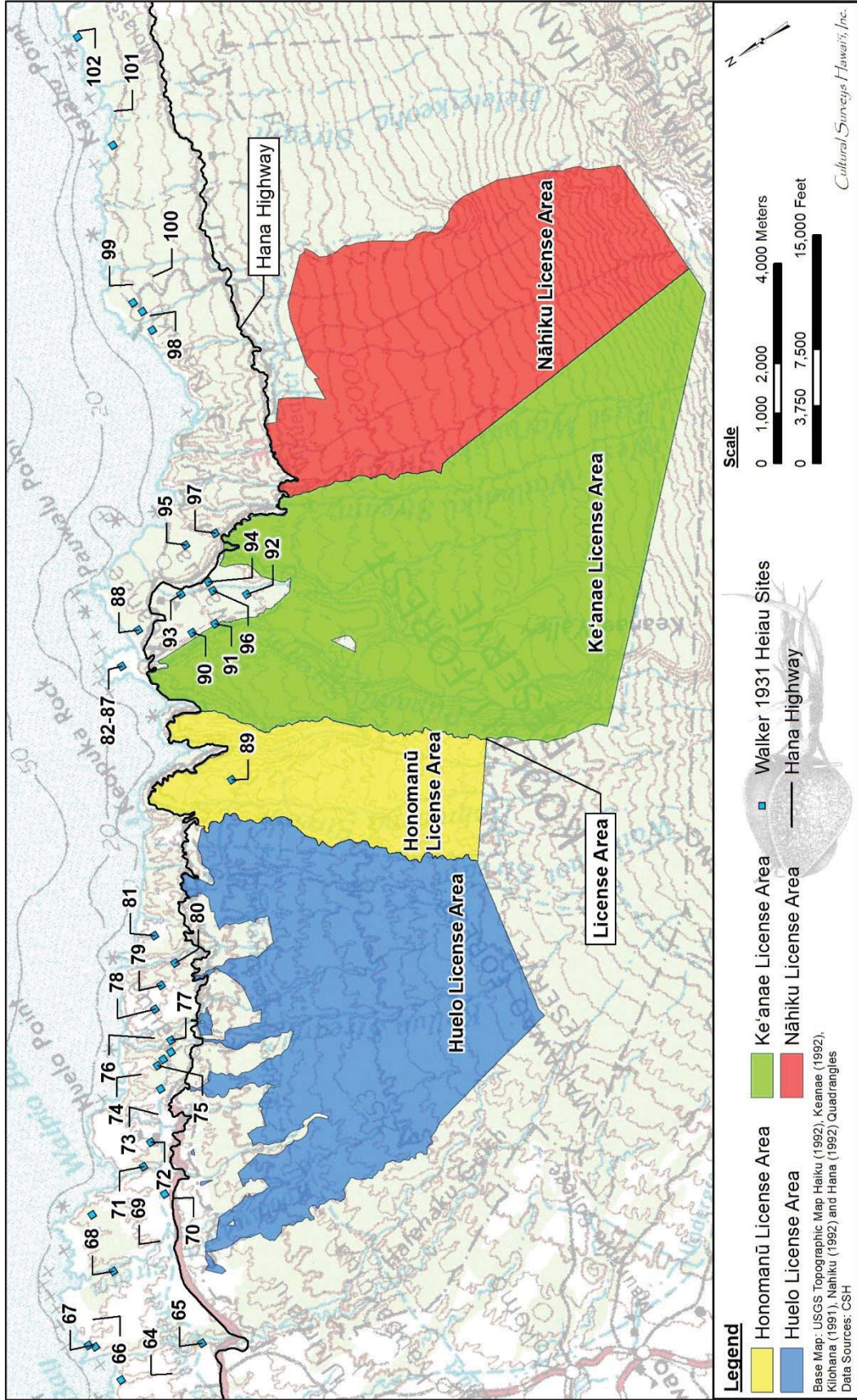


Figure 16. Portions of the 1992a Haiku, 1992c Keanae, 1991 Kilohana, 1992d Nāhiku, and 1992b Hana U.S. Geological Survey 7.5-minute topographic quadrangle series showing Walker *heiau* sites 64 through 102 with overlay of project License Areas (U.S. Geological Survey 1991, 1992a, b, c, d)

LRFI for Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKS: [2] 1-1 (various plats and parcels), 1-2-004-005, 007 (por.), and 2-9-014:(various parcels)

Table 3. Walker Heiau Sites Located Near the License Area, as Documented in Sterling (1998)

| Walker Site No. | Name              | Ahupua'a | District | Adjacent Watershed | Description per Walker (1931)   |
|-----------------|-------------------|----------|----------|--------------------|---|
| 64              | Mokahio           | --       | --       | --                 | Irregular <i>heiau</i> , terraced on several sides; walls and terrace facings measure 130-x-60-x-35-x-50-x-20-x-50-x-55 ft; greatest distance front to back of 85 ft; constructed of waterworn stones and pebbles; interior disturbed; outline follows hill contour; on top of a small knoll within a gulch a quarter mile from the sea (p. 102)  |
| 65              | Kaapahu at Kakipi | --       | --       | --                 | Destroyed   |
| 66              | Unknown           | --       | --       | --                 | Moderately sized <i>heiau</i> ; north side measures 128 ft, east side 120 ft; 68 ft from northeast corner a wall divides the <i>heiau</i> in two; back wall measures 115 ft; front wall facing is 4 ft high; north and west sides terraced in two to three steps; no coral or pebbles seen; partly destroyed to plant pineapples; on a bluff above Halehaku Bay, 50 yards from the sea (p. 103) |
| 67              | Piilani           | --       | --       | --                 | Massive beach rock <i>heiau</i> ; 10 ft high, 60 ft wide; 2 ft terrace forms rear wall against hill; terraced on front; oriented parallel to the shore for 150 ft; interior once paved, now heavily overgrown; no coral found; numerous enclosures at hill base indicating a past village site; on shore of Halehaku Bay, 50 yards from the sea (p. 103)  |
| 68              | Poohoolewa Heiau  | Honopou  | Makawao  | Hoolawa            | Large walled <i>heiau</i> , possibly sacrificial class; 300 ft long, 130 ft wide at front; large 200 ft open court off front wall; remaining 100 ft divided into two 50 ft enclosures with walls 5 ft high and 6 ft thick; constructed of beach stones, pebbles, and basalt; western side collapsed to permit   |

LRFI for Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004:005, 007 (por.), and 2-9-014:(various parcels)



| Walker Site No. | Name                   | Ahupua'a      | District | Adjacent Watershed | Description per Walker (1931)   |
|-----------------|------------------------|---------------|----------|--------------------|---|
|                 |                        |               |          |                    | planting of pineapples; at Apiapi on high bluff beyond Honopou Gulch to the east (p. 105)   |
| 69              | Puuokaupu Heiau        | Honopou       | Makawao  | Hoolawa            | Destroyed   |
| 70              | Mokupapaaku a Heiau    | Honopou       | Makawao  | Mokupapa Gulch     | Destroyed   |
| 71              | Oanapele Heiau         | Waipioiki     | Makawao  | Waiopio            | Measures 60-x-100 ft, has terraced face 10 ft high; structure was demolished to provide stone for the road; at Pu'uoneone, 200 ft north of school and main road (p. 105)  |
| 72              | Puuokalepa Heiau       | Waipionui     | Makawao  | Waipionui          | Outline indicates 65-x-100 ft <i>heiau</i> ; front is faced 20 f. high against hillside; Stokes (1916) reports it as sacrificial class; 800 ft east of protestant church, atop small hill above steep unnamed gulch (p. 105)  |
| 73              | Kupaikaa Heiau         | Hanehoi       | Makawao  | Hanehoi            | Large <i>heiau</i> ; 48 ft high wall on east side, 94 ft high wall on north side; northwest corner 20 ft high, built of three terraces; partly washed out from irrigation ditch failure; Drums heard from this heiau; at Hinalakahi on hillside below Kailua ditch, west of Kailua Protestant Church (p. 105) |
| 74              | Pohakuokaia Heiau      | West Hanawana | Makawao  | Hanawana           | Notched-shaped <i>heiau</i> ; measures 60-x-30-x-20-x-12-x-28-x-50 ft; basalt walls 3 ft high and 6 ft thick; constructed of beach stones, no coral or pebbles seen; at Hoalua, below church, on bluff near end of pineapple field (p. 106)   |
| 75              | Honomauloa at Hanawana | East Hanawana | Makawao  | Hanawana           | Destroyed   |

LRFI for Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004:005, 007 (por.), and 2-9-014:(various parcels)

| Walker Site No. | Name                              | Ahupua'a     | District | Adjacent Watershed      | Description per Walker (1931)   |
|-----------------|-----------------------------------|--------------|----------|-------------------------|---|
| 76              | Halepaahau at Hanawana            | Papa'a'ea    | Makawao  | Nailiilihaele           | Destroyed   |
| 77              | Kauhihale Heiau                   | Papa'a'ea    | Makawao  | Kailua                  | L-shaped <i>heiau</i> with walled enclosure; measures 200 ft long and 137 ft wide; two to three terraces on sides; northeast corner is triple terraced 10 ft high; 38-x-22 enclosure in northwest corner; constructed of rough basalt, no coral or pebbles; at Moii in Pu'uomaile, <i>mauka</i> of road, opposite of store (p. 106) |
| 78              | Pohakuokane?                      | West Makaiwa | Makawao  | Nailiilihaele and Puehu | Small notched-shaped <i>heiau</i> ; measures 66-x-36-x-32-x-6-x-32-x-36; walls are 4 to 6 ft thick and 5 ft high at corners; constructed of waterworn basalt rocks; in dense <i>hau</i> thicket on ridge, east of Kailua Gulch, below road (p. 107)   |
| 79              | Halekanaloa at Papea              | West Makaiwa | Makawao  | Puehu                   | Destroyed   |
| 80              | Kalaeohia at Papaeaiki            | East Makaiwa | Hāna     | O'opuola                | Destroyed   |
| 81              | Nakeikiikalalo makaiwa at Makaiwa | East Makaiwa | Hāna     | Ka'aiea                 | Destroyed   |
| 82              | Kukuioiono                        | Ke'anae      | Hāna     | Pi'ina'au               | Destroyed/not found; on point of Ke'anae Peninsula (p. 109)   |
| 83              | Lalaola                           | --           | --       | --                      | Destroyed/not found; on point of Ke'anae Peninsula (p. 109)   |
| 84              | Pakanaloa                         | --           | --       | --                      | Destroyed/not found; said to have been a war <i>heiau</i> to Kanehekili; on upper slopes of Ke'anae Peninsula (p. 109)  |

LRFI for Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004-005, 007 (por.), and 2-9-014:(various parcels)

| Walker Site No. | Name                     | Ahupua'a  | District | Adjacent Watershed   | Description per Walker (1931)  |
|-----------------|--------------------------|-----------|----------|----------------------|--|
| 85              | Lelewi at Ko'olau        | --        | --       | --                   | Destroyed/not found  |
| 86              | Paliuli                  | --        | --       | --                   | Destroyed/not found  |
| 87              | Kanekauolono             | --        | --       | --                   | Destroyed/not found  |
| 88              | Kamokukupeu              | Ke'anae   | Hāna     | Ohia                 | Destroyed/not found  |
| 89              | Puu o Kohola at Honomanū | Honomanū  | Hāna     | Punalau              | Destroyed/not found  |
| 90              | Kawalimukala at Pauwalu  | Ke'anae   | Hāna     | Pi'ina'au/ Palauhulu | Destroyed/not found  |
| 91              | Kupau                    | Ke'anae   | Hāna     | Pi'ina'au/ Palauhulu | Destroyed; remnant 84 ft terrace wall above road in Ke'anae Valley near ditch trail (p. 109)   |
| 92              | Kualani                  | Ke'anae   | Hāna     | Waiokamilo           | Destroyed/not found; on top of west ridge, at Waiokane Falls (p. 109)  |
| 93              | Kamilo Heiau             | Wailuanui | Hāna     | Waiokamilo           | Small <i>heiau</i> enclosure; measures 22-x-25 ft, walls 3 ft high and 3 ft thick, constructed of basalt stones and pebbles; at Kawaloa in dense <i>hau</i> and <i>puhala</i> grove, north side of stream (p. 112)   |
| 94              | Heiau of Ohia            | Wailuanui | Hāna     | Waiokamilo           | Dimensions lost, stones removed to build pig pen; likely agricultural <i>heiau</i> , built by chief Kaimuki; at Ohia in the valley, 3/4 mi. from the sea (p. 113)  |
| 95              | Kaluanui Heiau           | Wailuanui | Hāna     | Wailuanui            | Series of enclosures; measures 15-x-29 ft; south terrace is 11 ft wide; west wall is 6 ft wide and 4 ft high; higher terrace on one side; Stokes (1916) mentions oval pit in terrace pavement near southern end, measuring 6.5-x-4 ft and 2 ft deep; pit not present in 1931; at Kaluanui east of taro <i>lo'i</i> , 1/3 mi. from the sea (p. 113) |

LRFI for Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004:005, 007 (por.), and 2-9-014:(various parcels)

| Walker Site No. | Name              | Ahupua'a  | District | Adjacent Watershed           | Description per Walker (1931)   |
|-----------------|-------------------|-----------|----------|------------------------------|---|
| 96              | Kukuiaupuni Heiau | Wailuanui | Hāna     | Waiokamilo                   | Terraced platform; one platform measures 50-x-42 ft and 12 ft tall; second platform measures 47-x-51 ft and 5 ft tall; complex faces north by northwest; 200 ft open space between both terraces; on top of slope at Pauwalua, 300 ft south of road and 500 ft southwest of the school (p. 113)   |
| 97              | Makehau Heiau     | Wailuanui | Hāna     | Wailuanui and West Wailuaiki | Upper terrace outlines all that remains; measures 72-x-43 ft and is 5 ft high; water worn stones and pebbles observed on platform surface; said to have once contained two platforms; eight coconut trees growing there were said to have been planted by Kaniho, last <i>kahu</i> of the <i>heiau</i> ; on level land at Makehau, 1/4 mi. from the Wailua road and 150 ft from the Makehau road (p. 113) |
| 98              | Kaluakelea Heiau  | Ko'olau   | Hāna     | Makapipi                     | <i>Heiau</i> measuring 50-x-45 ft; three low terraces at northwest corner, 6 ft high; no coral or pebbles seen; partly destroyed by rubber plantation; at Honolulunui, on ridge west of Makapipi Gulch (p. 114)   |
| 99              | Pohoula Heiau     | Ko'olau   | Hāna     | Kuhiwa Gulch                 | Open platform <i>heiau</i> ; measures 72-x-72-x-65-x-64 ft; two terraces form top, the higher one measuring 36-x-25 ft, rising 1 f. above the lower; northeast corner is 8 ft high; east wall is 3 ft high and 4 ft thick; constructed of waterworn stones and pebbles, no coral seen; faces the sea; near Nāhiku village, on east side of Makapipi Gulch (p. 114)  |
| 100             | Haleaka Heiau     | Ko'olau   | Hāna     | Kuhiwa Gulch                 | Platform <i>heiau</i> ; 4 ft high in front, 6 ft high wall in back; northwest slope is double terraced; constructed of water worn stones; interior features trampled by cattle and pigs; located on a high hill; on east bank of Makapipi Stream, 300 yards from the school (p. 115)  |

LRFI for Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004-005, 007 (por.), and 2-9-014:(various parcels)

| Walker Site No. | Name              | Ahupua'a         | District | Adjacent Watershed | Description per Walker (1931)  |
|-----------------|-------------------|------------------|----------|--------------------|--|
| 101             | Heiau at Lanikele | Ula'ino          | Hāna     | Heleleikeoha       | Walled <i>heiau</i> ; measures 116-x-90 ft; south and east walls are 6 to 8 ft high, and 12 ft thick; east wall is double terraced; gate on south wall is 8 ft wide, 4 ft high and 12 ft deep, low 2 ft wall closes the interior end; no interior structures noted, only a stone heap; outer terrace paved with pebbles, contained only scattered stone within; perched atop a high shoreline bluff, west of a canoe landing and trail up Lanikele Gulch; may have been a strategic fortification, though not corroborated (p.115-116)   |
| 102             | Piilanihale Heiau | West Honoma'e le | Hāna     | Honoma'e le Gulch  | Platform <i>heiau</i> ; platform measures 340-x-415 ft; several (up to 5) terraces make up the north and east sides, up to 50 ft high; south and east sides enclosed by wall 10 ft high, and 8 to 10 ft thick; paved with small pebbles and lava cobbles; no high internal walls or terraces; two low walls observed in northeast corner and center of platform; scattered coral pieces seen; internal features minimally mapped due to vegetation density; house site observed beyond west wall; evidence of remnant village in cane fields below structure; paved road leading up western slope of <i>heiau</i> , possible extension of the Alaloa (Kihapiilani Trail); Largest <i>heiau</i> on Maui and tallest in the archipelago; name means "Home of Piilani," indicating site as possible royal abode of the Piilani family of Maui chiefs, reigning in the 1500s; on a shoreline hill near Kalahu Point (p. 123) |



Another account of Pu'u o Koholā comes from Inez Ashdown who places this *heiau* in the vicinity of Kaumahina Wayside Park along the mauka side of Hāna Highway just west of Honomanū. In *Ke Alaloe o Maui: The Broad Highway of Maui*, Ashdown (1971:54) states:

Where the Kaumahina park is now on land of that name, there stood a big temple and around it and its village grew an abundance of bananas, 'ohia-ai, rice and taro all in and around Punalu and above there to Kolea. Four streams above there form waterfalls over the cliffs and flow into Honomanu Bay. Nuailua stream does not reach far up the slope but it once watered large taro lands in olden times (Ashdown 1971:54).

A portion of a U.S. Geological Survey (1992c) map of the Ke'anae region (Figure 17) also confirms the same place-name of Pu'u o Koholā belonging to a local *pu'u* (hill) located south of the Kaumahina Wayside Park in the approximate location described by Ashdown (1971:54).

Within the modern Makawao District, containing the traditional *moku* of Hāmākua Loa, 10 *heiau* were identified. Six of the ten identified structures (Walker Sites 64, 67, 68, 74, 77, and 78) were observed to be largely intact, of a generally larger size than those located east toward Hāna and bore a few distinct features regarding the 'class' of *heiau* documented. Three of the six sites were considered large *heiau* as they each had at least two dimensions near or greater than 100 feet. One of these named Po'oho'olewa Heiau (Walker Site 68) was interpreted as a possible sacrificial *heiau* and had walled exterior dimensions of 300 by 100 ft with an open court stretching out 200 ft from the structure (Sterling 1998:105). The other two large sites include the Pi'ilani Heiau (Walker Site 67) with its long beachfront terrace and remnant village foundations, and the L-shaped Kauhihale Heiau (Walker Site 77) several kilometers to the southeast (Sterling 1998:103,106). Two more *heiau* of interest in this area are Pōhaku o Kāne (Stone of Kāne) Heiau and Pōhaku o Kai'a (Stone of the Fish) Heiau (Walker Sites 78 and 74, respectively), which are smaller sites but documented as unique in their shape with Walker citing six dimensions to outline its surface area (Sterling 1998:106-107). This description is reminiscent of Kirch's *heiau ho'o'ulu'ai* reportedly used to ensure crop fertility, of which one of the two common structural types of this class are defined as having "six sides, so that in plan view they look like a square with a notch removed from one corner" (Kirch 2012:213). The last *heiau* identified by Walker (1931) in the district, Kupaika'a Heiau (Walker Site 73), was interestingly tall (three terraces reaching nearly 20 feet) and may have been in use in modern times as there were transcribed reports of the sound of drums heard coming from its vicinity (Sterling 1998:106-107).

Within the modern Hāna District, containing the traditional *moku* (districts) of Hāna and Ko'olau, 11 *heiau* were identified by Walker (1931). Five of the 11 *heiau* were observed to be largely intact, three of which (Walker Sites 93, 95, and 96) were located slightly inland of the coast and were smaller in that they measured less than 50 ft along any single dimension (Sterling 1998). The two remaining structures are of a significantly larger scale as they are roughly two to six times the size of the smaller *heiau*. One of these is the forementioned Pi'ilanihale Heiau (Walker Site 102) in Hāna. The second is the *heiau* at Lanikele (Walker Site 101) with high stacked walls and

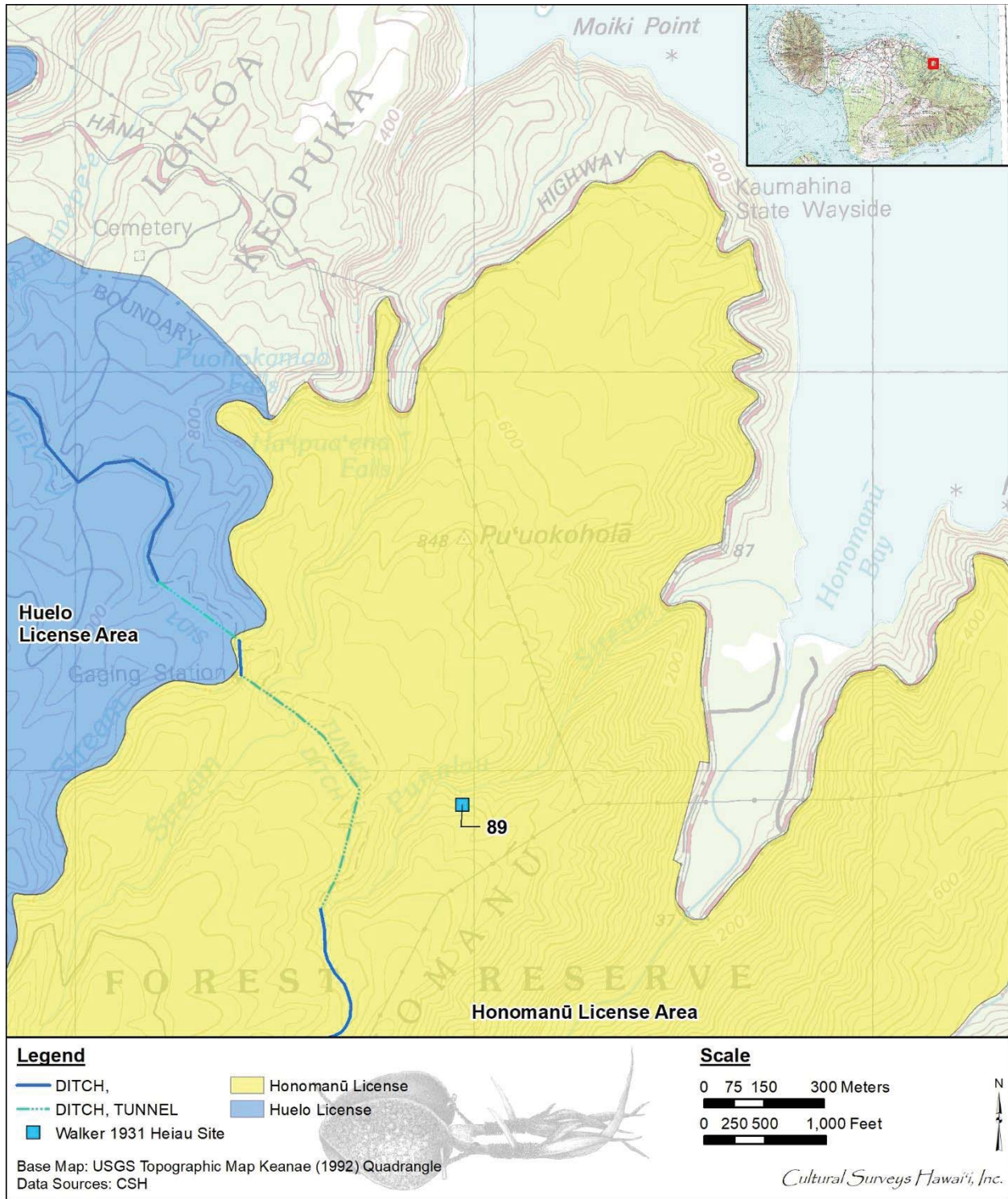


Figure 17. Portion of the Keanae (1992c) U.S. Geological Survey 7.5-minute topographic quadrangle series showing the approximate location of Pu'u o Koholā heiau (Walker Site 89), roughly corresponding to the location of Ashdown's unnamed heiau near Kaumahina Wayside Park

cobblestone paved exterior, thought by Walker to be a fortification due to its perch over a canoe landing 150 ft below it on the shoreline (Sterling 1998:115-116).

Many of the structures that Walker located within Hāna and Makawao Districts were partially damaged from neglect, agriculture, civil projects, or some combination of the three. Modernity impacted the traditional ceremonial structures in a variety of ways. The *heiau* that were observed intact were largely overgrown and unkempt due to the passage of time and the neglect furnished upon them resulting from Native Hawaiians abandoning the old *kapu* religious system with the arrival of missionaries to the Kingdom of Hawai'i in the 1800s. One example of this is Makehau Heiau (Walker Site 97) that was observed largely intact but partially collapsed (Sterling 1998:113). Many of the remaining structures that were either partially intact or missing altogether were unintentionally impacted by the advent of agriculture to the region during the historic period.

Kupaikaa Heiau (Walker Site 73) was partially washed down the hillside it sat upon when the irrigation ditch upslope failed and sent a torrent of agricultural water down the hillside (Sterling 1998:105-106). Haleaka Heiau (Walker Site 100) was largely trampled down into the soil from wandering cattle and pigs grazing in the region (Sterling 1998:115). Some heiau were destroyed intentionally, either for use of their materials or to make way for the development of agricultural pursuits. Kaluakilea Heiau (Walker Site 98) was intentionally destroyed while the Koolau Rubber Company was clearing fields for planting (Sterling 1998:114). Oanapele Heiau (Walker Site 71) was demolished in order to harvest its stone for the paving of local roads (Sterling 1998:105). The combined effect of neglect, the passage of time, and heavy handed agricultural clearing have been extremely detrimental to the longevity of most native Hawaiian architecture, and the state of East Maui's *heiau* stand as a physical testament to that damage. This can be further exemplified by the fact that 19 *heiau* could not be located and were assumed destroyed, comprising 48% of all known sites recorded between 1909 and 1931.

## 2.4 Historic Background of East Maui

### 2.4.1 Early Historic Period (1778 to Mid-1800s)

During the last half of the eighteenth century the high chiefs Kahekili of Maui and Kalani'ōpu'u of Hawai'i participated in battles between Maui and Hawai'i. This period also saw the arrival of the first European explorer, Captain James Cook, on his pan-pacific voyage. This occurrence would inevitably lead to the arrival of even more European explorers, merchant vessels, and missionary passengers across all Hawaiian Islands, including Maui. The interactions between Hawaiians and these newly arrived visitors would come to mark the reshaping of traditional land use patterns in Hawai'i toward the islands we see today.

#### 2.4.1.1 European Explorers

In 1778, when Captain James Cook's ships returned from their North American explorations, they stopped at Hāna and encountered Hawaiians for the first time on board the decks of their ships. This came just before the well-known incident that cost Capt. James Cook his life on Hawai'i Island when he attempted to kidnap Kalani'ōpu'u for use as ransom (Cordy 2000:294).

In December of 1788, William Douglas, commanding the British ship, *The Iphigenia*, arrived at Hāna and continued to sail on to the island of Hawai'i where he presented Kamehameha with a swivel cannon. This cannon was mounted on a large double canoe, together with a number of



muskets and a quantity of ammunition. In his account of Maui from aboard *The Iphigenia*, Meares (1791:335-336) wrote the following passage:

We had no longer appeared off Mowee [Maui] than a great number of canoes came off with hogs, yams and plantains.-On this fide [side] of the ifland [island] there is a large town, the refidence [residence] of Titeeree, the fovereign [sovereign] of Mowee [Maui], who was at this time on a vifit [visit] to Taheo, king of Atooi, in whofe [whose] adfence [absence] the government was left to the care of Harwallanee, brother-in-law to Tianna, of whofe [whose] arrival he was no fooner [sooner] informed, than he ordered a prefent [present] of hogs to the fhip [ship]; but before it arrived Tianna had obferved [observed] his brother of fhore [shore], and having dreffed [dressed] himself in his beft [best] apparel, defired [desired] that meffage [message] a might be fent [sent] to invite him on board.-On his arrival they met as borthers fhould [should] do after a long feparation [separation]; the whole of their conduct to each other was affectionate; they melted into tears, and almoft [almost] drew the fame [same] from the eyes of thofe [those] who held them. After their firft [first] emotions had fubfided [subsided], the chief requefted [requested] Captain Douglas to remain with him for a few days, and engaged to fupply [supply] him with any quantity of provifions [provisions] that might be demanded; but as he faw [saw] no place where they could come to an anchor in fafety [safety], the furf [surf] at the fame time beating with great violence, and an heavy fwell [swell] with the wind blowing in fhore [shore], Captian Douglas was under the neceffity [necessity] of declining the invitation. (Meares 1791:335-336)

#### 2.4.1.2 Battle of Great Canoes

In 1790, Kamehameha then began to muster his armies for a planned invasion of Maui. That summer, Kamehameha landed at Hāna. In a battle known as Kaua o Kawa'anui (Battle of Great Canoes), Kamehameha defeated the Maui advance guard there, after which he sailed for Hāmākua Loa, sweeping the remaining Maui defenders along the coast and back into 'Īao Valley, and annihilating them at the battle called Kaua o Kapaniwai o 'Īao (Battle of the Dammed Water of 'Īao), during which the slain warriors were said to have been so numerous, that they dammed the water of 'Īao Stream. Kamehameha then returned to Hawai'i to settle disputes there. In his absence, both Kahekili and the High Chief of Kaua'i, Kaekulani formed an alliance to retake Hāna. After that success, both chiefs launched an attack on Kamehameha at Waipi'o on Hawai'i, where they were both defeated. After the death of Kahekili in 1793, Kamehameha assumed the rule over all of Maui, through his victory over the High Chief Kahekili's successor, the High Chief Kalanikupule, in the battle of Nu'uanu on O'ahu in 1795 (McGregor 2007:99).

#### 2.4.1.3 Missionaries

Evidence of a cohesive religious population in East Maui is best described by the first Europeans to visit Ke'anae. From the journal of William Richards (1829) comes information that the region between Honomanū and Wailua was densely populated:

We went on board the canoe, and rowed a few miles, avoiding some difficult *paries* [steep cliffs]. After landing, we walked a few miles further, to Wailua, where we put up for the Sabbath. Very early the morning [of the Sabbath], the horns, summoning

the people to the house of God, were heard in every direction; and we soon perceived that the call had not been heard with indifference. At the early hour, the house was thronged with attentive worshippers. [The next day] we examined the schools, which were large. About 10 o'clock, A.M., the princess [Nahienaena] arrived, and addressed the people; after which, we proceeded on our way [to Hāna]. (Richards et al. 1829:249)

The Hāna region of Maui was known as “one of the most isolated places in these islands, remote and difficult to access” (Bishop 1861). Because of the many treacherous ravines and unpredictable flooding, Native Hawaiians usually rode on horseback to a point before Ke‘anae, then completed the journey to Hāna by canoe. Before the establishment of the Hāna protestant mission in 1837, missionaries reached East Maui no more than once or twice a year. From the early writings of the protestant missionaries in the Sandwich Islands, it appears that the first excursion to Hāna by an American protestant teacher was made in 1823. In regards to this, Richards and Stewart (1825:141) in *The Missionary Herald* write:

...A similar adventure is related by Honorii [Native assistant to the missionaries], in a late visit to the eastern part of the island of Mowee, whither he went in the company of Keoua, wife of Governor Adams. That part of the island [Hāna] had never been visited by missionaries, and Honorii took occasion to preach to them Jesus Christ. He found them wholly uninstructed, and exceedingly attached to their idols, and disposed to resist every argument in favor of a change in their religion. Before he left the place, he ascended a neighboring hill which overhangs the sea on the top of which were several huge stones erected, covered with tapa (native cloth), and dignified with the appellation of gods. With the aid of some of his company, he succeeded in displacing them from their beds, and rolled them into the sea. (Richards and Stewart 1825:141)

The Protestant mission station of Hāna was administered in its early days by the Reverend Mark Ives and his wife, Mary Ann Brainerd Ives. The Ives were protestant missionaries who had both arrived from New England in 1836 (Judd et al. 1969:122). The Ives were joined by the Reverend Daniel Toll Conde and his wife Mrs. Andelucia Lee Conde, who were stationed in Hāna following their arrival in 1838 (Judd et al. 1969:72). The isolated missionary station of Hāna was serviced by the 39-ton schooner *Missionary Packet* which had been built in 1825 at Salem, Massachusetts, for use between the Hawaiian Islands, as well as other schooners and steamships (Mifflin 1983:19).

#### 2.4.1.3.1 Catholic Missionaries and the Pa‘akaula of 1843

Protestant missionaries, having a strong presence in Hawai‘i by the early 1800s, had almost exclusive claims to managing the salvation of its inhabitants, but the Catholic Church was soon to follow its protestant fellows to Maui’s shores. Catholic missionaries had found a favorable foothold with a few courtiers of Kamehameha III just a year after he passed the Edict of Toleration in 1839. This Edict allowed religious freedom for all inhabitants of the Kingdom of Hawai‘i. Six years later, the first Catholic missionaries arrived in the busy whaling town of Lahaina and found themselves amid a population receptive to their teachings, despite the fact that many of the *ali‘i*, the protestant missionaries, and the Queen Regent Ka‘ahumanu were outwardly opposed to their presence on Maui (Speakman 1978:87-88). The earliest Maui converts to the recently arrived faith



were two brothers, Helio and Petero Kaoeloa from Wailuku (Schoofs 1978:291). The next generation of catechist converts were soon to follow, especially Helio Kaiwiloa who passionately converted from the fold of the Protestant Church into Catholicism. Helio Kaiwiloa had left East Maui to be officially baptized, shortly before returning to Maui to travel the East Maui districts preaching the Roman Catholic faith (Speakman 1978:87-88).

Helio Kaiwiloa's influence was significant during his lifetime spent preaching in remote East Maui. Robert Schoofs (1978:257) in his *Pioneers of the Faith* describes Helio:

Kaiwiloa assiduously studied his Christian doctrine and shared his knowledge with others. Going from house to house in Kahikinui he was not a little surprised to find many catechumens. He gathered them in a little chapel, where they said their prayers together and took part in the instructions. Kaiwiloa covered several adjacent villages, displaying great zeal in propagating the faith. (Schoofs 1978:257)

The increase in the number of catechumens acquired by Catholics in the Hāna District became a point of concern for Protestant missionaries, and in 1843 they prevailed upon Judge Mahune of Wailuku to send policemen to investigate the activities of Catholics and catechumen, arrest them, and transport them to Wailuku to stand trial. The charges were simple, that Kaiwiloa had gathered the catechumen once weekly in his private home for the purpose of practicing communal prayer. Perhaps perceived as a type of conspiracy, it was deemed unlawful and ordered to be stopped (Schoofs 1978:260).

Eventually the Wailuku police made it to remote East Maui to begin the arrests. In one of the first villages they reached they arrested a half-dozen Catholics and moved onto the next village, gathering a few more of the faithful at every stop along the long road back to Wailuku (Schoofs 1978:260). All along the way additional arrests were tied together to manage the ever increasing crowd of offenders, this is why the procession was named the *pa'akaula* (sometimes *pakaula*), or the "tying, binding with ropes" (Speakman 1978:88). Schoofs (1978:260) then relates the impressive display of solidarity that followed:

The catechumen of Maui had agreed on the following line of conduct. If any Catholic or catechumen were arrested for any crime other than for his religion, nobody would take an interest in the case. But if, however, anyone were arrested for religion's sake, all would declare their solidarity and voluntarily join the arrested one.

This is precisely what was done. Going eastward, the ever increasing band passed through Kaupo and Kipahulu, and continued the journey along the north coast of the island until they reached Wailuku. A striking feature of this procession was that the prisoners were dressed in their Sunday best and were wearing gay floral wreaths. (Schoofs 1978:260)

This large display crossed every major *moku* on their way into Wailuku to stand trial, allowing the procession to preach as they travelled through Hāna, Nāhiku, Ke'anae, Kailua, Ha'ikū, and Pā'ia (Speakman 1978:87). The entire distance travelled by the officers and their prisoners covered close to 90 miles of difficult terrain over the course of a month. There were also periodic rests along the way which afforded the persecuted Catholics time to speak with the inhabitants at their

brief respites and proselytize, gathering more catechumen into their fold as they proceeded (Schoofs 1978:260).

By the time that the procession had reached Wailuku for their trial the crowd was too massive for the courts to handle. Seeing the size of the crowd containing the Catholics and their sympathizers, Judge Mahune bid all the participants to “go home” and dismissed the charges against the Catholics (Schoofs 1978:260). Helio and his catechumen had prevailed against the persecution perpetrated by Protestant influences entrenched in Maui. An unexpected benefit of this persecution was that the number of catechumen on Maui had nearly tripled during the ordeal, bringing the count near a thousand adherents. The faithful Catholics then walked the long road back to their homes lead by Helio Kaiwiloa, spreading their faith along the way (Speakman 1978:88). Although religious ideas were developing at a rapid pace in the Hawaiian Islands after European contact, another major change was simultaneously taking place surrounding the relationship of Native Hawaiians to the land they inhabited for generations immemorial, The Māhele.

#### 2.4.2 The Māhele and Kuleana Act

The most significant change in land-use in the Hawaiian Archipelago came with The Māhele of 1848 which brought about the privatization of land in Hawai'i. The word *māhele* meaning literally “to divide, cut, partition” (Pukui and Elbert 1986:219), hastened the shift of the Hawaiian economy from that of a subsistence based economy to that of a market based economy. During The Māhele, all of the lands in the kingdom of Hawai'i were divided between *mo'i* (king), *ali'i* (chief/ruler), *konohiki* (land manager), and *maka'āinana* (tenants of the land) marking passage into the Western land tenure model of private ownership. On 8 March 1848, Kamehameha III further divided his personal (*mo'i*) holdings into lands he would retain as private holdings and parcels he would give to the newly budding Hawaiian Government in trust. This act paved the way for government land sales to foreigners as a source of funding for government operations, and in 1850, the legislature granted resident aliens the right to acquire fee simple land rights (Moffat and Fitzpatrick 1995:41-51).

Native Hawaiians who desired to claim the land on which their families had historically worked and resided were required to present testimony before the Board of Commissioners to Quiet Land Titles. Upon acceptance of a claim the Board granted a LCA to the successful applicant. The awardee was then required to pay, in cash, an amount equal to one-third of the total market value of the awarded parcel as a commutation fee. If this payment could not be made in cash, an acceptable substitute was to cede the one-third of the awarded parcel to the government as payment for the commutation fee (Chinen 1958:13).

By 1850 portions of *mo'i*, *ali'i*, *konohiki* and government LCAs were being sold to help pay commutation fees owed by their awardees and for simple cash profits from selling so-called unused land. As these lands belonging to Hawaiian elites had historically been cultivated by the *maka'āinana* in pre-Contact times, when the lands were being sold many tenant farmers were being inadvertently dispossessed of their homes and arable plots that lied within the sold portions of land. In acknowledgment of this dispossession, the Board passed resolutions authored by the Privy Council through the legislature in 1850 that aided in the protection of the rights of tenant farmers whose homes and plots were essentially owned by overarching LCA awardees (who may have owned the entire *ahupua'a* or *'ili* in which the plots were located). The plots awarded to

tenant farmers in this fashion were termed *kuleana* lands, or simply *kuleana* (*kuleana* meaning “right, privilege, responsibility”) (Chinen 1958:29-31; Pukui and Elbert 1986:179). Under this type of land acquisition, claimants were required to produce accurate surveys of the claimed plots, and to have these claims scrutinized by the Board to ensure that claimants were not attempting to acquire wastelands or additional arable lands with “the seeming intention of enlarging their lots” (Chinen 1958:30). Upon completion of this process, Chinen (1958:30) states that:

The native tenants were awarded their *kuleanas* free of commutation. The owner of the *ahupua'a* or *'ili kupono*, out of which the individual *kuleanas* were taken, was deemed responsible for the settlement of the whole government commutation... Though other lands escheated to the government upon the death of an owner without an heir, the *kuleanas* escheated to the owner of the *ahupua'a* or *'ili kupono* within which it was located. (Chinen 1958:30)

This change in escheating was because the overarching LCA owner was deemed to have “reversionary interest” in the parcels due to having been responsible for its commutation fee to the government (Chinen 1958:30). This reclamation of *kuleana* land would later come to have repercussions across large tracts of land as Western disease continued to run rampant in Hawaiian populations, and as people drifted toward more populous city centers, leaving many *kuleanas* abandoned and heirless. Patrick Kirch drives at the inevitable conclusion of the escheating of these lands in a time of Western economic expansion by stating that “By the 1870s, vast tracts of lands had been acquired by an expanding class of white sugar planters. Mostly of American origin...” (Kirch 2012:287). Similar acquisitions in the name of commerce were also being carried out in leeward ranching lands where abandoned and heirless *kuleanas* also existed.

*Kuleana* claims could be made for nearly any resource procuring activity from agricultural plots, to fishing grounds, to rights to harvest naturally existing vegetation, to naturally existing and artificially channeled water sources. Within the Māhele records for the four license areas (Table 4 through Table 7) there are claims for terrestrial agricultural features such as *lo'i* (irrigated *kalo* terraces), *pākanu* (garden, planting enclosure), *'auwai* (artificial irrigation canals, used to feed *lo'i*), *kula* (fields, open pasture), *pali* (cliff, precipice, or steep hill suitable for cultivation of select plants), *kīhāpai* (small cultivated patch or orchard), *mo'o* (ridge for similar purpose as *pali*), and *pō'alima* (small agricultural patches tended in traditional times solely for chiefly tribute) (Pukui and Elbert 1986:147,178,305,312,334). There are also *kuleanas* claimed for their naturally occurring vegetation and the right of tenants to collect these resources, such as *'ie* (aerial roots of the *'ie'ie* vine, used in plaiting, basketry, and wicker weaving), *olonā* (shrub with fibrous bark used in fishnets, baskets, and to construct *tī* leaf raincoats and capes), *wauke* (paper mulberry used in making *tapa* cloth), *hala* (pandanus tree) and wildy occurring *kalo* (taro) and sweet potato (Pukui and Elbert 1986:50,94,256,286). Lastly are the *kuleana* claims over aquatic resources such as off-shore fisheries (documented as “sea” in LCA awards) and *muliwai* (river mouth, freshwater pool behind a shoreline sand bar) that are naturally occurring and not man made (Pukui and Elbert 1986:256).

*Kuleana* claims were slightly more complicated in that many of these claims were made to lands within several *ahupua'a* or *'ili kupono* that lie in neighboring land divisions. These claims were documented, in their entirety, within the individual Māhele books for different land divisions. This means that often multiple separate claims to any one person will be duplicated within the record

books of different land sections, though the parcels comprising the entirety of the claim are distributed among several larger land divisions distant to each other. Resulting from this process the entire contents of *kuleana* claims will be fully enumerated in its respective table, though only a portion of an individual's *kuleana* claim may be present in the accompanying map for the specific license area. LCAs documented within the four license areas are displayed below in Figure 18 through Figure 21 and listed in Table 4 through Table 7.

### 2.4.3 Mid- to Late 1800s

The foundation for private land ownership set by the Māhele of 1848 began a very marked pace of development across the entire archipelago, and Maui was no exception to the age of Western development that was about to dawn across the island. The Māhele enabled many foreigners and foreign nationals to acquire land for the establishment of ranching and plantation operations, including the infrastructure projects that were aimed at supporting these land-intensive industries (aqueducts, roads, etc.). All of this was happening alongside civic development in the more populated areas as the Hawaiian economy grew, a growth funded in part by the government land sales to foreigners. Additionally, many foreign nationals who relocated to Maui to work were enabled to acquire their own homestead lands, and thus establish themselves and future generations on the island, increasing the ethnic and cultural diversity of Maui. Though these changes would signify a new period of economic growth for the Kingdom of Hawai'i as a whole, the pace of development would continue to impact the social and environmental landscape of East Maui.

#### 2.4.3.1 Disease in East Maui

One of the earliest impacts of European contact on Native Hawaiians was the spread of Old-World diseases into island populations. With the arrival of Captain Cook in the late 1770s came the initial introduction of venereal disease and possibly respiratory ailments (Kirch 2012:158). Kirch also suggests that venereal disease is often overlooked in disease impact studies since it does not usually kill its victim “although its effects on a population with no prior exposure may have been more severe than usual” (Kirch 2012:158). Resulting from the introduction of venereal disease, the birthrate very likely plummeted because of the severe effects of disease on women's reproductive organs who have never been exposed to them. The number of rampant diseases was to increase steadily alongside the number of traders, merchants, and visitors arriving from distant shores. To this effect Kirch (2012:158) observes:

Later ships brought even more virulent diseases: dysentery, measles, tuberculosis, smallpox, and leprosy. Before Cook the islands were free of all these old-world scourges; consequently, Hawaiian bodies did not have antibodies or resistance against them. As we now know, such ‘virgin soil’ epidemics can have devastating effects on indigenous populations. (Kirch 2012:158)

Although there is serious debate about the actual count of the Hawaiian population at first contact with Europeans, making an exact figure for the depopulation of Hawaiians by disease difficult to grasp, the known effects of the introduction of foreign disease make a population reduction from 500,000 in 1779 to 130,000 fifty years later seem feasible (Kirch 2012:158). Given the histories of European contact in other previously unexposed locations it is likely that morbidity can account for much of the decline. Though early mortality rates are sporadic at best and often



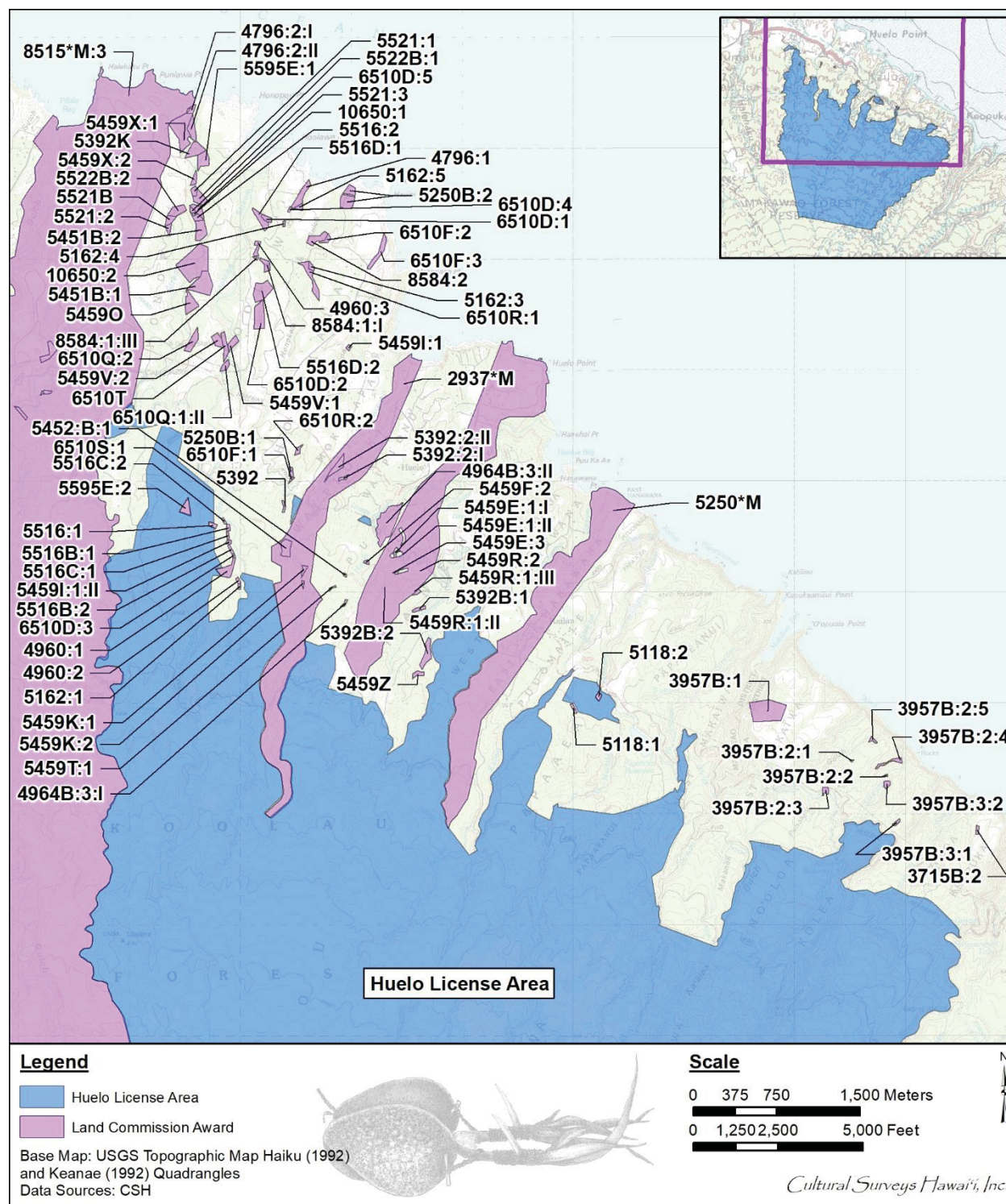


Figure 18. LCAs near the Huelo License Area (U.S. Geological Survey 1992a, c)



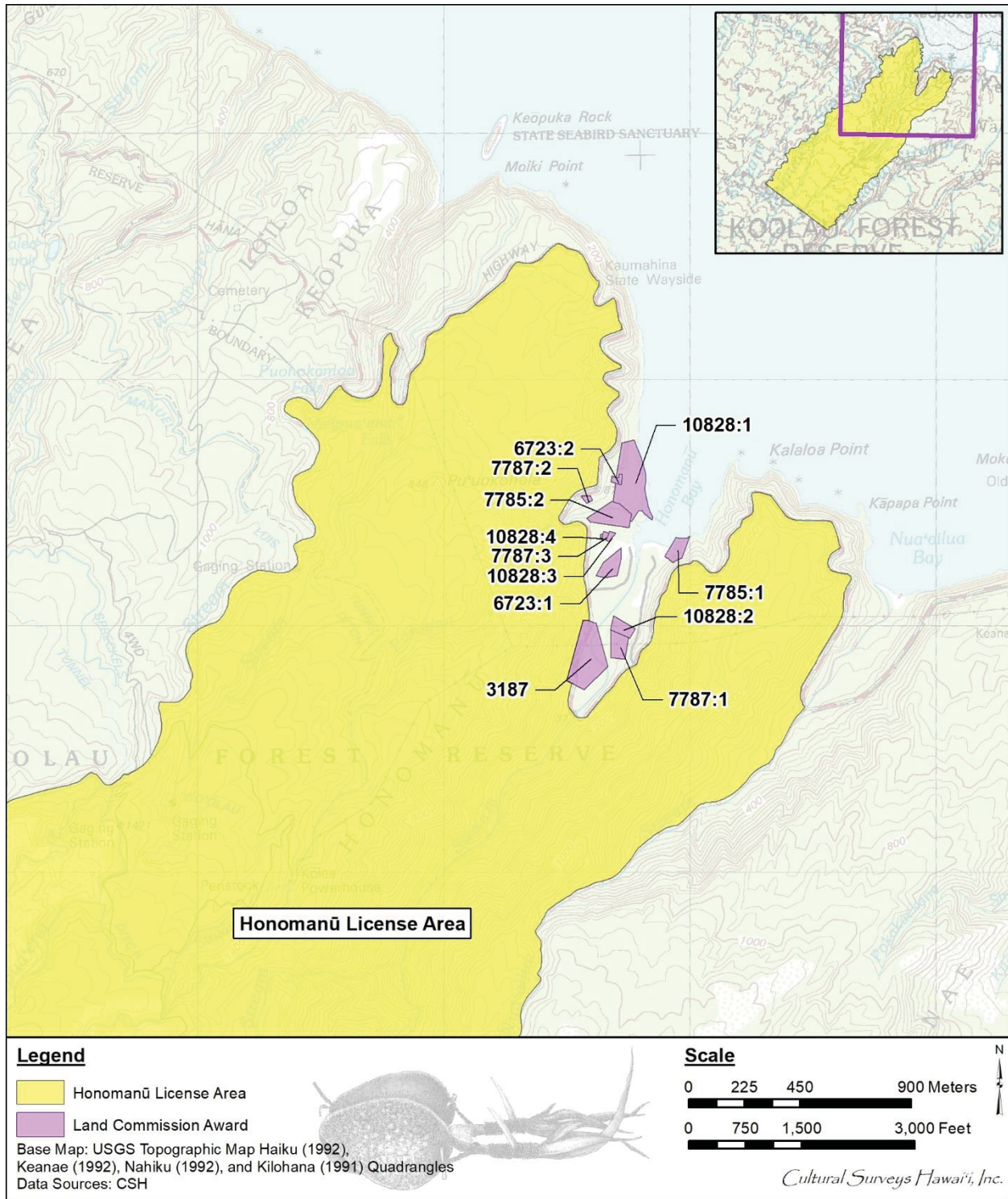


Figure 19. LCAs near the Honomanū License Area (U.S. Geological Survey 1991, 1992a, c, d)



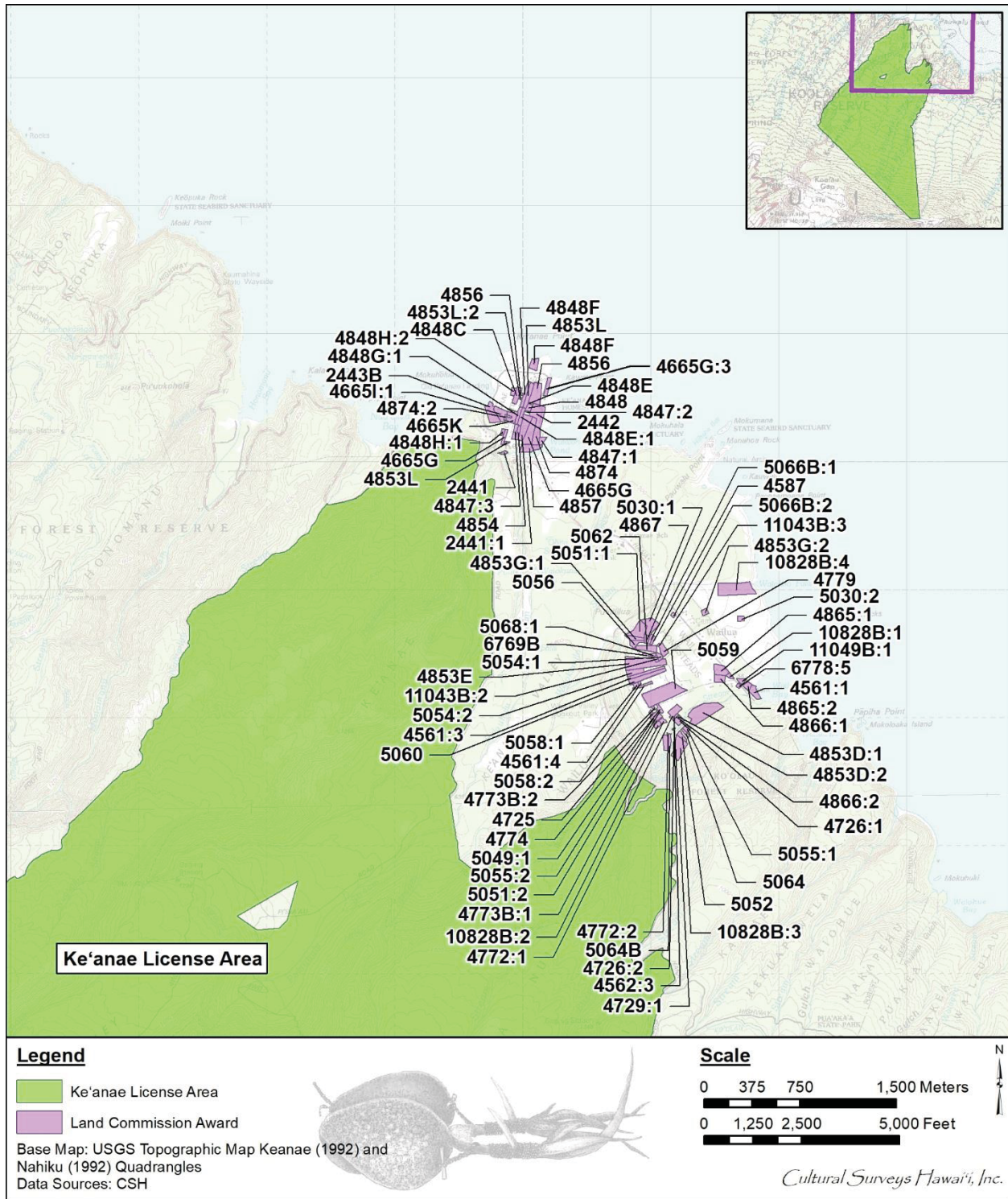


Figure 20. LCAs near the Ke'anae License Area (U.S. Geological Survey 1992c, d)



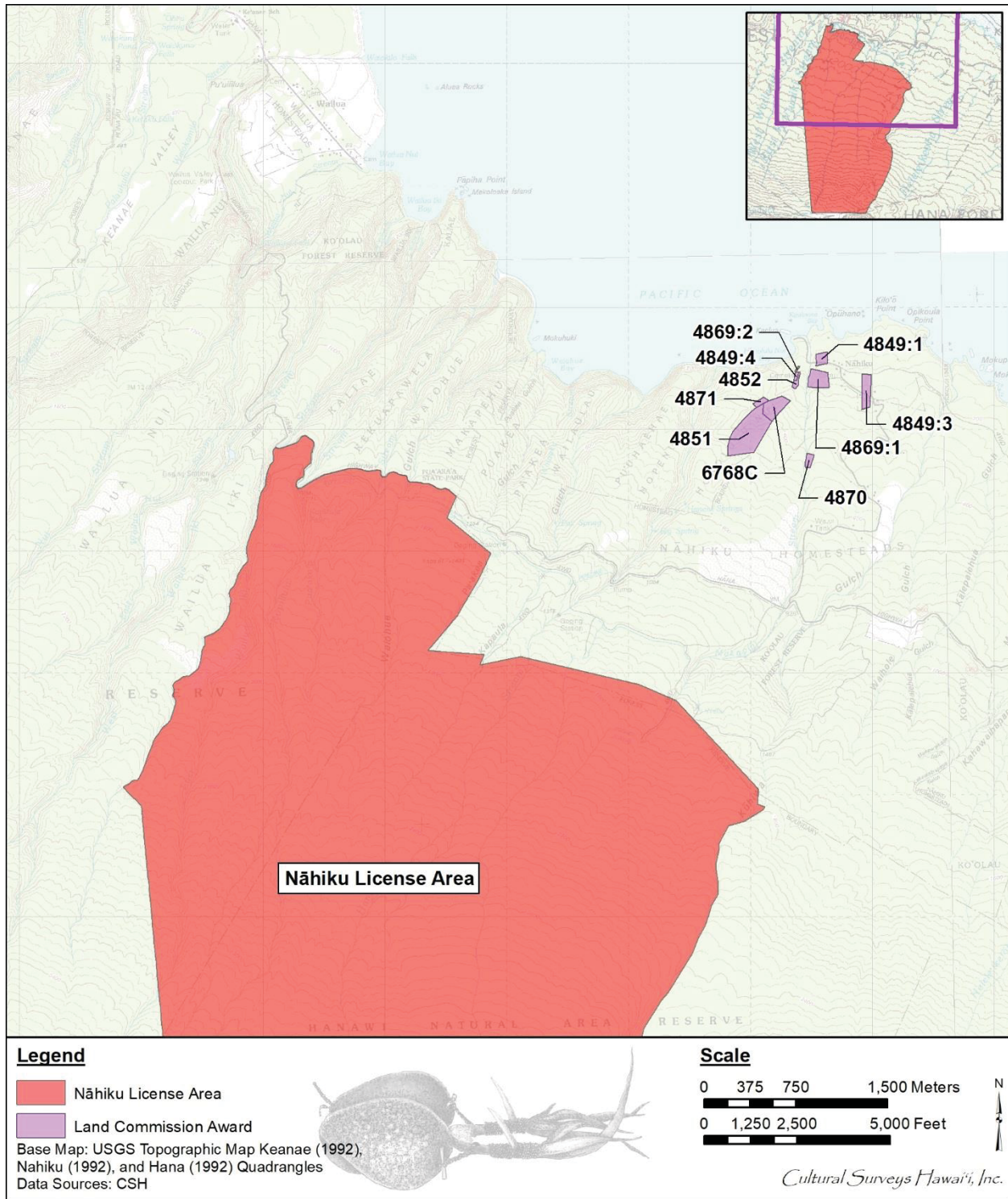


Figure 21. LCAs near the Nāhiku License Area (U.S. Geological Survey 1992b, c, d)

Table 4. LCAs near Huelo License Area (Waihona 'Aina 2000)

| LCA #  | Claimant           | 'Ili                                    | Land Use   |
|--------|--------------------|---|--|
| 2937M  | Harbottle, William | N/A                                     | Possible residence and the sea   |
| 3715B  | Kekuahani          | Keopuka, Loiloa                         | Two <i>lo 'i</i> , <i>kula</i> , sea shore, <i>pali</i> , an <i>olonā</i> pasture, and government road                     |
| 3957B  | Keuoho, Luka       | Punaluu                                 | Two <i>kīhāpai/pākanu</i> , <i>pali</i> , and a stream   |
| 4796   | Kealoha            | Waikakulu, Paniawa, Punahale            | Three <i>lo 'i</i> , two <i>kula</i> , three <i>kīhāpai</i> , sea shore, and two <i>pali</i>                               |
| 4960   | Kapahu             | Halepohaku, Kahauiki, Kahikiloa         | Four <i>lo 'i</i> , two <i>kula</i> , <i>pali</i> and a stream   |
| 4964B  | Kaiewe Kamakau II  | Kapalaoa, Kauulu, Wailaahili, Waialaea  | One house lot, a government road, a road, <i>pali</i> , and the sea  |
| 5118   | Kaualeleiki        | Papaaea, Ha'ikū, Hanawana               | Five <i>lo 'i</i> , a house lot, two <i>kula</i> , <i>pali</i> , government road, two streams, and <i>wauke</i>            |
| 5162   | Kamohai            | Haniapuaa, Halelua, Kahakona, Waikakulu | Five <i>lo 'i</i> , a <i>kula</i> , a <i>pali</i> , and sea shore  |
| 5250B  | Uheke              | Keaweula, Paomai                        | One <i>lo 'i</i> , a <i>kula</i> , a <i>pali</i> , and sea shore   |
| 5250*M | Kanui              | Kawahae, Keahou                         | Two <i>lo 'i</i> , a <i>kula</i> , a <i>pali</i> , three <i>pō 'alima</i> , and a stream                                   |
| 5392   | Huluhulu           | Puolua, Hanehoi, Waipio                 | Two <i>pali</i> , a stream, and sea shore  |
| 5392B  | Kawahine           | Popopanui, Nuukele                      | Three <i>lo 'i</i> , three <i>pō 'alima</i> , two <i>pali</i> , and a <i>kula</i>  |
| 5392K  | Makahikipuni       | Kapapaanae                              | One <i>lo 'i</i> , a <i>pō 'alima</i> , a stream, and a <i>pali</i>  |
| 5451B  | Palea              | Kahauiki, Ulukaa                        | 25 <i>lo 'i</i> , four potato <i>mo 'o</i> , 'ie, three <i>pō 'alima</i> , a stream, a <i>pali</i> , and a road to the sea |
| 5452   | Pia                | Mauluku                                 | 19 <i>lo 'i</i> , five potato <i>mo 'o</i> , a house lot, and <i>wauke</i>   |
| 5459E  | Kuluwaimakalani    | Makauke, Hanehoi                        | Two <i>lo 'i</i> , two <i>kula</i> , a <i>pō 'alima</i> , and a <i>pali</i>  |
| 5459F  | kaahaiea           | Palau, Ohia                             | Three <i>lo 'i</i> , two <i>kula</i> , a <i>pō 'alima</i> , <i>pali</i> , and <i>olonā</i>                                 |
| 5459K  | Kamaau             | Waipio, Holawa, Mokupapa                | Two <i>lo 'i</i> and <i>pali</i>   |

LRFI for Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004-005, 007 (por.), and 2-9-014:(various parcels)

| LCA # | Claimant    | ‘Ili   | Land Use  |
|-------|-------------|--|---|
| 5459I | Pohina      | Ohia, Opae   | Three <i>lo ‘i</i> , a <i>kula</i> , <i>pali</i> , a stream, sea shore, and a government road               |
| 5459O | Hewahewa    | Papuaa, Pohaku                                       | One <i>lo ‘i</i> , a <i>pali</i> , a stream, and a road   |
| 5459R | Pahia       | Kahuku, Pulehu                                       | Two <i>lo ‘i</i> and one <i>pō ‘alima</i>   |
| 5459T | Lalahili    | Ohia, Kawahapulua                                    | One <i>lo ‘i</i> , a <i>kula</i> , a house lot, and a <i>pō ‘alima</i>                                      |
| 5459V | Kaliki      | Kuamoohua  | One <i>lo ‘i</i> , a <i>kula</i> , and two <i>pō ‘alima</i>   |
| 5459X | Imihia      | Kaalukanu, Papamuku, Puniawa                         | Four <i>lo ‘i</i> , a <i>kula</i> , potatoes, three <i>pō ‘alima</i> , a stream, the sea, and a <i>pali</i> |
| 5459Z | Kaleo       | Mohala   | One <i>lo ‘i</i> , a <i>kula</i> , and a <i>pō ‘alima</i>   |
| 5516  | Hillawe     | Kaloiki, Kamania                                     | Two <i>lo ‘i</i> , a <i>kula</i> , two <i>pō ‘alima</i> , a stream, and a <i>pali</i>                       |
| 5516B | Mua         | Kuahanahana  | Two <i>lo ‘i</i> , a <i>kula</i> , and a <i>pali</i>  |
| 5516C | Kaio        | Halenoni   | One <i>lo ‘i</i> , a <i>pali</i> , and a stream   |
| 5516D | Naoopu      | Kuahanahana  | Two <i>lo ‘i</i> , two <i>kula</i> , a stream, and a <i>pali</i>  |
| 5521  | Nakaikuaana | Halaula, Kamania, Kapahi                             | Four <i>lo ‘i</i> , four <i>kula</i> , a stream, a <i>pali</i> , and shattereded <i>koa</i>                 |
| 5521B | Kanewaa     | Halaula  | One <i>lo ‘i</i> and a <i>kula</i>  |
| 5522B | Kaopu       | Halaula, Papamuku                                    | One <i>lo ‘i</i> , a <i>kula</i> , a <i>pō ‘alima</i> , a <i>pali</i> , and a stream                        |
| 5595E | Kepaa       | Hunananiho   | 27 <i>lo ‘i</i> , a stream, fresh water shrimp, two <i>pō ‘alima</i> , and seven <i>koa</i> trees           |
| 6510D | Manoa       | Kauhamano, Waikakulu, Halumaumau, Kahikiloa, Kamania | Five <i>lo ‘i</i> , a house lot, three <i>pō ‘alima</i> , and two <i>pali</i>                               |
| 6510F | Hanauwaha   | Puuokaupu, Maoli, Kauhiulu, Pukuhale, Waikakulu      | Five <i>lo ‘i</i> , four <i>kula</i> , a <i>pō ‘alima</i> , and two <i>pali</i>                             |
| 6510Q | Kawaha      | Kalanikahuli, Waiohiwa, Kalualaea                    | Three <i>lo ‘i</i> , <i>kula</i> , and <i>pali</i>  |
| 6510R | Naone       | Kauhiulu, Lapo                                       | Two <i>lo ‘i</i> , a <i>kula</i> , a <i>pali</i> , and a stream   |

LRFI for Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas, Multiple Ahupua‘a, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004-005, 007 (por.), and 2-9-014:(various parcels)



| LCA #  | Claimant                 | ‘Ili   | Land Use   |
|--------|--------------------------|--|--|
| 6510S  | Makue                    | Lui, Panau, Haliimaumau, Waikakulu                       | Four <i>lo ‘i</i> , a <i>kula</i> , a <i>pō‘alima</i> , a stream, and a <i>pali</i>  |
| 6510T  | Kuewa                    | Waiohiwa   | One <i>lo ‘i</i> , a <i>kula</i> , a <i>pali</i> , and a stream  |
| 8515*M | Keoni Ana/John Young, Jr | Owa, Puako, Haleu, Halehaku, Holili                      | No details for Halehaku LCA  |
| 8584   | Keoho                    | Kahaniki, Kahakona, Waikakuhē, Kaiui, Kaluaalaea, Ukulei | 14 <i>lo ‘i</i> , <i>kula</i> , sweet potatoes, ‘ulu, two ‘ōhi‘a trees, <i>moku mau ‘u</i> , two <i>pali</i> , three streams, and shattered <i>koa</i> |
| 10650  | Pia                      | Kamania, Uohale, Ulukee, Puniana, Kawaipaa               | Five <i>lo ‘i</i> , a <i>kula</i> , sweet potatoes, two <i>pali</i> , <i>wauke</i> , a gobey fish stream, forest, and a road to the mountains.         |

Table 5. LCAs near the Honomanū License Area (Waihona ‘Aina 2000)

| LCA # | Claimant  | ‘Ili                        | Land Use  |
|-------|-----------|-----------------------------|---|
| 3187  | Kekio, Z. | Kekia, Keehue               | <i>Kalo</i> patch, stream, and <i>pali</i>                |
| 6723  | Malaiula  | Palawai, Niulii             | One <i>kīhāpai</i> , <i>lo ‘i</i> , and a stream          |
| 7785  | Kinolau   | Halelaau                    | A <i>pali</i> and a stream                                |
| 7787  | Wahine    | Kanaha                      | Six <i>lo ‘i</i> , <i>pali</i> , and stream               |
| 10828 | Palailē   | Niulii, Okuhekuhe, Halelaau | Nine <i>lo ‘i</i> , <i>pali</i> , ‘auwai, and a fish pond |

Table 6. LCAs near the Ke‘anae License Area (Waihona ‘Aina 2000)

| LCA # | Claimant      | ‘Ili                 | Land Use  |
|-------|---------------|----------------------|---|
| 2441  | Kealina, Tito | Lalaola, Kuoo, Pahoa | 19 <i>lo ‘i</i> , a <i>kula</i> , forest, <i>olonā</i> , two house lots, ‘auwai, and stream |
| 2442  | Kaea          | Analoa, Kiapu        | Six <i>lo ‘i</i> , a <i>kula</i> , forest, <i>hala</i> grove, and a stream                  |

LRFI for Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas, Multiple Ahupua‘a, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004-005, 007 (por.), and 2-9-014:(various parcels)

| LCA # | Claimant          | 'Ili   | Land Use   |
|-------|-------------------|--|--|
| 2443B | Kanehaku, I       | Kanemakue  | Two <i>lo 'i</i> , a pond, a <i>kula</i> , forest, <i>olonā</i> , the sea, a stream, and a <i>pali</i> |
| 4561  | Wahinemaikai      | N/A  | Two <i>lo 'i</i> , <i>pali</i> , government road, ' <i>auwai</i> , and stream                          |
| 4562  | Wailaahia         | Kaakee, Maulu, Palolena, Paula                               | 13 <i>lo 'i</i> , <i>pali</i> , stream, and a house lot  |
| 4587  | Hoonoho           | N/A  | 12 <i>lo 'i</i> , one <i>kula</i> , and a house lot  |
| 4665G | Ehu               | Kalihi, Pahoa, Kukuiohoko                                    | 17 <i>lo 'i</i> , a house lot, <i>pali</i> , stream, the sea, and <i>olonā</i>                         |
| 4665K | Kanuku            | Panaewa, Kuoo, Makaiwa                                       | One house lot, the sea, <i>olonā</i> , stream, and <i>pali</i>   |
| 4665I | Kauakahi/Kanakahi | N/A  | Three <i>lo 'i</i> , a <i>pali</i> , stream, and <i>olonā</i>  |
| 4725  | Moo               | Paakamaka  | Nine <i>lo 'i</i> and a <i>kula</i>  |
| 4726  | Makaole           | Paulae, Kaonohikaa, Pohonui, Pohoiki                         | 23 <i>lo 'i</i> , two <i>kula</i> , streams, the sea, <i>olonā</i> , a path/road                       |
| 4729  | Moo II            | Makuku, Paulae, Palolena, Maulu                              | Eight <i>lo 'i</i> , a house lot, and stream   |
| 4772  | Naiwi             | Makaku, Waieli, Waikani, Maulu, Keononalu, Kalimapuhi, Kaahu | Nine <i>lo 'i</i> , a path/road, a stream, and a <i>pali</i>   |
| 4773B | Nakihei           | Kalimapuhi, Paakamaka  | Ten <i>lo 'i</i> , an ' <i>auwai</i> , a stream, and a <i>pali</i>                                     |
| 4774  | Nalimanui         | Kealia   | Residence and a <i>pali</i>  |
| 4779  | Naiapea           | Keononalu  | 18 <i>lo 'i</i> , <i>kula</i> , and <i>kīhāpai</i>   |
| 4847  | Malaelua          | Kuoo, Paehala  | 11 <i>lo 'i</i> , a house lot, <i>pali</i> , the sea, a foot path, and ' <i>auwai</i>                  |
| 4848  | Kuluhiwa          | Ololoakeahi, Pīlanolipi, Ohia                                | Nine <i>lo 'i</i> , a <i>kula</i> , stream, and <i>pali</i>  |
| 4848C | Keliāea           | Kuoliolio  | One house lot, a <i>kula</i> , and a <i>pali</i>   |
| 4848E | Maewaewa 2        | Lalaola, Ololoakeahi   | One <i>lo 'i</i> and a house lot   |
| 4848F | Maewaewa 1        | Kekaele & Kukuiohono, Kehaele                                | The sea  |

LRFI for Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004-005, 007 (por.), and 2-9-014:(various parcels)

| LCA # | Claimant     | 'Ili  | Land Use  |
|-------|--------------|---|---|
| 4848G | Mu           | Pohakuokane, Lalaola, Waiapuka, Haleakea, Lonowai, Kaaunaku | Three <i>lo 'i</i> , a house lot, <i>olonā</i> , stream, <i>pali</i> , and <i>kīhāpai</i>                   |
| 4848H | Kailio       | Kealokekua, Makaiwa, Kanemakue                              | Five <i>lo 'i</i> , a house lot, and <i>pali</i>  |
| 4853D | Naha         | Palolena, Paulae  | Two <i>lo 'i</i> , a house lot, <i>olona</i> , a foot path, and a stream                                    |
| 4853E | Kahahahei    | Waielei, Paakamaka  | One <i>lo 'i</i> , a house lot, <i>olona</i> , stream, and ' <i>auwai</i>                                   |
| 4853G | Kuheleaumoku | Keononalu, Kapae, Kaku, Kalaalaea                           | One <i>lo 'i</i> , a house lot, two <i>olonā</i> , stream, <i>pali</i> , a foot path, a road, and a pig pen |
| 4853L | Kaopa        | Koleaamoku, Waioea, Makaiwa                                 | One <i>lo 'i</i> , a house lot, and an ' <i>auwai</i>   |
| 4854  | Mamaikawaha  | N/A   | Six <i>lo 'i</i> , a <i>kīhāpai</i> , and a stream  |
| 4856  | Kaihu        | Haleakea, Waiolea   | Six <i>lo 'i</i> , a <i>kula</i> , and <i>olonā</i>   |
| 4857  | Naohiki      | N/A   | Ten <i>lo 'i</i> , two <i>kula</i> , sweet potatoes, a <i>muliwai</i> , <i>olonā</i> , and <i>pali</i>      |
| 4865  | Kapali       | Kealia, Paulae  | One <i>lo 'i</i> , a house lot, road, and a <i>pali</i> (bordered by a prison and a chapel)                 |
| 4866  | Kaholowaa    | Waielei, Keonoulu, Paulae, Paakamaka                        | Seven <i>lo 'i</i> , a house lot, and a path/road   |
| 4867  | Wahapuu      | Keononalu   | One house lot and a <i>pali</i>   |
| 4874  | Makea        | Paehala, Kipapa   | Two <i>lo 'i</i> , a <i>pali</i> , and a pig pen  |
| 5030  | Kekahuna     | Keononalu, Paehala, Paulae, Palolena                        | Ten <i>lo 'i</i> , <i>kula</i> , a foot path, a house lot, a pig pen, ' <i>auwai</i> , and a stream         |
| 5049  | Kauoa        | Paakamaka   | One house lot, two roads, ' <i>auwai</i> , a <i>pali</i> , and a stream                                     |
| 5051  | Kamanu       | Paakamaka, Keononalu  | 34 <i>lo 'i</i> , a <i>kula</i> , a house lot, <i>pali</i> , and ' <i>auwai</i>                             |
| 5052  | Kuiki        | Palolena  | 29 <i>lo 'i</i> , a <i>kula</i> , a house site, a <i>pali</i> , and a stream                                |
| 5054  | Kaiwikaola   | Waielei   | One house lot, a <i>pali</i> , and a foot path  |

LRFI for Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004-005, 007 (por.), and 2-9-014:(various parcels)

| LCA #  | Claimant     | ‘Ili   | Land Use  |
|--------|--------------|--|---|
| 5055   | Kamai        | Paakamaka, Pololena                                    | 27 <i>lo</i> ‘i, a house lot, stream, an ‘ <i>auwai</i> , a <i>pali</i> , and a foot path                           |
| 5056   | Kumulani     | Keononalu  | 21 <i>lo</i> ‘i and a <i>kula</i>   |
| 5058   | Kauila       | Waieli   | 22 <i>lo</i> ‘i, a path/road, and an ‘ <i>auwai</i>   |
| 5059   | Kukui        | Pukalawa   | A <i>pali</i> and beach   |
| 5060   | Kalawaia     | Waieli   | Ten <i>lo</i> ‘i, a house lot, a path/road, and a <i>kula</i>   |
| 5062   | Kahakaui     | Keononalu  | 20 <i>lo</i> ‘i, a <i>kula</i> , a foot path, <i>pali</i> , beach, and an <i>olonā kīhāpai</i>                      |
| 5064   | Keahi        | Palolena, Waieli                                       | Five <i>lo</i> ‘i, a stream, ‘ <i>auwai</i> , the sea, and a path/road  |
| 5064B  | Kaluahinenui | Waikani  | Three <i>lo</i> ‘i, a <i>pali</i> , a stream, and ‘ <i>auwai</i>  |
| 5066B  | Kaohilae     | Keononalu  | No details  |
| 5068   | Kauiki       | Keononalu, Waieli                                      | 24 <i>lo</i> ‘i, a <i>kula</i> , a road, and <i>pali</i>  |
| 6769B  | Ohule        | Waieli   | Six <i>lo</i> ‘i, a <i>pali</i> , the sea, and a stream   |
| 6778   | Kapahukaa    | Pukalawa, Waikani, Piiaola, Kapaiki                    | One house lot and a stream  |
| 10828B | Kaniho       | Palolena, Kalimapuhi, Kealaalaea, Wailuaiki, Piikalawa | <i>Kalo</i> patch, streams, <i>pali</i> , a foot path, a fish pond, ‘ <i>auwai</i> , a government road, and the sea |
| 11043B | Kaumauma     | Keononalu, Piikalawa                                   | Two <i>lo</i> ‘i, a house lot, a pig pen, road, a foot path, and ‘ <i>auwai</i> ,                                   |
| 11049B | Naiilima     | Kupalu   | N/A   |

Table 7. LCAs near the Nāhiku License Area

| LCA # | Claimant     | ‘Ili | Land Use   |
|-------|--------------|------|--|
| 4561  | Wahinemaikai | N/A  | Two <i>lo</i> ‘i, <i>pali</i> , government road, ‘ <i>auwai</i> , and stream |

| LCA # | Claimant              | ‘Ili                          | Land Use  |
|-------|-----------------------|-------------------------------|---|
| 4849  | Kalohelau, wahine     | Kahoomanamana, Koakumanamoana | Three <i>lo‘i</i> , one <i>kula</i> , a house lot, road, a foot path, a pig pen, a stream and <i>pali</i> |
| 4851  | Aoo                   | Kahooana                      | A stream  |
| 4852  | Uwaua                 | Kawiwi                        | Possible residence and a stream   |
| 4869  | Kaumoki/Kaomoai<br>ki | Kaohe, Kaohipoka              | One house lot and a <i>pali</i>   |
| 4870  | Kealiiokekanaka       | Waawaa, Haawaa, Waikupo       | Four <i>lo‘i</i> , a pig pen, stream, <i>‘auwai</i> , <i>olonā</i> , forest, and <i>pali</i>              |
| 4871  | Kalahie               | Olopana                       | Stream, forest, and the sea   |
| 6768C | Naholo                | Ihuhinui                      | A house lot, <i>lo‘i</i> , road, stream, <i>pali</i> , and beach  |



inaccurate in their measurements, there is some evidence of the impact of disease in Hawai'i in this early period.

Lack of demographics regarding salient mortality rates is best explained by logistical issues present in the developing nation of Hawai'i in the early to mid-1800s. In *Historical Statistics of Hawaii*, Robert Schmitt (1977:40) explains that "statistics on deaths by cause of death are particularly lacking in long term comparability, not only because of serious underregistration in the early years but also because of major changes instituted from time to time in classification procedures." The first statewide collection of mortality statistics associated to a cause of death did not occur until the early 1900s, and then the statistics were only in terms of individuals affected and were not tabulated according to either ethnic heritage or nationality. Regardless of this glossing of demography, the early records show tuberculosis being particularly ravaging in the beginning of the twentieth century. The first half of the 1900s regularly shows over 1,000 active cases of tuberculosis with as many as 531 deaths annually (Schmitt 1977:80). Record keeping for infectious disease (barring those transmitted by intercourse) gained more coherence by the mid-1900s, demonstrating the most commonly reported disease afflictions across the archipelago were leprosy, tuberculosis, gonorrhea, syphilis, chicken pox, influenza, measles, mumps, pertussis, shigella, and typhoid (Schmitt 1977:80-82).

From the early census data it becomes evident that one of the most alarming among the contagions was influenza, which in some years had death tolls well above 1,000 souls, with some years having as many as 6,677 (Schmitt 1977:82). Such observations were frequently reported in the local newspapers, such as with an article by J.S. Green (1857:1) in *The Pacific Commercial Advertiser*, where the author reported that "we have all been afflicted with the influenza, natives and foreign residents. Not a few of the aged and feeble among the people have died." Sporadic reports begin to appear with regular frequency in newspaper editorials after this, such as a 10 February article in the *Daily Honolulu Press* (1883:1):

In the month of July of this year we had a visitation of Influenza...Very many among the foreign population were attacked, and it prevailed extensively among the natives, death not infrequently resulting with the latter, from disposing causes. Among these was John Young (Keoni Ana) the Minister of the Interior, aged only 47. (*Daily Honolulu Press* 1883:1)

Even with the high instance of mortality among Hawaiians, it should be noted that the person responsible for the census of the Kingdom in the mid-1800s, Richard Armstrong, thought the reported numbers were far too low. He believed that for every reported death two to three went unreported (Daws 1968:140). Flu was not the only concern in the Hawaiian Islands as made apparent by a newspaper advertisement in the 4 October 1892 *Evening Bulletin* announcing the closure of all Hawaiian Ports with the sole exception of Honolulu, due to Cholera outbreaks (Macfarlane 1892:2) (Figure 22). Despite the remoteness and relative isolation of East Maui there was still sporadic reporting of disease afflictions affecting the population there.

Smallpox made an appearance in the early newspaper reports regarding disease among residents of East Maui. There is a November 1853 account of the first case of small pox in Hāmākua Loa from a passenger aboard the schooner *Sally* (*The Polynesian* 1853a:2).

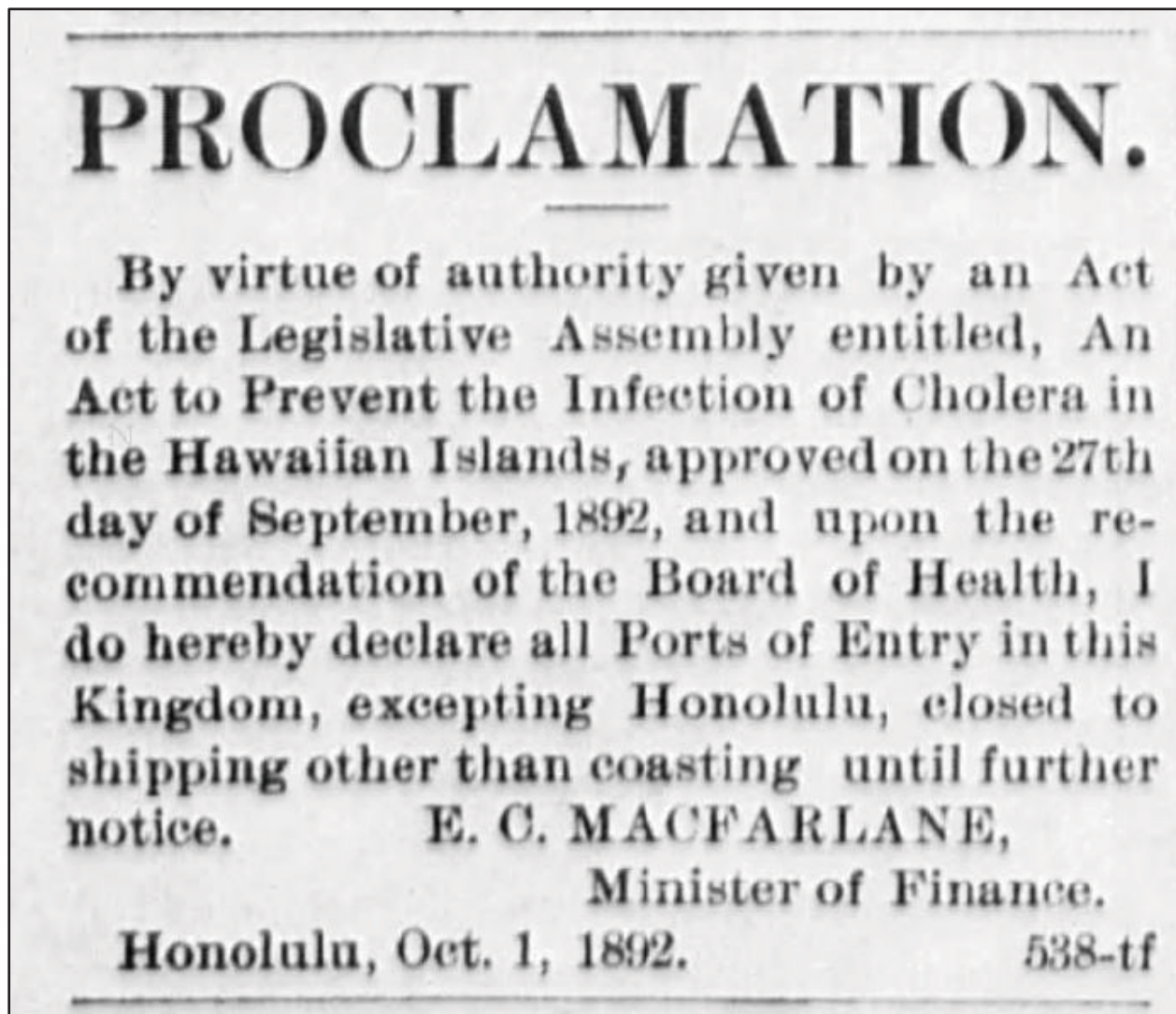


Figure 22. Announcement of port closure published in a Honolulu paper resulting from a cholera outbreak (Macfarlane 1892:2)

In a 24 December 1853 update of the account, the Commissioners of Public Health provide a description of how the disease arrived in the region as follows:

The woman, as near as we could learn from herself and her husband, left the schooner on Friday evening, and staid over night not far from Kahului. The next day she made her way home: traveling, as we suppose through Hamakuapoko, Maliko and Kalanakahua, and reached her mother's house, at Haiku, on Saturday night. This was one of five or six houses built as close together as they could stand; and we think from 12 to 20 persons occupied these houses. Sabbath morning some 30 individuals passed within a few rods of the house, on their way to meeting. One of us rode to the house and saw the woman. At 2 o'clock, P.M., he returned to the house, with the magistrate of the district, and found the woman's face covered with the small pox. She was ordered to be removed to the infected district, and the house was immediately destroyed, and the village deserted. No other case of the small pox have we had in Hamakualoa. (The Polynesian 1853b:2)

The following month, another update on small pox in East Maui is provided in the 21 January 1854 edition of Polynesian as follows:

A correspondent on East Maui writes,—"I am happy to report the state of things on this part of the island, as prosperous. There have been from six to ten cases of small pox in Hamakua, and three deaths. No new case during the past six weeks. We can now report freedom from the small pox, if no new case should be introduced from abroad. There has been no case in Koolau, none in Kula, none in Honuaula, and but one or two in Wailuku. We hear that there are but few cases remaining in the districts of Hana, Kipahulu and Kaupo." (The Polynesian 1854)

These accounts may have been related to a Honolulu epidemic of smallpox in 1853 and 1854 (Daws 1968:139) and of its impacts to the neighbor islands. It was a large pan-Hawaiian problem of which the population was wholly unprepared. Daws (1968:140) relates the scene of devastation in the more populated cities:

The Hawaiians had never given much attention to Western ideas about medical treatment, and in this instance they paid a terrible price...Hawaiians fell sick everywhere. Some were abandoned and died alone; their bodies were left to rot. Others were buried where they lay, without coffins, in graves so shallow that wandering pigs and dogs could unearth them. Some native families nursed their sick at home, devotedly and uselessly, and carefully laid the dead under the dirt floors of their thatch huts or in their house yards, following their old burial practices and condemning themselves to follow the dead into the grave. (Daws 1968:140)

Although large epidemics were rare in the eastern districts of Maui, when they did arrive, they often had devastating effects. On 2 October 1869, a brief call to action was published in *The Pacific Commercial Advertiser* describing a deadly epidemic that was occurring in Honomanū and throughout the Island of Maui as follows:

By a letter received yesterday from East Maui, we learn of the continued ravages of the epidemic fever which has prevailed for months on that Island. Rev S. Kamakahiki states, under date of the 23d, that since the 1<sup>st</sup> of September there have

been fifteen deaths at Honomanu and seven at Keanae, and that a large number of the natives were sick. From another source we learn that the once numerous population of Honomanu valley has dwindled down to two or three families. In behalf of these dying natives, we ask the Board of Health if all has been done that can be done to save them and stay the ravages of the fever? If not, is not the Board censurable? (The Pacific Commercial Advertiser 1869b:3)

The ailment to blame for the 1869 outbreak was never explicitly named, but given the poor state of disease reporting in general in more populous areas (Figure 23), it is unsurprising that only small attention was paid to this affliction from Honolulu newspapers. The testament of the reporter clearly shows that even something as common as fever could have terrible repercussions on isolated and non-immune communities. The precise impact of various diseases on the populations of East Maui is wanting in terms of public recordation, but it does call to mind the many reports of early island wide archaeological studies (Stokes 1916; Thrum 1909b; Walker 1931) that report evidences of extensive habitation and agricultural features lying abandoned throughout East Maui.

#### 2.4.3.2 Linton L. Torbert in Honua'ula

As early as the mid-1800s there was a small farming settlement located at Honua'ula, complete with a small landing for passing merchant ships traversing the southeast corner of Maui on their way to Kahului, Honolulu, and beyond. A prominent figure associated with Honua'ula at this time was Linton L. Torbert, an established rancher and agriculturalist operating a sizable tract of land in the Kula uplands and a small plantation at Honua'ula (Ulupalakua Ranch 2017). Torbert was a native of Newton Pennsylvania and his entry into the Territory of Hawai'i went quietly unnoticed.

In *Chapter of Firstling's*, Thrum (1909a) reports that, ca. 1820, a large red variety of Irish potato was introduced to Hawai'i by Captain Jos. Vaughn. Some of these potatoes were sent to Governor Hoapili on Maui where they flourished better than on other islands (Thrum 1909a:129). Torbert was a prominent figure in the potato trade that had developed between California and Hawai'i between 1845 and 1856 while he oversaw the growing of corn and potatoes on his *kula* lands on the western slope of Haleakalā. Torbert's foodstuffs were then shipped to California by way of island merchant ships to fuel the population boom associated with the California gold rush. Tolbert was also one of the first individuals to plant sugar cane on Maui under the direction of King Kamehameha III (Ulupalakua Ranch 2017), in addition to being appointed as a committee member of the Royal Hawaiian Agricultural Society (The Polynesian 1850).

In February 1846 Torbert was charged, along with one of his employees named Benjamin Furbush, in the killing of a man named Aki in the Honua'ula region. Although both men were found guilty of the crime, their sentences were commuted upon payment of \$200 each for extenuating circumstance (Cushing 1985). Robert L Cushing in his account of the proceedings found within *The Beginnings of Sugar Production in Hawaii* (Cushing 1985:22) stated that:

The circumstances of the shooting, described in the newspaper account of the trial, suggest that there was some provocation, that it was also to some extent accidental, and that Torbert and Furbush provided as much assistance as they could to Aki, in spite of which he died (Cushing 1985:22)

The exact reasons for the shooting are never explicitly detailed in Cushing's account of the incident, but neither the shooting or the verdict seemed to have adversely affected Torbert's



| Year                   | Disease                            | Deaths <sup>1</sup> |
|------------------------|------------------------------------|---------------------|
| 1804                   | "okuu" (cholera?)                  | <15,000             |
| 1818                   | "catarrhs and fevers"              | 60                  |
| 1825                   | unnamed                            | "Great"             |
| 1826                   | influenza                          | "Thousands"         |
| 1839                   | mumps                              | "Great numbers"     |
| 1848-1849              | measles, whooping cough, influenza | 10,000              |
| 1853                   | smallpox                           | 5,000-6,000         |
| 1857                   | influenza, dengue                  | "Many"              |
| 1870-1871              | scarlet fever                      | "Great"             |
| 1878-1880              | whooping cough                     | 68                  |
| 1881                   | smallpox                           | 282                 |
| 1888                   | whooping cough                     | 104                 |
| 1889-1890              | measles, dysentery                 | 26                  |
| 1895                   | cholera                            | 64                  |
| 1899-1900              | bubonic plague                     | 61                  |
| 1918-1920              | influenza                          | 1,700               |
| 1928-1929              | cerebrospinal meningitis           | 68                  |
| 1936-1937 <sup>2</sup> | measles                            | 205                 |

Figure 23. Epidemic mortality rates within the Hawaiian Archipelago demonstrating insufficiencies in detailed documentation prior to the late 1800s, from Schmitt (1977:58)



standing in the Honua'ula community. According to Cushing, "Torbert had lived several years in the district and bore among all classes an excellent character. [He] had, by his good habits and friendly conduct won the esteem of the natives" (Cushing 1985:22).

In early 1851, Torbert had become intolerant of the conditions of drunkenness in the town of Kalepolepo surrounding the nearest entrepot and landing located downslope of his *kula* plantation, acting as the closest port of sale for his *kula* produce. As part of an editorial responding to a proposed lightening of taxes on imported beer into Hawai'i, Torbert lends his account of the conditions at Kalepolepo to an unnamed "Pastor of Makawao" in *The Polynesian* (1851b:1) as follows:

Kula is full of potatoes, nearly ripe, of a fine quality...so that, with the blessings of God on good management there is nothing to prevent gains flowing in like a river...and yet there is danger that all these benefits will be counteracted by the beer shops at Kalepolepo, and other places along that shore. The people tell me they have great trouble with their teamsters... After a taste of the wretched beverage, they care little for their teams or for their loads; neglect all till they have filled themselves with this vile compound... They fill their kegs with the good creature, and take with them a sufficient quantity to make their friends drunk at home. Of this I have no doubt, and the fact is as alarming as it is shameful. (The Polynesian 1851b:1)

The decline of Kalepolepo entrepot may be the reason that L. L. Torbert began advertising the selling of his potatoes on commission from his plantation at Honua'ula starting in 1851 (The Polynesian 1851a) (Figure 24). Having worked in the region since the 1840's, Torbert used Honua'ula as a port of sale for his goods until at least 1855 (The Polynesian 1855b).

During his period of operation at Honua'ula, Tolbert was renowned for the quality of his goods. In the 1852 published meetings of the Royal Hawaiian Agricultural Society in a column appearing in *The Polynesian* (1852:2), Torbert was awarded third place in the islands for the quality of his sugar cane and first place for his Irish potato specimens. Several years later, Torbert was also awarded first place for the quality of beef (The Polynesian 1855a). Despite Torbert's excellent products, the Honua'ula plantation was put up for auction in mid-1855 (The Polynesian 1855b).

In 1862, Torbert moved to O'ahu, and died in Honolulu in 1871 at the age of 55 (The Hawaiian Gazette 1871; The Pacific Commercial Advertiser 1862). Although the growing and shipping operations by Torbert at Honua'ula were eventually closed, sugar would continue to be grown in the region by small growers, as well as by the East Maui Plantation and several decades later by the Nahiku Sugar Company.

#### 2.4.3.3 The Stranger's Home of Wailuanui

The 4 September 1869 edition of *The Pacific Commercial Advertiser* provides an account of an August 1869 journey through East Maui from the harbor in Hāna to Central Maui by reporter "H.M.W." The account describes the lush landscape, referring to the region as "The Largest [Mountain] Apple Orchard in the World" and "The Switzerland of Hawaii" (The Pacific Commercial Advertiser 1869a:3).

THE BEST QUALITY  
of  
**IRISH POTATOES**  
IN ANY QUANTITY,  
at the  
**LOWEST PRICES,**  
on the  
**Shortest Notice,**  
by  
**L. L. TORBERT,**  
at  
**HONUAULA, EAST MAUI.**

Cargoes bought on commission at \$1 50 per ton  
or 12 1-2 cents per bbl.

Enquire in *Honolulu* of A. P. Everett, or Makee,  
Anthon & Co.

There is a greater proportion of the RED pota-  
toes at Honuaula than at any other part of the po-  
tato region.

Honuaula is the most convenient anchorage at  
the Island of Maui, to get cargoes on board. 6m-17\*

Figure 24. Advertisement from *The Polynesian* (1851a:1) for L. L. Torbert's sale of commissioned potato cargo from Honua'ula

During the trip, heavy rains in Wailuanui created flood conditions that made the streams of the area impassable and the travelers were invited to stay at the house of Hiniau, described in the following passage:

Here we sought refuge in a neat native house, whose landlord, a well-to-do native, named Hiniau, invited us in, and urged us to stop for the night, as it would be impossible to cross the next stream, which was considered dangerous when swollen. This we found to be correct, as the river forms a narrow gorge, where the road passes, and the water tumbles through it from ten to twelve feet deep, compelling travelers to stop till it subsides, which it generally does as rapidly as it rises. Our host, who was an eccentric genius, decidedly loquacious and somewhat of a jester as we found, was full of praise of the resources of the valley and his house, which he called *hale malihini* or the Stranger's Home,- and on being interrogated, said he could furnish food in abundance such as fowls, pigs, fish, eggs, potatoes, taro, poi, pine-apples, oranges, bananas, &c. (The Pacific Commercial Advertiser 1869a:3)

In addition to characterizing the extreme abundance of resources that were locally available in Wailuanui, the traveler's account provides early documentation of how stream freshets affected access and travel through the region.

#### 2.4.3.4 The Growth of Early Sugar in East Maui

With the decline of the whaling industry in the Pacific in the mid- to late-1800s, the Hawaiian Islands attracted a new generation of managers, professionals, and entrepreneurs who would reshape the landscape for western enterprises and pursuits. Samuel T. Alexander and Henry Perrine Baldwin were prominent in this movement. Alexander had been sent from his family home at Lahainaluna to study at Oahu College (Punahou School) in Honolulu followed by studies at Williams College in Massachusetts. Alexander returned to Lahainaluna in 1862 as a teacher, and he is credited with using irrigation for improving the town's sugar cane and banana yields with his students (Dean 1950). Reverend Dwight Baldwin (1798-1886) had arrived in the Hawaiian Islands in 1831 and was stationed at Lahaina between 1835 and 1870. During the early 1850s, Rev. Baldwin had been granted 2,675 acres of land in northwest Maui. This land holding became the basis for enterprises expanding over areas of West Maui undertaken by his son, Henry Perrine Baldwin, during subsequent decades of the nineteenth century (Dean 1950).

With the ratification of the treaty of reciprocity with the United States in 1876, the future success of sugar in the Hawaiian Islands seemed assured. At that time, several small plantations in the districts east of Wailuku and Kahului and north of Makawao developed new plans to expand the growing of sugar. The Haiku Plantation, managed by Samuel T. Alexander, as well as the Paia Plantation of Henry P. Baldwin, and the Grove Ranch Plantation of T. H. Hobron all suffered from frequent drought. In 1867, S. T. Alexander proposed a massive construction project to bring mountain water from the streams of East Maui west to their plantations along the slopes of Haleakalā (Kuykendall 1967:64).

The stockholders of the Haiku Plantation agreed to back the project. On 30 September 1876, the government of Hawai'i gave permission to the plantations of Maui to take water from the principal six streams of the region and convey the water by ditch to their fields, for an annual rental

of \$100. The grant for the water was to last for 20 years, with the stipulation that the ditch construction be completed within the next two years (Kuykendall 1967:64). The system by which mountain water was brought from East Maui to the Haiku Plantation fields in Ha'ikū and further west onto the isthmus of Maui was the breakthrough that the sugar industry needed to flourish (Wilcox 1996:127).

The "Hamakua Ditch Company" was organized on November 2, 1876, and specifically allotted the shares and costs and the divisions of water to the various plantations, as thus;

The ownership, share of costs and division of water were 9/20ths Haiku Sugar Company, 5/20ths the Alexander and Baldwin Company, 2/20ths James Alexander, and 4/20ths T. H. Hobron. Construction of the Hamakua Ditch, which consisted of a combination of an open ditch, tunnels and iron pipes, was carried on throughout 1876-1877. Funding for the project was accomplished by the agency of Castle & Cooke. Castle & Cooke agreed to finance the project, with the belief that Samuel Alexander and Henry Baldwin could bring the ditch project in for between \$25,000 to \$50,000 (Kuykendall 1967:64).

Thrum (1877:39-42) in *Hawaiian Annual and Almanac for 1878*, published a description of the project:

The digging of the ditch was a work of no small magnitude. A large gang of men, sometimes numbering two hundred, was employed in the work, and the providing of food, shelter, tools, etc., was equal to the care of a regiment of soldiers on the march. As the grade of the ditch gradually carried the line of work high up into the woods, cart-roads had to be surveyed and cut from the main road to the shifting camps. All the heavy timbers for flumes, etc. were painfully dragged up hill and down, and in and out of deep gulches, severely taxing the energies and strength of man and beast, while the ever-recurring question of a satisfactory food supply created a demand for everything eatable to be obtained from the natives within ten miles, besides large supplies drawn from Honolulu and abroad. (Thrum 1877:39-42)

When construction got under way, Sam Alexander and Henry Baldwin began to find out what a monumental job they had tackled. Torrential rains and landslides plagued the project. Workers had to hack their way through jungle and descend sheer cliffs by rope. When the men balked at the final barrier of the sheer drop of over 300 feet at the Māliko Gulch, Henry Baldwin, who had lost an arm in a sugar mill accident, shamed them into returning to work by sliding down a rope with his one good arm (Taylor et al. 1976:87).

In July 1877, the first water began flowing through the ditch. It reached the parched Haiku Plantation 24 hours later – barely one day before the deadline set in the royal grant. Approximately 60 million gallons of water a day were soon running through the aqueduct system. The ditch had cost \$80,000, which was paid for by Castle & Cooke. At the same time that the success of the Hamakua Ditch became known in the islands, the wealthy refiner of beet sugar in San Francisco, Claus Spreckels, arrived in Honolulu. Seeing the early success of the Alexander and Baldwin partnership, Spreckels moved fast to do business with the sugar growers of Hawai'i. Within three weeks, he had bought more than half the sugar crop of 1877 and was laying plans to take over the industry as a one-man monopoly (Taylor et al. 1976:87).



Spreckels had watched the Hamakua-Haiku Ditch development on Maui with special interest, hoping it would fail so that he could pick up the pieces. Anticipating the success for the future of sugar at East Maui, Spreckels acquired 8,000 acres of barren plain adjacent to Ha'ikū and the Alexander & Baldwin properties. He then leased 24,000 acres of Crown land in Wailuku through an agreement with a prominent member of the royal family. In 1882, Spreckels was able to obtain title to these lands in fee simple. All he needed was water. Here, Spreckels turned to his friend, Kalakaua; the newly-elected king of the Hawaiian Islands. Kalakaua dismissed his cabinet, whom had previously turned down Spreckels' application for water from the same general area as Alexander & Baldwin's Hamakua Ditch. A new cabinet was appointed by the king, who then approved a new right to water for Spreckels. Spreckels went on to build his own ditch and develop his Maui lands into a profitable sugar plantation (Taylor et al. 1976:88-89).

Spreckels was quick to consolidate his gains. His sugar venture on Maui was named "Hawaiian Commercial & Sugar Company," His expenditures on irrigation and mill machinery were lavish, and his Spreckelsville plantation was nothing short of magnificent. When Claus Spreckels received permission to the use of water found in East Maui, he built his own ditch from Honomanū stream to Maui's south shore (Wilcox 1996).

#### 2.4.3.5 The Rise of Commercial Enterprise in Hāna

A 2 February 1897 article in *The Hawaiian Star* discusses the future of the Hāna region from the perspective of the continued growth of industry and commerce in Hawai'i at the turn of the century (The Hawaiian Star 1897). Hāna and the undeveloped slopes of East Maui are described as one of the last natural environments remaining in the State in the following excerpts:

The district of Hana is one of the least known to the general public of any districts on the Islands. Beyond the fact that there are three sugar plantations, viz: Hana, Reciprocity and Kipahulu, the average citizen of Honolulu knows very little about it. It is one of the districts that, like Kona and Puna, will one of these days awake out of sleep.

The prospects of the Hana district are good. The sugar plantations lie on the belt of the undulating land at the extreme east of the Island. To the northwest of Hana Plantation there is an extent of country stretching for twelve or fourteen miles, which, at one time, supported a large population, but which at present time has only a scattered villages here and there.

The energy to develop these lands must come from without, it can never come from within. Again, it is not only energy and capital that are required, but roads. The roads of the portion of the Hana district have hardly been touched since the days of Dr. Judd, who, so far as memory serves, had the present so-called road constructed. (The Hawaiian Star 1897:4)

The ambition for successful commercial cultivation in East Maui continued to be the focus of all endeavors throughout the mid- and late-1800s. Sugar, coffee, and rubber plantations were started throughout the region with high hopes of success. A 19 December 1898 article in *The Hawaiian Star* documents a large land sale in Nāhiku and describes the beginning of "the awakening" of the region to foreign industry in the following excerpts:



The land sale which took place at Paia on Saturday afternoon, December 17<sup>th</sup>, was indeed a phenomenal one. There were three lots for sale, and each of them sold for a little over five times the appraised price.

The lands in question are situated in Nahiku among the Palis of East Maui. A couple years ago it would have been hard to give the land away and no one wanted it, unless the chances of permanent government and therefore capital were assured. So the land lay a waste of guava scrub, ferns, ohia, kukui, lauhala and so forth. The thundering waterfalls crashed over the cliffs and the streams roared over their rocky beds to the ocean, with no tribute to the soil in the shape of irrigation. For miles there would be no habitation.

Now all this is being changed. The district, one of the most fertile on the Islands, awakes out of its lethargy. The valleys which have only heard the roar of the cataract and the rush of the stream will wake to the sound of the steam whistle and the ax, and man will enter upon his kingdom. Cultivation and civilization will reign, but the wild beauty of the Koolau district will be gone. Again this is progress under annexation. (The Hawaiian Star 1898)

#### **2.4.3.6 East Maui Irrigation Company**

The East Maui Irrigation Company (EMI) Aqueduct System was constructed to deliver water from the abundant watersheds of East Maui into coastal and central isthmus plantations to aid in sugar production. The EMI Aqueduct System has been in use for over 134 years and continues to collect water today for both private and municipal entities. The EMI Aqueduct System, at this time, contains 50 miles of tunnels, 24 miles of open ditches, 13 inverted siphons and flumes, and approximately 388 intakes. In addition, the system is served by approximately 62 miles of private roads, and a solar powered radio telemetry system to monitor ditch flow. The catchment begins at roughly 1,300 ft elevation and delivers water to Central Maui at an elevation of 1,150 ft, covering 18 miles from its western to eastern extent.

Built at a time when Hawai'i was still an independent kingdom, the EMI Aqueduct System was the first of its kind both in the Pacific and on the West Coast of the U.S. It is also the largest privately financed, constructed, and managed irrigation system in the U.S. The initial construction of the first section of the aqueduct system in the 1870s, named Old Hamakua, began the engineering trend of catchment ditches that would later fuel the sugar industry on Kaua'i, O'ahu, Hawai'i, and Maui, making sugar the major economic sector of Hawai'i for over a century. The aqueduct system itself is composed of a mosaic of multiple smaller ditches, all built at different times by different groups of financiers and engineers (ASCE 2001).

Hawai'i was moving through many economic and demographic shifts in the late 1800s following the intensification of Western commerce, including the continued drift of rural populations toward town centers, which made water a highly contested and protected resource on islands such as O'ahu where these demographic trends were most pronounced. This is largely because water had to be diverted from distant watersheds to support growing cities. The legality surrounding watershed catchment was continuously challenged for leaving too-little water for residents where streams were diverted by the government (Wilcox 1996). Regardless of the dismay this may have caused, the costs of abandoning water catchment had to be carefully balanced by

the Kingdom, since much more than the municipal water supply hung in the balance. In *Sugar Water: Hawaii's Plantation Ditches*, Carol Wilcox (1996:27) states:

Hawaii moved steadily through this transition because it always had something that it could trade. At first the orient traded for Hawaiian sandalwood; then the whaling fleet needed crew and provisions; there was California Gold Rush market; the westerners wanted land-and these commodities all became available. Both the markets and the resources, however, were limited, and before long they were "used up." Unless it developed a new commodity, Hawaii ran the risk of becoming a political and economic non-entity, a backwater nation. This did not fit the vision that the monarch, the resident haole, or the people had for the future of the kingdom. (Wilcox 1996:27)

The prospect of growing sugar in Hawai'i was very appealing to the Kingdom as it would provide a renewable economic base. This view was further exemplified in 1876 by "An Act to Aid the Development of the Resources of the Kingdom" in which eminent domain rights reserved for public purposes (such as water) could be applied by the government to private enterprises for the development of sugar (Wilcox 1996). Along with the Reciprocity Act of 1876 that allowed the duty-free export of Hawaiian sugar to the mainland U.S., the groundwork had been set for the start of the sugar industry in the archipelago (ASCE 2001). This new industry would require a vast amount of water as exemplified by the poem about sugar cane named *The Crop* by Beryl Blaich: "And water, all the water you can find, dig, direct, scrounge, divert, tunnel and hold. Bring the water tribute to me, King Cane" (Beryl Blaich in Wilcox 1996:v).

Old Hamakua, the first catchment marking the start of the EMI Aqueduct System, was constructed during the reign of King Kalakaua. This section of ditch was constructed by Henry P. Baldwin, Samuel T. Alexander, and James M. Alexander between 1876 and 1878 under the name of the Hamakua Ditch Company. The result of the project was 17 linear miles of non-lined ditch finished in the last days of the deadline imposed by the Kingdom (Wilcox 1996). This ditch was servicing Ha'ikū fields by July 1877 with the water it harvested from Kailua, Hoalua, Huelo, Hoolawa, and Honopou streams on its way to the terminus at Nailiilihaele Stream.

The second addition to the aqueduct system was the Spreckels Ditch, also known as the Haiku Ditch, constructed between 1879 and 1880. The lease granted to Spreckels gave him rights to all water not already in use by 30 September 1878, the same date as the deadline for the completion of the Old Hamakua Ditch. Taking advantage of his unrestricted access to all streams not currently under collection, the Haiku Ditch was twice as long, three times as large, carried 50 percent more water than the Hamakua Ditch, and stretched from Honomanū Stream to the Kihei boundary (Wilcox 1996). The ditch was 30 miles long and could deliver up to 60 million gallons per day (mgd), costing nearly half a million dollars by the time it was completed (ASCE 2001). The breadth and scale of this endeavor would redefine standards of water collection for the sugar industry in Hawai'i. The massive Haiku Ditch was the first developed by a foreign engineer, named Herman Schussler, a trend that would continue for all future additions to the EMI Aqueduct System (Wilcox 1996). Shortly after Spreckels formed the Hawaiian Commercial and Sugar Company (HC&S), construction also began on Center Ditch (1898), Manuel Luis Ditch (1900), and the Lowrie Ditch (1899-1901) by Schussler (ASCE 2001).

In 1898, Spreckels lost controlling interest of HC&S to the agency of Alexander & Baldwin, who took up and completed construction of the Manuel Luis and Lowrie ditches. Along with the Center Ditch, these two sections completed a lower elevation catchment running through the Hāmākua Loa and Koʻolau regions. Most notable was the Lowrie Ditch, sometimes called the Lowrie Canal, named after the manager from the HC&S plantation and mills at Spreckelsville, William J. Lowrie. The 22 mile-long Lowrie Ditch could deliver 60 million gallons per day and contained seventy-four tunnels (totaling 20,850 ft, with a single tunnel of 1,955 ft), 19 flumes (totaling 1,965 ft), and 12 siphons carrying water from distant Honomanū Valley to the central isthmus (Figure 25). This ditch was also engineered by a foreign expert, E. L. Van Der Neillen, and constructed by Japanese laborers under the direction of Carl Jensen (Wilcox 1996).

Following the completion of the Manuel Luis/Center/Lowrie Ditch extensions, the next large irrigation project for the Hamakua Ditch Company would be the Koolau Ditch, constructed between 1904 and 1905 by M. M. O'Shaughnessy. This extension of irrigation catchment reached an additional 10 miles toward the Hāna Region and consisted of 7.5 miles of tunnel and 2.5 miles of open ditch and flume. Given the extreme difficulty of working in the narrow and deep gulches of the region it was necessary to build a road alongside the ditch where it passed into tunneled rock, the span of these borings ranged from 300 to 2,710 ft in length (Wilcox 1996). It is this road that was famously travelled by author Jack London in 1905 (The Honolulu Advertiser 1914). This newest ditch section extended out to Makapipi Stream in Nāhiku and cost the Hamakua Ditch Company \$511,330 to complete. The Koolau Ditch was constructed concomitantly with the New Hamakua ditch, transferring the Koʻolau water further west toward Hāmākua Loa, located parallel to the Lowrie ditch but further upslope (Figure 26) (Wilcox 1996).

In 1908 the Hamakua Ditch Company was succeeded by their new business entity, EMI. The purpose of this new entity was to develop and administer the surface water collection for all plantation entities under the Alexander & Baldwin umbrella, including the newly acquired Kīhei Plantation. Shortly after this transition, in 1912, EMI added lining to the Koolau Ditch bed and started construction on the Kauhikoa Ditch. The Kauhikoa Ditch collected the water originating in the Koolau/New Hamakua ditches and carried them further west through Haʻikū, Pāʻia, and further out to Puʻunene in the central isthmus. This newest extension was completed in 1915 at 29,910 linear ft and carrying 110 million gallons per day. Shortly after starting the Kauhikoa Ditch EMI also started construction of the New Haiku Ditch in 1913. Construction of this lower altitude ditch, running from Halehaku gulch in Peahi to dry North Kīhei, was completed in 1914 with a finished length of 54,044 ft and a daily delivery of 100 mgd. The much longer New Haiku Ditch was completed faster than its Kauhikoa contemporary as the terrain it had to traverse was less severe (Wilcox 1996). Plans for the last major addition to EMI's catchment system, the Wailoa Ditch, was started in 1918. By the time this ditch was completed in 1923 it was the highest capacity channel in the entire network and had a greater median flow than any natural river in Hawaii. The Koolau Ditch was connected to the new Wailoa section, being diverted away from the New Hamakua Ditch, and connected to a series of hydro-electric power plants on the north shore of Maui (Figure 27). The Wailoa Ditch consists of 51,256 ft of mostly lined tunnel, and its water capacity ranged from 160 mgd upon completion to a later increased capacity of 195 mgd. This ditch ran parallel to, and above, the earlier New Hamakua and Kauhikoa Ditches (Wilcox 1996).



Figure 25. Surface water collection along the walls of Honomanū Valley (Wilcox 1996)





Figure 26. Koolau Ditch water diversion at Piinaau stream (Courtesy of EMI)

LRFI for Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas, Multiple Ahupua‘a, Makawao and Hāna, Maui  
TMKs: [2] 1-1 (various plats and parcels), 1-2-004:005, 007 (por.), and 2-9-014:(various parcels)



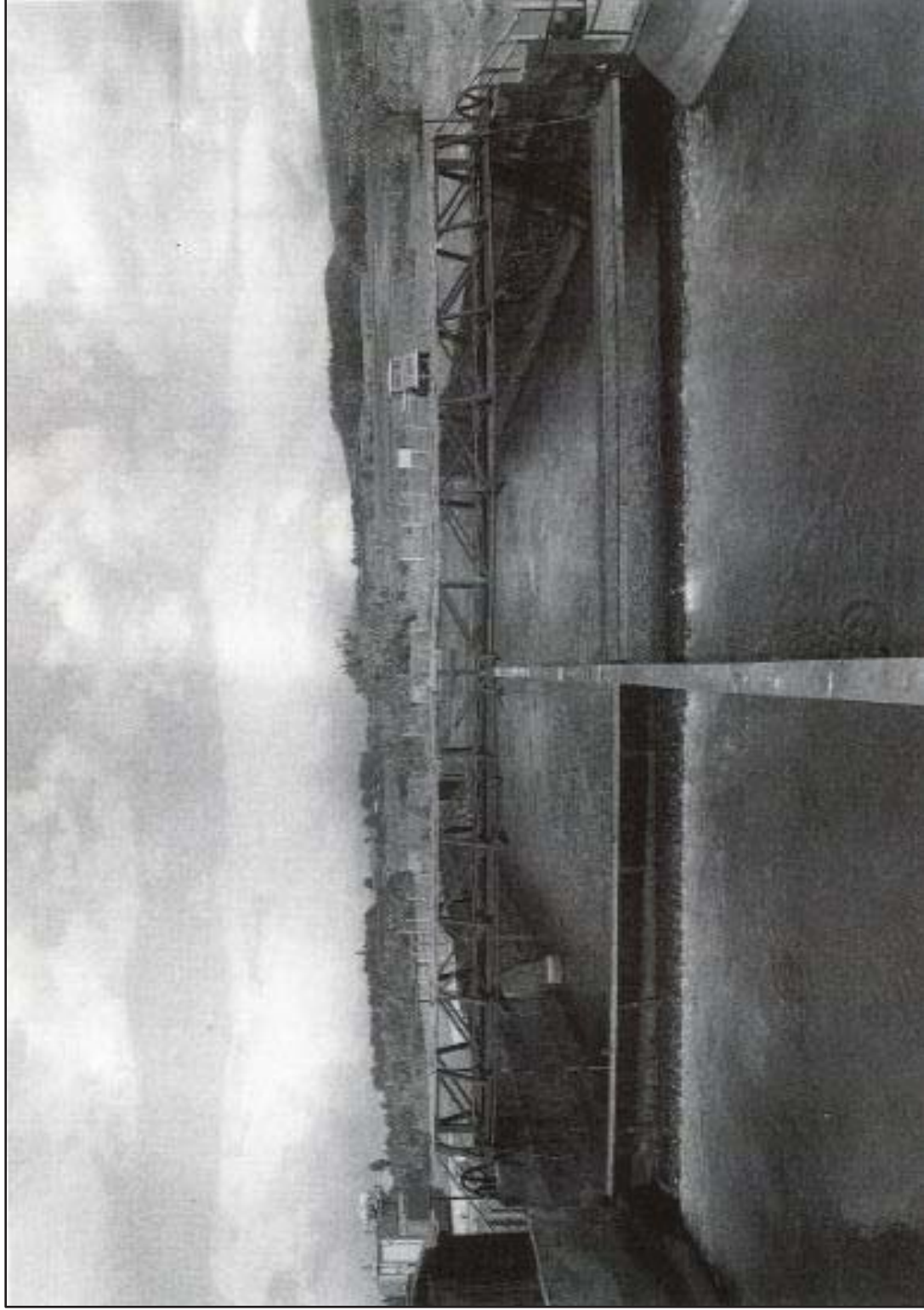


Figure 27. Wailoa forebay, a section of Wailoa Canal that drops into a low-head hydro-electric power plant (Wilcox 1996:118)

LRFI for Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004:005, 007 (por.), and 2-9-014:(various parcels)

Upon completion of the major ditch features, EMI commanded the runoff water of a combined 50,000 acres, of which EMI owned 17,000 acres and the State of Hawaii owning the balance and directed it toward their 30,000-acre sugar plantation and into various municipalities. Accompanying the water collection infrastructure were 12 siphons, 62 miles of road, 15 miles of telephone line, and numerous small feeders, dams, reservoirs, intakes, pipes, and flumes (Figure 28). The totality of the collection system was managed by four license areas (Huelo, Honomanū, Keʻanae, and Nāhiku) that dictated the circumstances and conditions under which EMI could collect the runoff from the various Government lands it crossed. The development and improvement of the EMI Aqueduct System over time has cost nearly \$5,000,000, compared to its modern assessment of nearly \$200,000,000 to create a comparable system.

#### 2.4.3.7 Nahiku Sugar Company

In the late 1890s, sugar was grown in the Nāhiku region of East Maui by the Nahiku Sugar Company. Smaller sugar growers likely planted in the region prior to the establishment of this larger plantations due to the proximity of the area to the Makapipi Stream watershed. From the beginning, water rights for the Makapipi watershed were jointly shared between the Nahiku Sugar Company and multiple homesteaders who collectively formed the body of the company's sugar growers. The business of growing sugar at the plantation in Nāhiku was also dependent upon local farmers in that a significant portion of the land under cultivation by the company was deeded to the same homesteaders who held a portion of the water rights (Honolulu Advertiser 1902:2). For a brief period, the Nahiku Sugar Company was acquired by Alexander & Baldwin. In early 1899, Alexander & Baldwin took 250 shares and were appointed agents for the 370-acre Nahiku Sugar Company. Even with significant financial backing, profits declined, and by mid-summer 1900 development work on the plantation had stopped.

In addition to the day-to-day operations, the Nahiku Sugar Company completed the construction of a landing for the Territorial Government of Hawaii in 1901 and constructed rail lines for a derrick at the landing. There is no record of the use of locomotives on the rail lines that were constructed, although the neighboring Hana Plantation began railroad operations in 1883 (Conde 1993:30). The construction of the landing at Nāhiku placed the plantation owners in additional financial hardship, and in the House of Representatives general assembly on Tuesday 25 June 1901, the *Honolulu Advertiser* reported that it was agreed upon that “the amount expended on Nāhiku landing be paid the incorporation by the Government, at whose suggestion the landing had been taken in hand and finished” (1901b:9-14). Deferring the landing's construction cost to the Government proved to be of minimal short-term financial benefit to the company.

In 1902 local homesteaders petitioned their Congressman, Delegate Wilcox, not to grant additional water rights to the Nahiku Sugar Company that would infringe on the already established rights of the local farmers who had since had a falling out with the Company. Water rights and land were shared from the start, so when local homesteaders refused to plant additional cane for the mill in response to a perceived threat to their individual water rights, the Nahiku Sugar Company petitioned for additional water rights from neighboring watersheds in inaccessible gulches to the northwest to supplement the shortage. Since the initial licenses were upheld, and the homesteaders' rights protected, the Nahiku Sugar company was forced to “either get more land under cultivation, or the plantation must be given up” (Honolulu Advertiser 1902:2).



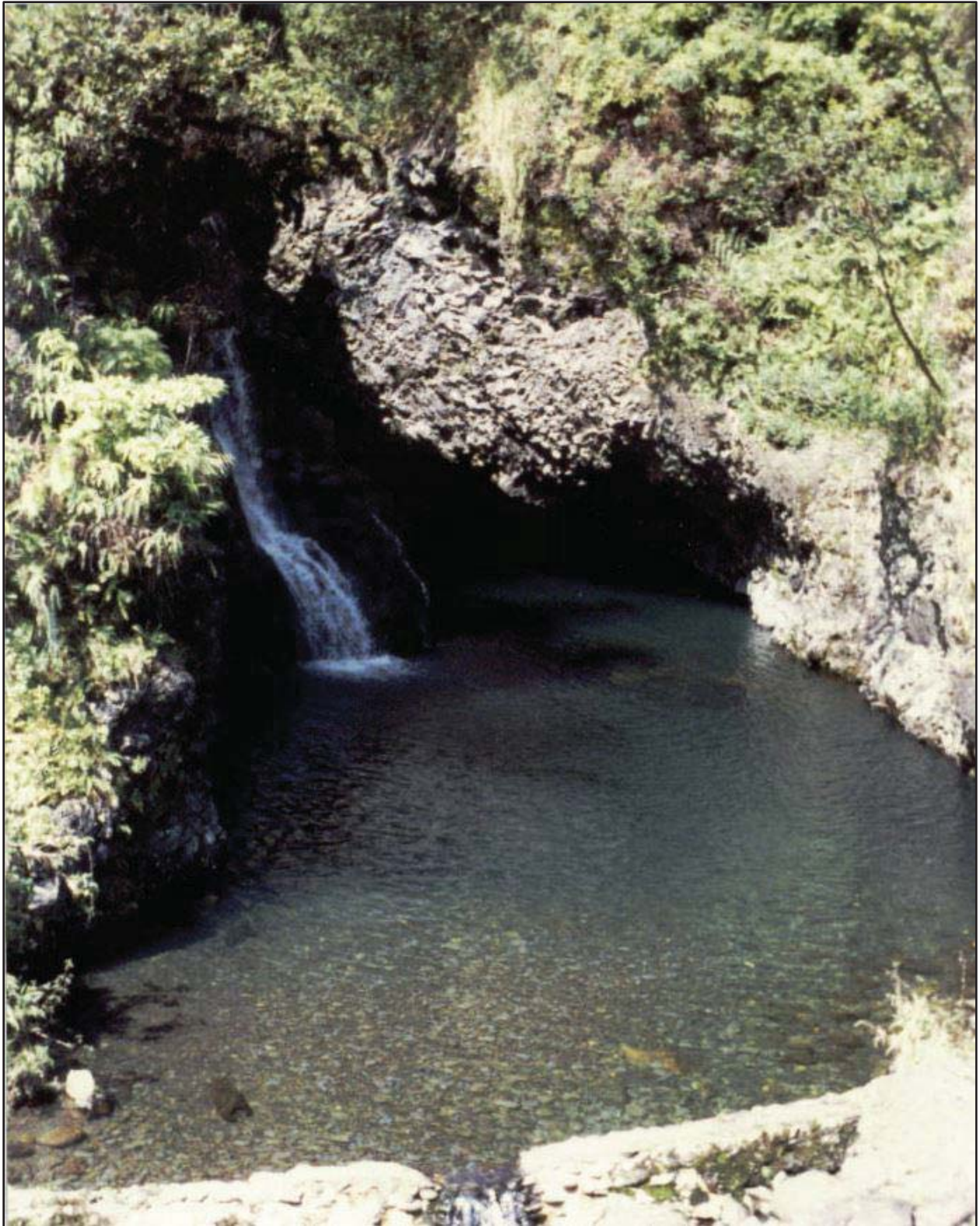


Figure 28. Collection of water at Hanawi Dam near Ke‘anae (Courtesy of EMI)

Eventually, the founding homesteaders gave up on the Sugar operation altogether, putting the company at risk of collapse due to insufficient land and water access for continued cane cultivation. In a *Honolulu Star Bulletin* article dated 24 July 1943, Mrs. Shaw, widower of a Nahiku Sugar Company homesteader, summarized the failed operation as follows:

Mr. Shaw and I moved from Paia, Maui, to our newly acquired homestead of 125 acres at Nahiku, on the windward side of Maui. At that time the land was in its virgin state and unimproved...and Mr. Shaw planted cane for the Hana plantation while plans were being developed for the Nahiku Sugar Co. The prospects for this new company were so promising that all those owning land there were planning to plant for the newly organized plantation, but unfortunately the company failed. In 1903 we had to vacate our homestead and came back to Honolulu. (*Honolulu Star Bulletin* 1943:6)

In 1902, a merger was planned with the Hana Sugar Plantation by which the plantation would pay an annual rental of \$4,500 over a 26-year lease which included a valuable set of water rights (Thompson 1902:272). In 1904, Alexander & Baldwin bought out all the remaining stock in the Nahiku Sugar Company (Dean 1950:62). Efforts were made by the company to diversify their planting operations, potentially adding a new income stream to the business by dedicating ten percent of their arable land (200 acres) to the cultivation of latex rubber (Pacific Commercial Advertiser 1910). The rubber industry had a short boom in the region around this time with several other rubber plantations opening around the Nahiku Sugar Company. Attempting to capitalize off this new regional industry did not pan out for the company, since in the years leading to 1920, all rubber plantations in the area had closed (see Section 2.4.4.2 Nahiku Rubber Plantations). Eventually, all the former sugar plantation land at Nāhiku was acquired by HC&S and EMI under the parent corporation of A&B (Hatch 1922:1410).

#### 2.4.4 1900s

According to the Census Bulletin of 1900, the population of Hāna District was reported to be 5,276 and the population of Makawao District was reported as 7,236 (Thrum 1909a:18). The Board of Health reported 755 births and 422 deaths in Maui County in the year 1900 (Schmitt 1977:13). An interesting population dynamic of this period of time is that while the populations of the Wailuku and Makawao districts continued to grow by at least a thousand inhabitants every ten years, there is a corresponding negative effect on the population of Hāna. Official census figures have the Hāna population shifting from 5,276 persons in 1900 to only 969 persons in 1970 (Schmitt 1977:13-14). While disease and urban drift may play a role in these figures, there is also the added regional strain of the establishment, and subsequent collapse, of agricultural industries throughout the East Maui region. While East Maui was originally slotted for agrarian development in the eyes of the early developers, this industry would, during the course of the twentieth century, gradually give way to tourism as its primary draw to visitors and businessmen.

A feature section in the 4 September 1910 edition of the *Honolulu Advertiser* documents an August 1910 tour through the Hāna District of Maui by H.M. Ayres, a reporter for the paper (The *Honolulu Advertiser* 1910:13). The tour, which began on the government road and then continued along the Ko'olau Ditch trail, provides a first-hand account of the region, albeit from an outsider's perspective, along with photographs of homesteads, homesteaders, landscapes, and prominent structures. While passing through Honomanū Gulch, Ayers relates "...there is none more

impressive in the islands. Its beauty baffles description and were its attractions name widely known, tourists in plenty would assuredly visit..." (The Honolulu Advertiser 1910:13). Continuing along the ditch trail to Ke'anae, Ayers stopped at the house of Halemano and recounts the following observations of life in Ke'anae:

At the house of Halemano we were made very welcome, supper being ordered by our host at a Chinese restaurant nearby. He naively remarked that poi and fish were no good for haoles. Halemano, who is postmaster and political boss of the precinct, is a dignified old native. His house is on the campaign circuit and when election time rolls round there are stirring times at his residence. His daughter, Aunie, is easily the belle of the district.

Many of the Keanae girls have Chinese husbands and appear to be quite happy with them. They are better providers than the Hawaiians and this probably accounts for the phenomena.

Before leaving Keanae we offered to buy a squid stone from Halemano but the old man refused to part with the relic, declaring that it was his wife's and that he didn't need the money-a rare thing with the average Hawaiian today.

While we were in Keanae the natives were conspicuous by their absence. Returning for some article that I had forgotten, after my departure, I found quite a gathering discussing the business of the malihini haoles while across the rice fields men, women, and children were hastening toward the house of Halemano. (The Honolulu Advertiser 1910:13)

Nāhiku was the next stop on the tour for Ayers who was welcomed by C.S. Austin, manager of the American-Hawaiian Rubber Company. Ayers described the rubber industry in Nāhiku (described in greater detail in subsequent sections) and provides the following account of the work and resources in the region:

There is a very good class of Hawaiian at Nahiku, industrious and contented. The rubber affords them more or less constant employ and fish are very plentiful off the shore. The natives working for Mr. Austin regard him as a friend. He speaks their language fluently and both he and his mother have, by their helpful attitude, endeared themselves in the hearts of the Hawaiians of Nahiku. (The Honolulu Advertiser 1910:13)

The account of Mr. Ayers illustrates a significant degree of social interaction and integration between the lifestyles of the Native Hawaiians, *haole* (foreign) businessmen, and the various ethnic laborers and homesteaders that had adopted the region as home. Though agrarian industries were still trying to scratch profits from the rocky slopes of Makawao and Hāna District's coastal plantations at this time, the makings of East Maui as a destination of note for travelers to the islands was in the making. Tourist activity would become more frequent with the advancement of local infrastructure into the region, eventually supplanting agriculture as the economic cornerstone of the region.



#### 2.4.4.1 Jack London

In the summer months of 1907, renowned travel writer Jack London and his second wife Charmian, stopped at Maui on the South Pacific portion of their sailing trip around the world to travel the ditch trail across the Hāna District. His horseback travels around Haleakalā and overland to Hāna appeared in his book “The Cruise of the Snark,” a non-fiction account of London’s travels and experiences during their world tour that was published in 1911. In select excerpts from London’s book reprinted in *The Honolulu Advertiser* (1914:10) the beautifully rugged East Maui coast is described as follows:

The windward side of Haleakala is serried by a thousand precipitous gorges, down which rush many torrents, each torrent of which achieves a score of cascades and waterfalls before it reaches the sea. More rain comes down here than in any other region in the world... Hundreds of inches of rain annually, on fertile soil, under a tropic sun, means a steaming jungle of vegetation. A man, on foot, cutting his way through, might advance a mile a day, but at the end of a week he would be a wreck, and he would have to crawl hastily back if he wanted to get out before the vegetation overran the passage way he had cut. (Jack London in *The Honolulu Advertiser* 1914:10)

London also observed the lay of the land near the Ko‘olau Gap in Haleakalā Crater, travelling into Hāna, Ke‘anae, and eventually Nāhiku. As a keen observer and seasoned writer, London took notice of the abundance of water flowing from the local watersheds. London also inspected the rubber plantation at Nāhiku and traveled by way of the Nāhiku Ditch Trail, of which he commented:

Water means sugar, and sugar is the backbone of the Territory of Hawaii, wherefore the Nahiku Ditch, which is not a ditch, but a chain of tunnels. The water travels underground appearing only at intervals to leap a gorge, travelling high into the air on a giddy flume and plunging into and through the opposing mountain. This magnificent waterway is called a “ditch,” and with equal appropriateness can Cleopatra’s Barge be called a box-car... There are no carriage roads through the ditch country, and before the ditch was built, or bored, rather, there was no horse-trail... O’Shaughnessy was the daring engineer who conquered the jungle and the gorges, ran the ditch and made the horse-trail. He built enduringly, in concrete and masonry, and made one of the most remarkable water-farms in the world. Every little runlet and dribble is harvested and conveyed by subterranean channels to the main ditch. But so heavily does it rain at times that countless spillways let the surplus escape to the sea. (Jack London in *The Honolulu Advertiser* 1914:10)

Turning his attention from water collection of the Nāhiku Ditch to the engineering feat of the ditch trail running alongside of it, London comments on the trials of the passage:

The horse trail is not very wide. Like the engineer who built it, it dares anything. Where the ditch plunges through the mountain, it climbs over: and where the ditch leaps a gorge on a flume, the horse trail takes advantage of the ditch and crosses on top of the flume. That careless trail thinks nothing of travelling up or down the face of precipices. It gouges its way out of the wall, dodging around waterfalls or passing under them where they thunder down in white fury; while straight overhead the

wall rises hundreds of feet and straight beneath it sinks a thousand... The only relief from the flumes was the precipices; and the only relief from the precipices was the flumes, except where the ditch was far underground, in which case we crossed one horse and rider at a time, on primitive log-bridges that swayed and teetered and threatened to carry away... The ceaseless iteration of height and depth produced a state of consciousness in which height and depth were accepted as the ordinary conditions of existence; and from the horses back to look sheer down four hundred or five hundred feet became quite commonplace and non-productive of thrills. And as carelessly as the trail and the horses, we swung along the dizzy heights and ducked around or through the waterfalls... I advise only those with steady nerves and cool heads to tackle the Nahiku Ditch trail. (Jack London in The Honolulu Advertiser 1914:10)

Some of the heights experienced by riders on London's overland expedition were said to have shaken even the steadiest nerves. London relates an incident involving a lifelong cowboy from a local ranch with a reputation for fearlessness, having to dismount his horse while crossing a particularly deep gorge on a flume, gladly surrendering his reputation for the security of knowing he would be returned safely to his wife and children (The Honolulu Advertiser 1914).

The creator of the aqueduct system and its horse trail traveled in London's narrative, Michael M. O'Shaughnessy, was considered at the time the world's foremost irrigation engineer. O'Shaughnessy arrived in the Hawaiian Islands in 1899, and engineered the 1904-1905 Ko'olau Ditch through Nāhiku, referred to by London as the "Nahiku Ditch" (Wilcox 1996:117). Of the condition surrounding the construction of this section of the Ko'olau Ditch and its accompanying trail, O'Shaughnessy reported:

The country was so steep and precipitous that little ditching could be employed, and it was necessary to make four and one-half miles of wagon road and eighteen miles of stone paved pack trails to facilitate during construction the transportation of supplies. About 4000 barrels of cement and 100,000 pounds of giant powder were used. In all, ten mountain streams are intercepted, which are admitted into the main aqueduct through screens of grizzly bars spaced three quarters of an inch apart (O'Shaughnessy in Wilcox 1996:117)

London's visit to East Maui could not have been better timed and his observations more appropriate considering the ongoing development of agricultural endeavors in the Hāna District. Surely his descriptions of the local watersheds, his experiences in plantation communities, and the feats of engineering that connected them would reach many readers abroad by way of his penmanship. Even the impressive engineering feats London witnessed in this environment could not detract from the wildness of the surrounding countryside he observed:

The vegetation ran riot over that wild land. There were forests of koa and kolea trees, and candlenut trees... Wild bananas grew everywhere, clinging to the sides of the gorges, and, overborne by their great bunches of ripe fruit, falling across the trail and blocking the way. And over the forest surged a sea of green life, the climbers of a thousand varieties, some that floated airily, in lacelike filaments, from the tallest branches; others that coiled and wound about the tree like huge serpents; and the one, the ie-ie, that was for all the world like a climbing palm, swinging on

a thick stem from branch to branch and tree to tree and throttling the supports whereby it climbed... In fact, the ditch country is nothing more nor less than a huge conservatory. Every familiar variety of fern flourishes, and more varieties that are unfamiliar, from the tiniest maidenhair to the gross and voracious staghorn, the latter the terror of the woodsmen, interlacing with itself in tangled masses five or six feet deep and covering acres. (Jack London in The Honolulu Advertiser 1914:10)

London's visit to the Nāhiku Ditch trail and to East Maui capture both the wildness of the countryside and the efforts of twentieth century business men to tame it in the name of commerce. The living in this area was rough and isolated, a fact that would become better known to the many agriculturalists who called Nāhiku their home during this period of plantation development in the area. Even with the collapse of the Nahiku Sugar Company's planting operations around the same time, the wild country with its abundant water and volcanic soils would continue to be a powerful draw for agriculturalists seeking their fortunes.

#### 2.4.4.2 Rubber Plantations in Nāhiku

In the early 1900s, Nāhiku became the site for several competing rubber plantations attempting to serve a growing demand for rubber used in automobile tires (Lindsay 1907:289-290). The *Hawaiian Gazette*, in a 1906 article, detailed the prospective changes to the region resulting from the introduction of rubber a year prior:

A little over a year ago a few homesteaders dwelt in Nahiku, living on their land chiefly because they hadn't money enough to go elsewhere. Wild bananas gathered in the jungles, mixed with guavas from the lower hillsides and washed down with milk from the cattle that wander in the forest, this was their means of subsistence. But the last year has demonstrated that rubber trees will grow in the district and the Nahiku of a year ago would scarcely be recognized now. (*Hawaiian Gazette* 1906:6)

Rubber planting was welcomed into the community by the residents as an avenue to bring income to the region after the closure of the nearby sugar plantation. With the local Nāhiku Sugar Company's difficulties in growing commercial sugar in the area, the Nāhiku region fell into a state of "innocuous desuetude...so the district has lain idle and the residents there have grown poorer and poorer until many families were on the verge of starvation" (*Hawaiian Gazette* 1906:6). Outlook for the profitability of rubber was good according to industry experts. R. H. Anderson, having studied rubber cultivation in Brazil, the West Indies, and Mexico, made a visit to Nāhiku in 1905 to survey the environmental conditions. During this visit Anderson planted a handful of rubber trees to monitor their growth rate, and tapped several existing trees serving as shade near Nāhiku Landing to gauge latex output of local rubber. After witnessing good latex flow from the mature trees near the landing, and the several feet of growth of his experimental saplings in just a few short weeks following heavy rains, Anderson was convinced that "rubber trees would not only grow, but would produce rubber" (*Hawaiian Gazette* 1906:6). This visit by Anderson set the stage for the emergence of the rubber industry as attested by the *Hawaiian Gazette* nearly a year later:

That little grove of trees planted by Mr. Anderson in January, 1905, is now a thriving young orchard...so high that a man on horseback may ride beneath their

lower branches without bending his head. And other orchards are being planted all along the nearby slopes of Haleakala, the primeval forest is falling before the axes of forces of laborers, and little rubber saplings from a foot to ten or eighteen feet in height are springing up everywhere to eventually clothe the mountain sides. (Hawaiian Gazette 1906:6)

Four chief rubber companies operated in the region by 1907, with all companies dedicating a combined total of 1100 acres to the cultivation of cerea (*Manihot glaziovii*) and hevea (*Hevea brasiliensis*) rubber tree varieties, with the former being favored over the latter due to its high “first returns” (Pacific Commercial Advertiser 1910:9-12). The first plantations to open in the region were the Nahiku Rubber Company and the Koolau Rubber Company in 1905, followed a year later in 1906 by the opening of the Hawaiian-American Rubber Company and the Alexander & Baldwin-owned Nahiku Sugar Company, who began cultivating rubber trees on former cane land. When taken together, the combined plantings of the four major companies were more than 280,000 individual rubber trees, with the fields being tended by Japanese, Portuguese, and Hawaiian laborers living in the region as homesteaders or in plantation labor camps. Growing rubber was a difficult business to start in Nāhiku considering that the average maturity rate for a rubber tree is between three and five years, resulting in the first ‘experimental’ tapping of these crops in 1910 to determine quality, and not emerging onto the national market until a sizable crop could be harvested in 1911. Some companies, such as the American-Hawaiian Rubber Co., attempted to diversify their plantation by cropping corn in the spaces between the furrows of rubber trees in an effort to offset the costs associated with the long wait for the rubber trees to reach productive maturity (Pacific Commercial Advertiser 1910). Attempting commercial agricultural operations in a region as isolated as Nāhiku in the early 1900s proved to be an insurmountably difficult undertaking for the growing rubber enterprise on East Maui.

#### 2.4.4.2.1 *The Nahiku Rubber Company*

The Nahiku Rubber Company was in operation as early as 1905. As the first rubber plantation on Maui, the Nahiku Rubber Company sought to spearhead the new burgeoning demand for rubber on the international market. At the time of the company’s founding, automobile manufacturing was a booming industry and automobile tires cost the average consumer between \$25 and \$40 a piece “because rubber was scarce and expensive, most of the world supply being gathered from wild trees in the Amazon valleys of Brazil” (Smith 1943:10). Accompanying literature of the time regarding the cultivation of rubber in the tropical British Colonies of Malay and Ceylon was filled with highly optimistic accounts of the big profits to be made in the industry. Expecting significant returns from the undertaking the Nahiku Rubber Company, promoters purchased approximately 900 acres of land and immediately started clearing fields and building roads, labor camps, and houses for the staff (Figure 29) (Smith 1943).

Expenditures on the Nahiku Rubber Company facilities were soon augmented by the difficulties encountered by the early growers once planting had started (Figure 30). The first crop had been comprised of 50,000 rubber tree seeds imported from Brazil, some of the seeds germinated while the rest had failed to sprout. In the wake of these losses the company decided to scout the island for established trees already growing in people’s residences, and the company offered cash to acquire the domestic trees to their plantation. With the plantation being as remotely located as it was, the company would cut the trees down and transport the stumps to the fields for replanting,

which the managers viewed as a shortcut to bypass the long wait for seedlings to reach maturity (Figure 31). Very soon the capital for the project was expended, and the company began selling stock to raise more money for the plantations day to day costs of operation. Economic forecasts for the rubber industry did not live up to their expectations, and by the time that the Nahiku Rubber Company had a fully planted and matured 250 acres ready for tapping, the price of rubber had bottomed out at 16 cents per pound. Depending heavily on an all-inclusive low of one dollar per pound for their product, the domestic rubber market in Hawai'i could not remain profitable. The Nahiku Rubber Company, Ltd., managed by David Colville Lindsay at that time, was closed on January 20, 1915 (Siddall 1917:175).

#### 2.4.4.2.2 Koolau Rubber Company

In June of 1905, William A. McKay organized the Koolau Rubber Company at Nāhiku, and served as managing director during its first year of operation (Nellist 1925). By 1906, a year after the Koolau Rubber Company was founded, the prospects for the rubber plantation looked promising. A *Maui News* article from 1906 echoed this optimism by stating that “It is confidently expected that the growing of rubber will be one of the most successful industries on the island and will make possible the utilization of many acres of land that are now useless” (The Maui News 1906:13). The optimism was partly justified because upon return from an inspection of the plantation, the company representatives R. A. Wadsworth and W. L. Decoto reported a 15-foot growth of the previous year's crops that had been planted from seed. The luxuriant growth of the crop exceeded their expectations. The costs of cropping the rubber trees were also small for the time, costing the company only six dollars per acre to clear the dense vegetation and only about one cent per hole for planting saplings. At the time of this assessment, Koolau Rubber Company had only planted 25 acres of their 300-acre holdings and were expecting their next shipment of saplings later that year (The Maui News 1906).

By 1914, the Koolau Rubber Company had nearly its entire acreage planted and was poised to produce its maximum output, but the simultaneous fall of rubber prices on the world market forced the company into considerable financial hardship. Prices had dropped so drastically that the cost alone of tapping the trees on the plantation would have drained all the profit from the company's sales and would incur debt. The company had not been a profitable venture from the start and had been carried for some time by a small number of wealthy shareholders waiting patiently for the projected returns. In the end, rubber prices never rose to a profitable value for the Koolau Rubber Company and the prospect of severe economic atrophy had finally won out over the determination of the shareholders to keep the company in operation. In 1914, the Koolau Rubber Company published its notice of intention to foreclose on the \$30,000 dollar mortgage from the First National Bank of Wailuku and begin winding down operations immediately (Honolulu Star Bulletin 1914).

#### 2.4.4.2.3 American-Hawaiian Rubber Company

As early as 1906, the American-Hawaiian Rubber Company was in operation in East Maui with over 65,000 juvenile trees in the ground (The Hawaiian Star 1906c). In 1908, American Hawaiian Rubber Company fields were evaluated by F. T. P. Waterhouse who was particularly well pleased with the growth of the rubber trees. The hevea variety of rubber tree was the primary crop at this plantation with higher year to year yield being cited as the reason this species was





Figure 29. Nāhiku hillsides planted with rubber tree saplings; plantation manager's house visible on the ridge (Pacific Commercial Advertiser 1910)

LRFI for Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004:005, 007 (por.), and 2-9-014:(various parcels)



Figure 30. Seedlings being planted at the Nahiku Rubber Company (Pacific Commercial Advertiser 1910)





Figure 31. Nahiku Rubber Company Manager C. H. Anderson riding among his rubber tree saplings (The Honolulu Advertiser 1908)

chosen over the more commonly planted cerea tree. The company also experimented with castilloa rubber trees from Mexico and with interstitial planting of select food crops between the widely spaced rubber trees. The use of hevea trees was initially not as beneficial as had been anticipated by the American-Hawaiian Rubber Company. Initially, the hevea trees were planted during the winter months as the this was when the seed crops originating in the southern hemisphere were maturing and ripe for shipment, the abundance of which made the cost of procurement less expensive. Even though the trees in the region were generally doing well, this error in planting times was cited as being the reason why timely maturation and first yields were lacking (The Honolulu Advertiser 1908). As with the neighboring plantations in the area, once the trees were planted and growing the enterprise became a waiting game until the trees were mature enough to harvest. An article in *The Honolulu Advertiser* (1910:13) relates the continued optimism as harvest approached:

The product is of prime quality, there is a keen demand for it as a result of samples sent out, and the price continues to rule high. Small wonder that the Nahiku rubber planters impatiently watch the growth of their trees and pray that the price of rubber may keep up. They have had a hard row to hoe, but have stuck manfully to their work...There seems to be no doubt as to the ultimate success of the rubber enterprise, which has been removed for beyond the experimental stage, as far as paying returns are concerned. (The Honolulu Advertiser 1910:13)

New techniques, cultivation of a variety of species, planting additional crops between rubber trees, and patience did not pan out for the American-Hawaiian Rubber Company, and in 1917 the company gave notice of foreclosure on their mortgage in local newspapers (Honolulu Star Bulletin 1917).

#### 2.4.4.2.4 *Nahiku Sugar Company*

Unlike other rubber ventures in the region, the Nahiku Sugar Company approached the planting of rubber with a bit more caution and tempered enthusiasm than their neighboring competitors. Whether this approach was resulting from the failure of the plantation to successfully crop sugar a decade earlier is uncertain, but by the time that the rubber industry had begun to grow in the region the Nahiku Sugar Company lands were in a severe state of neglect (The Hawaiian Star 1907). Sometime between late 1905 and early 1906, Alexander & Baldwin hired a new manager for the former sugar plantation at Nāhiku by the name of J Sylvester from Portland Maine (The Hawaiian Gazette 1908). By late 1907 Sylvester had planted nearly 100 acres in cerea rubber trees mimicking the other local plantations with a rough planting of about 400 individual trees per acre under cultivation (The Hawaiian Gazette 1907). Details about rubber crops specific to Nahiku Sugar Company regarding the product quality and progress of growth are scarce, but in general, their rubber crops seem to have lacked the same profitability as the neighboring plantations. By the time that the manager of the Nahiku Rubber Plantation, W. A. Anderson, brought a group of potential investors through the region to evaluate the state of rubber growth in East Maui, The Nahiku Sugar Company manager had decided that the next years plantings would not be as close together and that he would be experimenting with hevea variety trees in the next plantings (The Hawaiian Gazette 1908). The new planting techniques either came too late or were of little profit to the company as under two years after first planting a portion of their land to rubber the plantation manager announced that no more rubber would go into the ground until the already developing

downward trend in rubber's market value reached a more favorable standing (The Maui News 1907)

While rubber cultivation was in full swing, the plantation managers made it their business to regularly test the crop productivity to better gauge the long term financial viability and estimate future yields, especially W. A. Anderson who managed the Koolau Rubber Company and oversaw a government experimental station for the express purpose of evaluating the local rubber industry. Initial rubber tree tapping in 1912 yielded an "enormous quantity" of the valuable latex sap, and appeared to bode well for the profitability of the local plantations (The Maui News 1912:1). Although the sap was voluminous it was found to lack the elastic qualities that would have made it ideal for tire production, and instead the rubber produced in East Maui was only suitable for "machine belts and other articles which do not demand the elastic qualities" (The Maui News 1912:1). Just how profitable the non-elastic latex sales would be was unclear at the time of the published article, as the market for those goods was not in as much demand as the need for automobile tires.

Ultimately a decline in the price of rubber doomed the Maui rubber industry. After testing for several years, the rubber growers concluded that it would not be profitable to continue. It was found that the temperature was hardly warm enough for rubber to grow best and that labor was much more expensive than at Malaysian plantations (O. W. Freeman 1927:64).

#### 2.4.4.3 Ke'anae

Ke'anae is located on the windward flank of Mauna Haleakalā in the Hāna District and traditional *moku* of Ko'olau within the ahupua'a of Ke'anae. Once a site of intensified Native Hawaiian agriculture and habitation, and later becoming a center for missionary and agricultural activities during the 1800s, Ke'anae packed several hundred years of historical development into a single stream-fed coastal valley peninsula. Though the region experienced varying degrees of economic boom and bust over its storied history, that history would become the next major draw to the region and supply income to its residents where subsistence and industry fell short.

##### 2.4.4.3.1 Ke'anae Homesteads

Ke'anae has been an active agricultural community for many generations. Studies of the history of land use in Ke'anae indicate that the lands have been used intensively for wetland taro cultivation, or *lo'i* agriculture, historically and during pre-Contact times (Group 70 International et al. 1995:70; E. S. C. Handy et al. 1991). As Native Hawaiian populations of the islands declined with the arrival of western disease, so too did the need for taro, resulting in unattended *lo'i* in the Ke'anae area. In the second half of the nineteenth century, the market for rice grew significantly with increasing demand from Chinese laborers on sugar plantations in Hāna. After successfully completing labor contracts, Chinese immigrants looking for independent pursuits took advantage of an opportunity to grow their own staple, rice (Wright 1974b). With a pond field irrigation system already in place in Ke'anae, the region was ripe for conversion from taro cultivation to rice. Chinese entrepreneurs commonly leased former *lo'i* lands from Hawaiian owners for rice cultivation (Group 70 International et al. 1995). Tax records for 1890 indicate that the rice lands in Ke'anae and Wailuanui comprised approximately 67.84 acres out of a total of 163.322 acres in pond-field agriculture. Two years later, this number rose to 75 acres in Ke'anae and Wailuanui while other lands on Maui (Honokowai, Waikapu, Wailuku, Waiehu, and Waihe'e) registered a combined acreage of 175 (Group 70 International et al. 1995; Linnekin 1985).



The Chinese farming community flourished in Keʻanae, and with an increase in population came the construction of buildings necessary for production and housing related to the rice plantations, as well as the establishment of socially-related organizations. An article in *The Hawaiian Star* (1906b) reports of two saloons “run by Chinamen”. The Li Hing Society Building (SIHP # 50-50-07-1510), a two-story wooden structure with a second story front porch, was built in 1908 and served as a place for Chinese social, religious, and educational purposes until the early 1950s (Figure 32) (Wright 1974b). After falling into disuse, the building was subject to repeated vandalism until, in 1981, it was demolished (Group 70 International et al. 1995). Remnants are now stored at the Kwock Hing Society in Keokea, Kula (Wright 1974b).

In 1906, 14 applications were received out of the 16 Keʻanae homestead applications made available at that time to Hawaiians. Stipulations required occupants to build a residence and cultivate taro on the homestead parcels, which each averaged about two to three acres including from a half to a whole acre of taro land (The Hawaiian Star 1906a). Concerns regarding these homesteads were reported:

It is very probable that many of the applicants do not realize, or have not taken the time to consider the conditions under which the land is to be awarded to them, but fully expect to lease out their land to the Chinese there for planting rice, and let their kula land lie idle, and when the first two years are up a great many of them will doubtless forfeit their lots. The Hawaiians there have been asking for homestead for several years back and it is now up to them to make good. (The Hawaiian Star 1906a:5)

Hawaiians did grow taro on these early homesteads, mostly for home consumption. Rice farming declined sharply following 1910, and by 1935 ceased entirely (Group 70 International et al. 1995). Around 1920 many Hawaiians returned and began commercially cultivating taro on Keʻanae Homesteads (Figure 33). Due to its important cultural and historical significance, the Keʻanae Peninsula taro complex has been designated SIHP # 50-50-07-3933.

#### 2.4.4.3.2 *Transportation Infrastructure*

Prior to the construction of the Belt Road to Hāna, horse trails, developed when engineers constructed aqueduct systems between East Maui and the central Maui isthmus, were the only means of overland travel. Travelers leaving Haʻikū on horseback for Keʻanae descended and ascended 22 major valleys before arriving at Keʻanae. Along the way, the traveler would have visited Native Hawaiian villages at Huelo, Kolia, Waiakamoi, Wahinepeʻe, Puahokamoa and Honomanū. Inter-island steamships made regular stops at the Keʻanae Landing, but were considered expensive (\$2.00 for deck passage) (The Maui News 1926).

Reports of an exceptional account of a Chinese merchant departing from Keʻanae Landing to ship rice to Makawao was published in *The Honolulu Republican* (1901:9) newspapers:

On account of the refusal of the Wilder Steamship Co. to carry rice from Keanae to Maliko, T. Awana, one of the most enterprising Chinese in the Islands, has contrived another means by which he can convey his rice to Maliko, and from there to Makawao in carta. Awana has built a Chinse sampan, and rigged it with Chinese sails. The boat was built at Maliko of white pine, and it can carry about five tons of merchandise. It is manned by a crew of about ten Chinamen, whom Awana has



Figure 32. Historic Rice Mill (SIHP # 50-50-07-1510) in the Ke‘anae Historic District (The Honolulu Advertiser 1910)

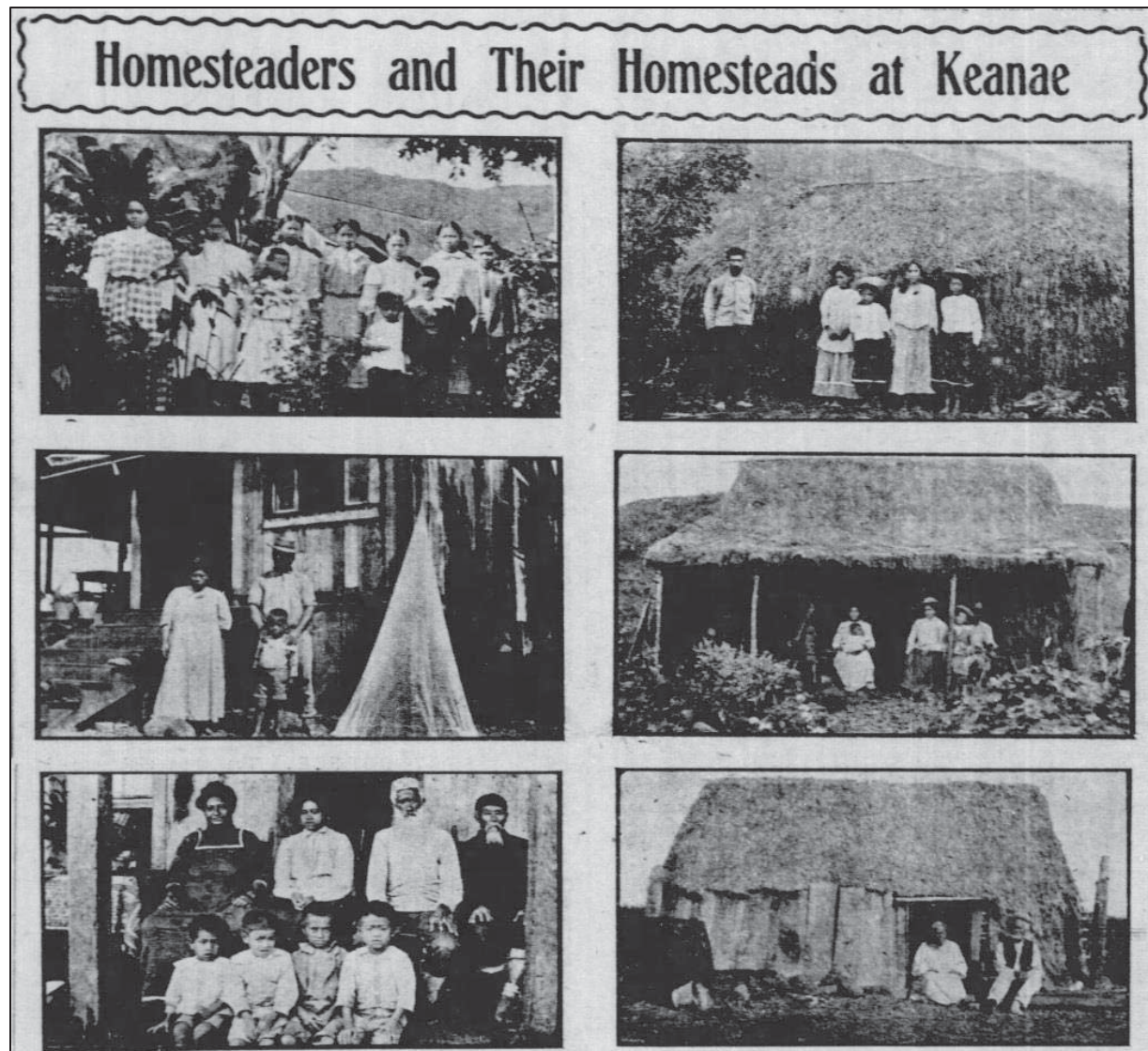


Figure 33. Portraits of Ke‘anae homesteaders and their residences (The Honolulu Advertiser 1910:13)



selected from his number of workmen. These Chinese at first were not accustomed to the motion of the boat, and on this account it took some time before the boat reached Maliko from Keanae with its first load of five tons of rice. From Maliko the boat leaves for Keanae with small loads of food-stuff to supply Awana's customers on the other side. Awana owns large patches of rice in the Keanae District. All the riggings and gear for the sampan were made by Awana, even the rope which he uses to fasten the sampan to its moorings in Maliko. Mr. Awana also grinds his own coffee for sale in his store at Makawao, keeps cattle, and engages in several other enterprises, all of which he attends to personally. The rice which reaches Maliko from Keanae is carried to his store at Makawao in ox carts, where it is sold in large quantities (Honolulu Republican 1901:9)

An article in *The Honolulu Advertiser* (1901a:11) further describes the crew and trip:

...The crew consisted of ten sailors six Chinese and four Hawaiians. The trip over was a rough one, the six Chinese being sick from the motion of the waves not to mention the effort of rowing in a choppy sea. As the wind was contrary, the sampan had to be rowed over, eight oarsmen working at one time. They sailed back again in three hours with the assistance of one of their two square sails. Five tons of rice was the cargo brought from Keanae. The start was made on the 28<sup>th</sup> and the return during the 30<sup>th</sup>. (Honolulu Advertiser 1901a)

After 1927, use of the landing had discontinued. In 1992, remnants of Ke'anae Landing were assigned SIHP # 50-50-07-2957 (Group 70 International et al. 1995).

In 1912, a narrow road and bridges were completed that connected Kailua to Nuaailua Bay near Ke'anae, and by 1915, other contractors had built a road connecting Hāna to Ke'anae. However, this Hāna connection ended in the Ko'olua forest instead of tying into the road to Kailua (Group 70 International et al. 1995). Two historic concrete tee beam bridges were constructed near the entrance of Ke'anae Peninsula in 1916, Piinaau Stream Bridge and Palauhulu Stream Bridge (Group 70 International et al. 1995).

By 1922, the Hāna Belt Road had been completed between Kuiaha and Kakipi Gulch. In 1923, the County Board of Supervisors requested more prison labor for roadwork between Kailua and Ke'anae. While road work continued toward Ke'anae, survey work commenced between Ke'anae and Kopili'ula. In June 1925, the grand opening of the Kailua-to-Ke'anae portion of the Belt Road was celebrated by a procession of automobiles to Ke'anae. Territorial Governor Wallace Farrington dedicated the opening of the road with County Board of Supervisors Chairman Samuel Kalama and others (Figure 34) (The Maui News 1926). A highly anticipated *luau* was held on Kamehameha Day to celebrate the opening of Hāna Belt Road into Ke'anae:

The celebration will be the first time that the Keanae folk as a community have been brought into direct contact with those of the rest of the island, and all the district is determined to make the affair a rousing success. Hawaiian delicacies in fish and fruit are promised in lavish supply from the Hana and Keanae country, and June 11 has been written down a day of ill omen for the pigs and steers of Central Maui." (Honolulu Star Bulletin 1925:21)

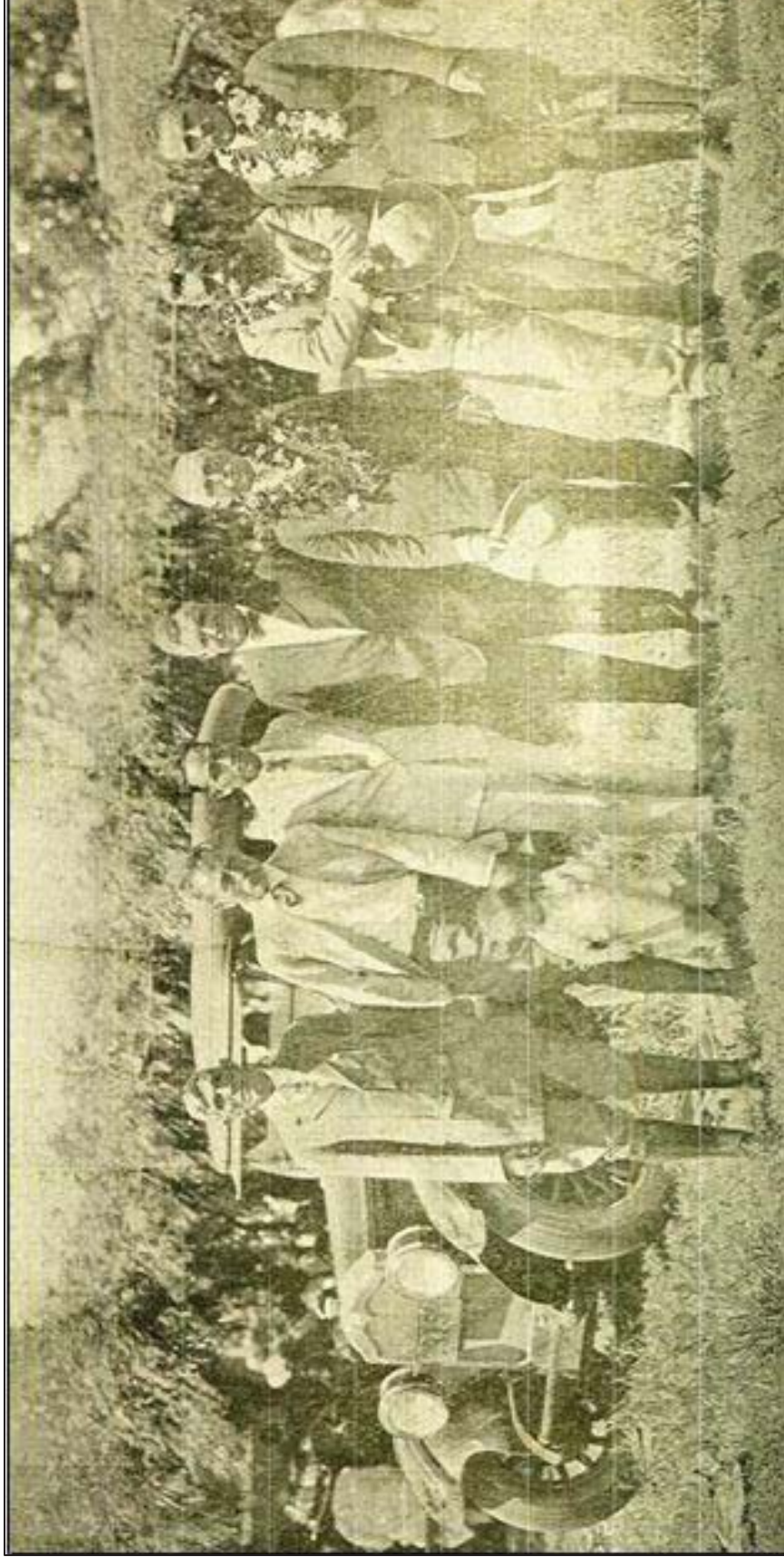


Figure 34. A group of Maui County Supervisors pose with Governor Farrington in Ke'anae. Left to right: R.A. Drummond, W.F. Kaee, County Engineer P. Low, Sheriff C. Crowell, Governor W. Farrington, Chairman S. Kalama and D.T. Fleming (The Maui News 1926)

LRFI for Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004:005, 007 (por.), and 2-9-014:(various parcels)



#### 2.4.4.3.3 Churches

The Ke'anae Protestant Church (SIHP # 50-50-07-1511), also referred to as Ke'anae Congregational Church or Ke'anae Church (Figure 35), is a stone structure with wooden doors and a single interior open space located near the ocean on the Ke'anae Peninsula. A small cemetery adjoins the north side of the church. While materials were being gathered as early as 1857, the church was not built and dedicated until 1860 (Group 70 International et al. 1995). Construction was not entirely completed until 1863. Painted on the east wall behind the pulpit is the church's given name, "Lanakila Ihiihi O Iehova Ona Kaua," meaning "Sacredness, Success of Jehova, the Son of God" (Wright 1974a).

The surveyor responsible for completing the NRHP form for Ke'anae Church, J. C. Wright (1974a:3), further describes the Ke'anae Church as an "excellent example of the early stone mission church erected in distant outposts with indigenous materials." This large structure, which included an attached social hall, not only served the congregational needs of the local Ke'anae inhabitants, but also provided a gathering place for surrounding communities (Wright 1974a).

On 1 April 1946, a *tsunami* generated by an earthquake in the Aleutian Islands off the coast of Alaska, struck the Ke'anae Peninsula. The height of the *tsunami* runup over two separate spots at Wailua was measured at 4.8 m (15.7 ft) and at 5.1 m (16.7 ft) (World Data Center 1977). The Keanae Church was the only structure left standing when the *tsunami* receded (Bartholomew and Bailey 1994), although the assembly hall was destroyed (Group 70 International et al. 1995). The church sustained some damage from the 1946 *tsunami*, and by 1968, time had weathered the structure to a point of having a leaky roof, a near collapsing ceiling, and a saggy floor (Wright 1974a).

Mr. Harry K. Pahukoa, Jr., and his mother, Mrs. Nary Aima Pahukoa, with the assistance of the other four families of the church and a carpenter friend, began repairs on the church. Though slow at first, help from the community did materialize. Funds and chandeliers were donated, and volunteers helped refinish pews, paint the walls, and install electricity. The roof, windows, doors, and floors were all repaired. Through diligence, faith, and dedication, the Pahukoa's dreams of repairing the church were realized, and their efforts have helped secure this historic site for posterity. More than 350 people attended the rededication of Ke'anae Church on July 27, 1969 (Wright 1974a). In addition to Ke'anae Protestant Church, another historic church is also present in Ke'anae. Wailua Mormon Church (SIHP # 50-50-07-1514) is a one-story wooden building situated between Ke'anae School and Wailua Homesteads Road. It was built in 1934 and dedicated in 1935. It served a small Mormon community in the Ke'anae area before it was eventually abandoned and used mostly as a residence. In 1974, the church had only five members (Wright 1974a).

#### 2.4.4.3.4 Ke'anae School

The first school in Ke'anae was located on the peninsula near the Ke'anae Congregational Church. The main portion of the present day Ke'anae School was built in 1912 with subsequent additions. The school provided a common learning place for children in kindergarten through eighth grade, in which the older students commonly assisted the younger pupils (Lum 1969). Initial enrollment was for 63 students (Penkiunas 1992). This number fluctuated throughout the years, but the curriculum continued to include traditional Hawaiian values and practices, including



Figure 35. 1958 Photo of Ke'anae Protestant Church (CSH Archives).

Hawaiian language and the cultivation of and traditional uses for plants (Figure 36 and Figure 37) (Tanji 1978). According to the Penkiunas (1992:10), Keanae School is a “surviving example of a small rural school” that “represents the small wooden vernacular building found in many rural areas” and is the “last remaining two-room schoolhouse on Maui” (Figure 38) (Penkiunas 1992:10). It has been designated SIHP # 50-50-07-1630. After much debate regarding the school’s closure, the last class was held at Ke‘anae School in 2005. It was officially closed in 2010 (The Honolulu Advertiser 2010).

#### 2.4.4.3.5 YMCA Camp Complex, Ke‘anae Arboretum, and Ke‘anae Quarry

The Ke‘anae Prison camp was used from about 1925 to 1939. In the 1920s, prisoners at the camp worked on the construction of the Hāna Belt Road. The prison camp was converted to a Civilian Conservation Corps (CCC) camp in 1934, where islanders were employed to plant thousands of eucalyptus and other tree species, such as *koa* and *wauke* in the region. In 1946, the camp again housed prisoners who renovated the *lo‘i* located at the nearby Ke‘anae Arboretum. The Ke‘anae Arboretum *lo‘i* complex (SIHP # 50-50-07-3922) consists of 14 *lo‘i* on two to three acres west of Piinaau. These *lo‘i* have existed much longer than the arboretum, which was started in 1942 but did not open to the public until around 1970. The prison camp was closed in 1950. YMCA received a lease for the camp in 1949. Today the site is a YMCA camp that can be rented by the public. The YMCA camp complex consists of a group of plantation style wooden buildings. The manager’s residence, constructed in 1934, is the oldest building in the complex. The YMCA camp site offers panoramic views above Ke‘anae Peninsula and overlooks Ke‘anae Landing and Ke‘anae Quarry (Group 70 International et al. 1995).

Keanae Quarry (SIHP # 50-50-07-3943) is located on a hill beneath the YMCA camp. It was used during the 1920s by prisoners who helped build the Hāna Belt Road with the blue rock that was crushed at the quarry. Features encountered at the quarry indicate the site was also used during World War II (WWII). When the quarry was first documented by Group 70 International et al. (1995), old machinery, a WWII gun emplacement, and a rock platform were observed. The platform may be the grave site of a former worker who died during a blasting accident.

Today, Ke‘anae consists of taro fields, small residential areas, and parks. In addition to taro, residents now also grow bananas, yams, and other wetland crops (James 2002). Though the landscape has undergone some changes, Ke‘anae, with its *lo‘i* and preserved historic infrastructure, offers a glimpse into the traditional and historic land use in East Maui.



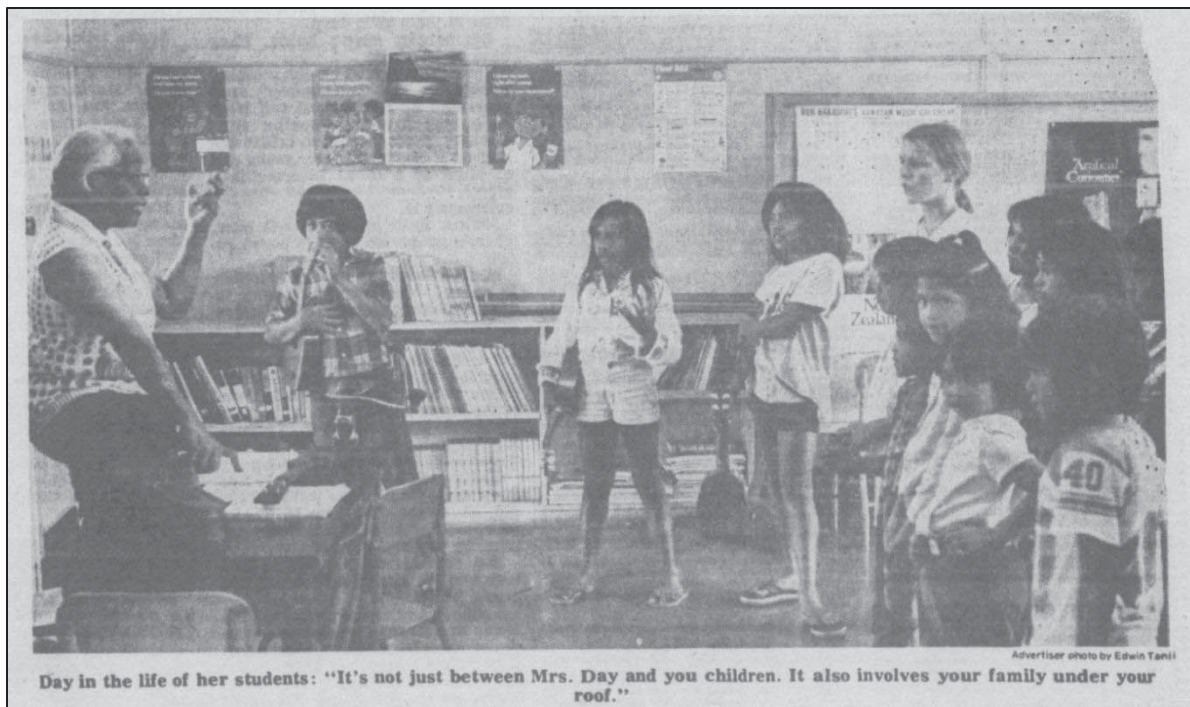


Figure 36. Mrs. Apolonia Day teaching her students at Keʻanae School in 1978 (Honolulu Advertiser 1978)



Figure 37 Keʻanae School students playing football (Honolulu Star Bulletin 1969)



Figure 38. 2013 Photograph of Ke'anae School (Wikimedia 2016)



#### 2.4.4.4 Hāna Highway Historic District

The Hāna Highway Historic District (SIHP # 50-50-va-1638), which includes 48 miles of roadway beginning at 0.2 miles west of Mile Marker 3 on State Route 360 (Hāna Highway) and ending at Kalepa Gulch on County Route 31 (Pi'ilani Highway), includes 78 contributing feature components. The Hāna Highway was also recognized as a Millennium Legacy Trail in 2000, and in 2001 was nominated to the National Register of Historic Places (NRHP). A total of 73 contributing resources of the Hāna Highway Historic District were documented within the district's NRHP registration form (Duensing 2001). A Historic American Engineering Record (HAER) No. HI-75 for the Hāna Belt Road was published by the National Park Service in 2005 to provide descriptions of the historic architectural and engineering features of the Hāna Historic District (Duensing 2005). Of the 78 component features of the Historic District approximately 56 of the bridges/culverts exist between Hāna and the central isthmus of Maui along the north shore of the island (Figure 39).

Portions of the road corridor are much older than the existing historic highway. It has predecessors as early as the time of the Maui King Pi'ilani's Alaloa ("long road") and Kihapi'ilani's addition to the Alaloa known as "The Kings Trail" in the 1600s, to the time of the "Ditch Trail" that ran alongside the early water catchment and diversion ditches for agriculture in the early 1900s. The Hāna Highway was first built with the intent to circumscribe East Maui with a levelled road surface in 1900, complete with gulch spanning bridges. The initial roadwork of the early twentieth century was piecemeal and incremental at best, sometimes making use of horse and foot trails connecting otherwise isolated sections of road (Duensing 2005). Dawn E. Duensing in Hāna Belt Road HAER HI-75 (2005:29) describes the difficulty of working on the early road as follows:

The work required in the Hana District was quite extensive due to the heavy rainstorms and freshets. At times flooding during the winter rainy season made it impossible to travel on the Hana Road...mail carriers were unable to complete their rounds, so the SPW [Superintendent of Public Works] ordered foot bridges built over deep gulches. Travelers were stuck with difficult overland travel on horseback or by steamers, which used what one resident called the "most impractical landings." (Duensing 2005:29)

Many of these problems were alleviated with the passing of the County Act of 1905 that established county government throughout the State of Hawai'i, an important function of which was to appoint a county engineer by the name of Hugh Howell to oversee civic projects like the Hāna Belt Road. Replacement of the bridges was of utmost importance to the Hāna Belt Road project since "many of the [existing] bridges had deteriorated from rot and had trusses that were considered dangerous" (Duensing 2005:30). Howell's program of replacing the truss type bridges with concrete pier-type bridges was first implemented across 'Ohe'o Gulch amounting to a seventy foot span. Although construction of these new type of bridge foundations were expensive, Howell argued that it represented an economic reconstruction since concrete piers required less maintenance than the trusses, which reduced necessary maintenance cost from an estimated \$50 per year to \$5 per year. Part of these savings in maintenance also originated in Howells use of crude oil and carbolineum to help protect the wooden superstructure against the moist tropical air and environment (Duensing 2005).

Construction of the road was slow for several years as the existing funding for the project was extremely limited and insufficient, having originated at that time from small amounts of money parceled out yearly by the government for the completion of consecutive sections of the road. This financial difficulty combined with the physical difficulty of building the road had the project approximately 10 years behind schedule by 1909. The formation of the Maui Loan Fund Commission (MLFC) in 1911 enabled the project to move forward with a more permanent capital improvement by replacing all timber bridges with concrete. The formation of the MLFC and the regularity of funding it provided enabled the construction of the first several concrete bridges enumerated among the Hāna Highway Historic District. The bridges constructed during the initial implementation of this funding were those named: Waikomai, Kolea, Honomanū, Nuaʻailua, Moʻomoniui, Waiakoi, Paʻihi, South Wailua (Honolewa), and Koukouʻai (Duensing 2005).

By 1920, the project saw the completion of many additional concrete bridges to the belt road, however the belt road itself was far from complete as it still did not connect at several points. Also during 1920, the MLFC decided that it would suspend funding for the Hāna Belt Road for a few years to allocate funds to roads nearer the central isthmus that were seasonally inhibiting pineapple harvests due to poor conditions. The suspension of the belt road project would last until 1923 when Maui's business and civic leaders, along with the Hawai'i governor Wallace Farrington, became proponents of a resurgence of civic interest in the project. This revitalized interest fueled a massive organized effort to complete the section of the road from Kailua to Keʻanae, which was completed by its projected finish date in 1925 (Duensing 2005).

The construction of the next section of the Hāna Belt Road was begun shortly after the completion of the Kailua to Keʻanae section, and was boosted by a substantial bond from President Calvin Coolidge issued to the Territory of Hawai'i that included \$150,000 for completion of the proposed 3.5 mile stretch from Keʻanae to Wailuaiki. This stretch would prove to be the most difficult portion of road to create due to the many serried ridges of hard volcanic stone that had to be blasted through, and because of the occasional slipping of steam shovels into deep gorges and mechanical issues associated with their employment in the process of rock breaking. Occasional flooding and landslides were also a discouraging element of constructing the belt road, having been responsible for several instances of burying the steam shovels under their downslope aftermath. The final stretch of road was completed with the construction of Wailuanui Bridge in 1926, which had itself been setback by a landslide that sent 600 bags of concrete needed for its construction coursing down the adjacent gulch and out to sea (Duensing 2005).

The Hāna Belt Road was completed and opened to the public in 1926 and effectively ended Hāna District's centuries of geographic isolation from the rest of the island. Although the public had begun travelling the road, several bridges were operational but incomplete. All the original bridges that comprise the historic road were not completed until 1947, and the road itself lacked a complete pavement up until the 1960s (Duensing 2005).

The types of component structures of the historic district consist of bridges and culverts, including: masonry arch bridges (Figure 40), concrete bridges (Figure 41), concrete arch bridges, and stone and concrete culverts. Since the road had been scarcely maintained since the final paving of the surface in 1962, it had been ravaged by the passing of time, showing few contemporary improvements aside from the addition of guardrails and pavement patch on the road surface.

In the 1990s the State of Hawai'i responded to the need to repair the Hāna Belt Road and implemented a preservation plan for the entire length of state-owned road between Huelo and Hāna. The preservation plan called not just for the preservation of the bridges themselves, but instead sought to retain the “character” of the road with its narrow bridges and winding cliffside roads. This proved to be a challenge as the funds offered by the Federal Highway Administration (FHWA) required the roads to be widened to their standard widths of 36 feet, with some of the existing roads only being about 16 feet wide. Ultimately the historic width of the bridges was allowed to remain narrow (Figure 42), conditional upon approval by the FHWA on a case by case basis. As a result of this ongoing maintenance work, the historic district has been thoroughly researched and described in detail by multiple studies (Duensing 2001, 2005; McCurdy et al. 2014; MKE Associates LLC and Fung Associates 2013; Nagamine Okawa Engineers Inc. and Fung Associates 2015; Oceanit 2000; Wilson Okamoto & Associates 2001)

Ultimately the Hāna Belt Road was deemed a historic property of significance due to the efforts and achievements surrounding its construction. Duensing (2005:55-56) clarifies the roads effect on the region:

The Hana Belt Road was a substantial public works achievement...during an era when Maui, especially Hana, was quite isolated from the rest of the world... the Hana Belt Road also involved the expertise of highly trained engineers and designers... Although some of the construction work was contracted out, county employees did nearly all the design and engineering work. (Duensing 2005:55-56)

Although the Hāna Belt Road was constructed to more sufficiently connect and develop the remote eastern side of the island, the opposite effect has been documented because of the narrow winding nature of the historic highway. Duensing (2005:59) clearly illustrates this point as follows:

The lack of easily-travelled, high-speed traffic artery has served to impede substantial development...There are no fast food chain restaurants, chain stores, strip malls or sprawling subdivisions along the Hana Belt Road. Travelers...are served by the occasional roadside stand and must drive all the way to Hana for limited conveniences such as groceries, gas, and restaurants. With a sizeable population of residents of Hawaiian ancestry, Hana is often cited as Maui's “most Hawaiian community” (Duensing 2005:59)

The novel architectural features of an early twentieth century road combined with an awe inspiring slow drive through densely vegetated jungle and deep gulches have afforded the Hāna Belt Road a character uncommon in most civic projects of the early twentieth century.



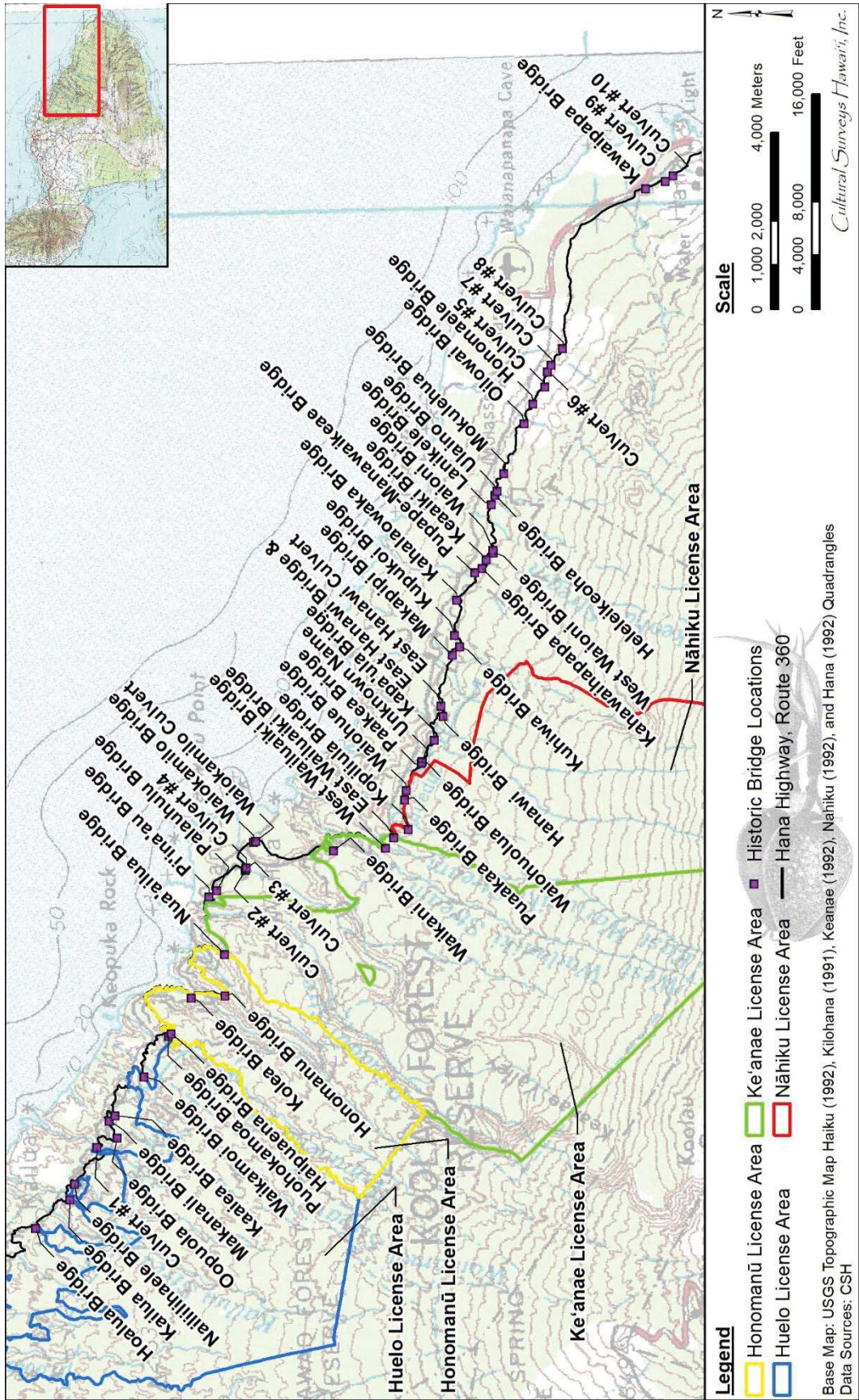


Figure 39. Portion of the Haiku (1992a), Kilohana (1991), Keanae (U.S. Geological Survey 1992c) USGS topographic quadrangles depicting historic bridge locations in East Maui

LRFI for Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: [2] 1-1 (various plats and parcels), 1-2-004-005, 007 (por.), and 2-9-014 (various parcels)





Figure 40. Hāhālawe Bridge, a characteristic masonry arch style bridge (Wilson Okamoto & Associates 2001)



Figure 41. Papahawahawa Stream Bridge, a concrete beam and slab style bridge (Wilson Okamoto & Associates 2001)





Figure 42. Hāna Belt Road near Waiele Bridge, illustrating the narrow roadway tightly encroached upon by bedrock ridges and jungle vegetation (Wilson Okamoto & Associates 2001)

### 2.4.5 Modern Land Use

When the sugar industry in the Hawaiian Islands began to decline, tourism emerged as one of the largest economic sectors across the state. Prior to the 1970s, the region of East Maui remained a collection of communities isolated by a 50-mile-long road legendary for its twisting turns and landslides. Recent improvements to the bridges and roads now allow over 700,000 visitors yearly to tour East Maui (Wood 2003). Tourism through East Maui was augmented by the burial of Charles Lindberg at Kīpahulu in 1974 at the Palapala Ho'omau Congregational Church graveyard, and has since continued at an ever-increasing pace, with the purchase of large tracts of land in Hāna by celebrities such as Steven Tyler, George Harrison, Jim Nabors, Kris Kristofferson, and Oprah Winfrey.

After leaving Pā'ia and Ha'ikū toward the east, the Hāna Highway crosses the Huelo region and enters the beginning of the rain belt that feeds the dense north-shore jungles of East Maui. In addition to containing many small groupings of isolated residences, the Huelo region has many points of environmental interest. Chief among these is the popular Twin Falls Fruit Stand that contains many gardens of edible flora and a network of trails leading visitors through the forest to small pools and the waterfalls that feed them. The Huelo region also offers many hiking trails (including the Bamboo Forest trails), Huelo Point Lookout, Jungle Zipline, and several smaller lodgings and eco-retreats. Kaulanapueo Church, built in 1853, is among one of the more prominent historic features of the area. These attractions are in addition to the numerous small beaches and waterfalls the can be observed proximate to the Highway, in addition to the residence of American singer/songwriter Steven Tyler.

As the Hāna highway passes through the Ke'anae region it skirts the edge of the large Ko'olau Forest Reserve that spans the highlands between Huelo and Hāna. The Ko'olau Forest Reserve, Hāna Forest Reserve, Haleakalā National Park, and Kīpahulu Forest Reserve form a continuous band of adjoined conservation lands that comprise a significant portion of East Maui. The conservation lands of Ko'olau and Hāna, spanning the entire northeast portion of East Maui, also make a significant portion of their land holdings available as a game reserve for licensed hunters (State of Hawaii 2015a, b). In these lands, hunters are allowed to hunt feral pigs and goats by means of rifle, handgun, shotgun, archery, and dogs year round with limited vehicle access (State of Hawaii 2018). These conservation lands also contain a number of smaller hiking trails into the tropical hinterlands of East Maui, as well as Pua'a Ka'a State Wayside Park, Wailua Valley State Wayside Park, Honomanu Park, Kaumahina State Wayside Park, Ke'anae Valley Lookout Park, Waikamoi Nature Trailhead, Garden of Eden Arboretum, and Ke'anae Arboretum. This stretch of Hāna Highway also crosses the historic regions of Ke'anae Peninsula, Ke'anae Valley, Honomanū Valley, and Nāhiku that are home to small rural communities and various small roadside shops and food/fruit stands that service weary travelers seeking a respite from the winding roads. Another notable visitor attraction on this stretch of the Hāna Highway is the Saint Gabriels Mission Coral Miracle Church built in 1860 out of locally sourced stone and coral mortar (Hana Picnic Lunch Co. 2018).

The Nāhiku region of East Maui, located east of Ke'anae, houses a small community separated from other residential areas by dense forests on its east and west flanks. Attractions for the traveler in this area include the Nahiku Viewpoint and Wayside Park, the Nahiku Church, and the private estate of the late George Harrison of the early rock group The Beatles (Google Maps 2018; Yucha

and Hammatt 2017). The community in this region consists largely of multi-generational family homes connected by a single lane road that winds alongside the residences down to the coast.

The scenic city of Hāna in East Maui has been known for some time as a place left aside by the vagaries of commercial development that has changed the cultural landscape of distant towns such as Lahaina and Kīhei. Many travelers to the island seek to visit the Hāna coast for a view of the “Real Hawaii” that has since lapsed in the towns and cities of the busier central and western portions of the island (Hawaii Web Group 2017). Visitors soon discover that beyond the road to Hāna, with its beautiful vistas and lush forests punctuated by streaming waterfalls, there are not many activities or amenities commonly available to them in resort areas. Hāna town today is marked by an abundance of domestic residences, relatively uncrowded beaches, hiking trails, campgrounds, cultural attractions and festivals, historic sites, and offers a host of guided tours to visitors. Hāna Town contains its own fire station, county council office, community center, three churches, two general stores, and a single gas station serving the residents. Domestic amenities aside, there are also two smaller inns, the slightly larger Travaasa Hotel (with its plantation style accommodations and pool/spa), the Luana Spa Retreat, Hāna Treasures gift shop, and a small host of restaurants and food trucks largely servicing the visitors who find their way out to this remote town. A noteworthy addition is the residence of singer/songwriter/actor/rogue scholar Kris Kristofferson just within the south side of Hāna town on a sizable piece of property off the main Highway (Real Geeks 2013). American TV icon, Jim Nabors also used to have a few hundred acres of macadamia nut fields in the region, before selling the land to the National Tropical Botanical Garden in 2002 (Pignataro 2017). Hāna is also home to the Hāna Ranch and the famous lava-stone constructed Fagan’s Cross, erected by Paul Fagan on the Ranch lands he had purchased in the 1940s (Hawaii Web Group 2017).

Hāna hosts a collection of tours that appeal to the naturalist, those interested in Hawaiian culture and history, and for those just seeking an afternoon of natural beauty. This sector is perhaps the largest economic draw to the region. In addition to being allowed to take rented vehicles down the scenic 50 mile Hāna Highway over historic bridges and through state park recreation areas, there are also five major providers of Road and Air tours of the region (TripAdvisor LLC 2018). Most of these tours take a few hours (by air) to a whole day (by road) and shuttle visitors to a variety of local attractions of the region such as various volcanic and coral sand beaches, Ka‘eleku cavern lava tubes, Haleakalā National Park hiking trails and campground, Wainapanapa State Park and campground, Ono organic farm, local farmers markets, snorkeling reefs, various art galleries, and Hāna museum and cultural center among many smaller attractions.

Being one of the remote vestiges of old Hawaii, Hāna offers much in the way of cultural and historic activities for those interested in the Hawaiian culture. Most notable is the Hāna Cultural Center and Museum that houses a variety of physical artifacts and photographic displays of the history of the town. The Cultural Center also has on its grounds the federally recognized monument of the Historic Hāna Courthouse in addition to a replica of a traditional pre-Contact chiefly residence named Kauhale Village (Hana Cultural Center and Museum 2017). Another notable site is the Kahanu Garden which is part of the National Tropical Botanical Garden, a Hawaii based non-profit institution. In addition to housing a large pandanus forest among other plants of ethnobotanical significance to the Hawaiian People, the grounds also contain one of the largest ceremonial *heiau* in the state, Piilanihale Heiau. Additionally one can see the fortress hill of Ka‘uiki on the coast of Hāna town, the site of a historic battles between Maui and Big Island chiefs

prior to Western contact and the birthplace of Queen Ka‘ahumanu, a notable figure in the Hawaii’s transition to modernity following Western contact (Hawaii Web Group 2017; Sterling 1998). The Hāna Taro Festival is also a notable attraction to visitors to the region. The festival, held annually between the spring months of March and May, displays many aspects of Hawaiian culture both past and present including traditional arts and crafts, live poi pounding, hula performances, Hawaiian music, farmer’s market, and food and drink booths.

## 2.5 Previous Archaeological Research

### 2.5.1 Early Maui Island Surveys

The earliest archaeological studies on the island of Maui were a part of island-wide surveys conducted in the early 1900s (Stokes 1916; Thrum 1909b; Walker 1931). These studies tended to focus on the compiling of descriptive lists of large-scale architecture or traditional ceremonial *heiau* sites. The *heiau* sites in the vicinity of the current License Area have been described in the context of the historic background of East Maui (see section 2.3.5. Heiau).

Between 1931 and 1976, only sporadic archaeological studies were undertaken in the area. Following the passage of the National Historic Preservation Act in 1966 and HRS Chapter 6E, which established the Historic Preservation Program in 1976, archaeological studies occurred as a condition of development on a more frequent basis. In this vein, the lands surrounding the current project area have been subject to a variety of studies including archaeological assessments, reconnaissance surveys, field inspections, AIS investigations), archaeological literature reviews and field inspections (LFRI), monitoring, cultural landscape studies, and preservation plans. The previous studies conducted within and around the current License Area are described in the following subsections.

### 2.5.2 Hāna Highway Archaeological Studies

The previous archaeological studies conducted for the Hāna Highway Historic District area summarized in Table 8 and depicted extending throughout multiple license areas.

#### 2.5.2.1 S. D. M. Freeman et al. (2004)

Between June and August 2004, CSH completed archaeological monitoring for the Hāna Highway Improvements Huelo to Hāna Project at mileposts (MPs) 4.2, 19.1, and 23.7 (TMKs: [2] 2-1-001; 2-1-002; 2-1-004:001–005; 2-2-009:005, 006, 009, 010, 012, and 013) (S. D. M. Freeman et al. 2004). No historic properties were identified.

#### 2.5.2.2 McCurdy et al. (2014)

Between 12 July and 15 August 2013, CSH completed the fieldwork component of a literature review and field inspection report for the proposed Hāna Highway Improvements, Huelo to Hāna Phase II Project (McCurdy et al. 2014). Eleven areas were investigated during the field inspection (pedestrian survey), including MPs 8.1, 11.2, 13.0, 14.7, 14.9, 15.7, 16.3, 17.7, 19.0, and 21.5 (TMKs: [2] 1-1-001:999; 1-1-002:999; 1-1-007:999; 1-1-008:999; and 1-2-001:999 por). Five additional contributing features of the Hāna Highway Historic District (SIHP # 50-50-07-1638) were identified and documented. These features, likely components of Hāna Highway construction ca. 1923, include an example of the cut and fill method employed during the construction of the Hāna Belt Road (Feature MP 8.1), five concrete guide posts (Feature MP 8.2), a retaining wall and culvert (Feature MP 15.7), a retaining wall (Feature MP 17.7), and a rock culvert and headwall (Feature 21.5).



Table 8. Previous Archaeological Studies within Hāna Highway Historic District

| Reference                      | Type of Study             | Location  | Results  |
|--------------------------------|---------------------------|---|--|
| S. D. M. Freeman et al. (2004) | Archaeological monitoring | Hāna Highway mileposts 4.2, 19.1, and 23.7  | No significant findings  |
| McCurdy et al. (2014)          | LRFI                      | Eleven areas along the Hāna Highway from Huelo to Hāna, including MPs 8.1, 11.2, 13.0, 14.7, 14.9, 15.7, 16.3, 17.7, 19.0, and 21.5 | Identified and assigned temporary feature designations to five additional features of the Hāna Highway Historic District (SIHP # 50-50-07-1638), including an example of the cut and fill method employed during the construction of the Hāna Belt Road (Feature MP 8.1), five concrete guide posts (Feature MP 8.2), a retaining wall and culvert (Feature MP 15.7), a retaining wall (Feature MP 17.7), and a rock culvert and headwall (Feature 21.5) |
| Madeus and Hammatt (2017)      | Archaeological monitoring | Hāna Highway MPs 10.4, 14.0, and 16.0   | No significant findings  |

### 2.5.2.3 Madeus and Hammatt (2017)

Between 23 July and 31 October 2012, CSH monitored ground disturbing activities associated with Hāna Highway emergency road repairs at MPs 10.4, 14.0, and 16.0 (TMKs: [2] 1-1-001:022, 023 por., 044, 999 por. and 1-1-002:002, 012 por.) (Madeus and Hammatt 2017). No historic properties were identified.

## 2.5.3 Huelo License Area Archaeological Studies

Previous archaeological studies conducted within or near the Huelo License Area are depicted in Figure 43 and summarized in Table 9.

### 2.5.3.1 Sinoto and Pantaleo (1992)

Intermittently between 17 June and 3 September 1992, Aki Sinoto Consulting conducted an AIS of the East Maui Waterline Project (TMKs: [2] 2-5-003, 004, 005; 2-7-003, 007-011, 013, 016-020; 3-8-051, 059, 061, 070, and 071), consisting of surveys of gulches and pedestrian surveys, mostly along existing paved roads and cane roads (Sinoto and Pantaleo 1992). Easternmost parcels surveyed in this study are located near the current License Area. No cultural materials were observed during this AIS.

### 2.5.3.2 Kennedy et al. (1992)

From the end of July to the beginning of August 1992, Archaeological Consultants of Hawaii, Inc. carried out an AIS with subsurface testing at a parcel located about one mile inland from the ocean, near Hanawana Stream, and adjacent to the *mauka* side of the Hāna Hwy in West Hanawana Ahupua'a (TMK: [2] 2-9-010:003) (Kennedy et al. 1992). Three historic properties were recorded, including a set of five mounds associated with post-Contact agriculture (SIHP # 50-50-06-3132), six agricultural terraces with two *'auwai* and three walls associated with both pre- and post-Contact agriculture (SIHP # -3133), and a complex of two irrigated terraces with one *'auwai* and five wall segments associated with both pre- and post-Contact agriculture (SIHP # -3134). In addition, a ceramic and concrete scatter was discussed but was only addressed as Temporary site # T-1.

### 2.5.3.3 D. L. Fredericksen (1996)

In April 1996, Xamanek Researches conducted a limited AIS on a 25.12 acre Ho'olawa Point parcel in Ho'olawa Bay, Huelo (TMK: [2] 2-9-02:014 por.) (D. L. Fredericksen 1996). Pre-Contact artifacts encountered during this pedestrian survey included an adze blank, three utilized basalt flakes, a large piece of red ochre, a piece of volcanic glass, and several waterworn stones. SIHP # 50-50-06-4167, an old roadway, was identified on the surveyed parcel. Historic cultural materials associated with SIHP # -4167 encountered near the roadway include glass and porcelain fragments, one piece of *Conus* shell, broken Maui Soda bottles from the 1920s/30s, a possible old wagon wheel rim, and pieces of rusting metal track. SIHP # -4196, a historic grave with inscription "JHO Nokaupu Make Feb 14 1918" was also observed on the property. Ho'olawa Landing, SIHP # -2956 was identified to the east of Ho'olawa Stream, beyond the property borders but within close proximity to the surveyed area; brick and concrete footings, four large pieces of rusting machinery, and a set of railroad car wheels were observed in association with SIHP # -2956. Both SIHP #s -4167 and -2956 comprise part of a historical complex associated with the sugarcane

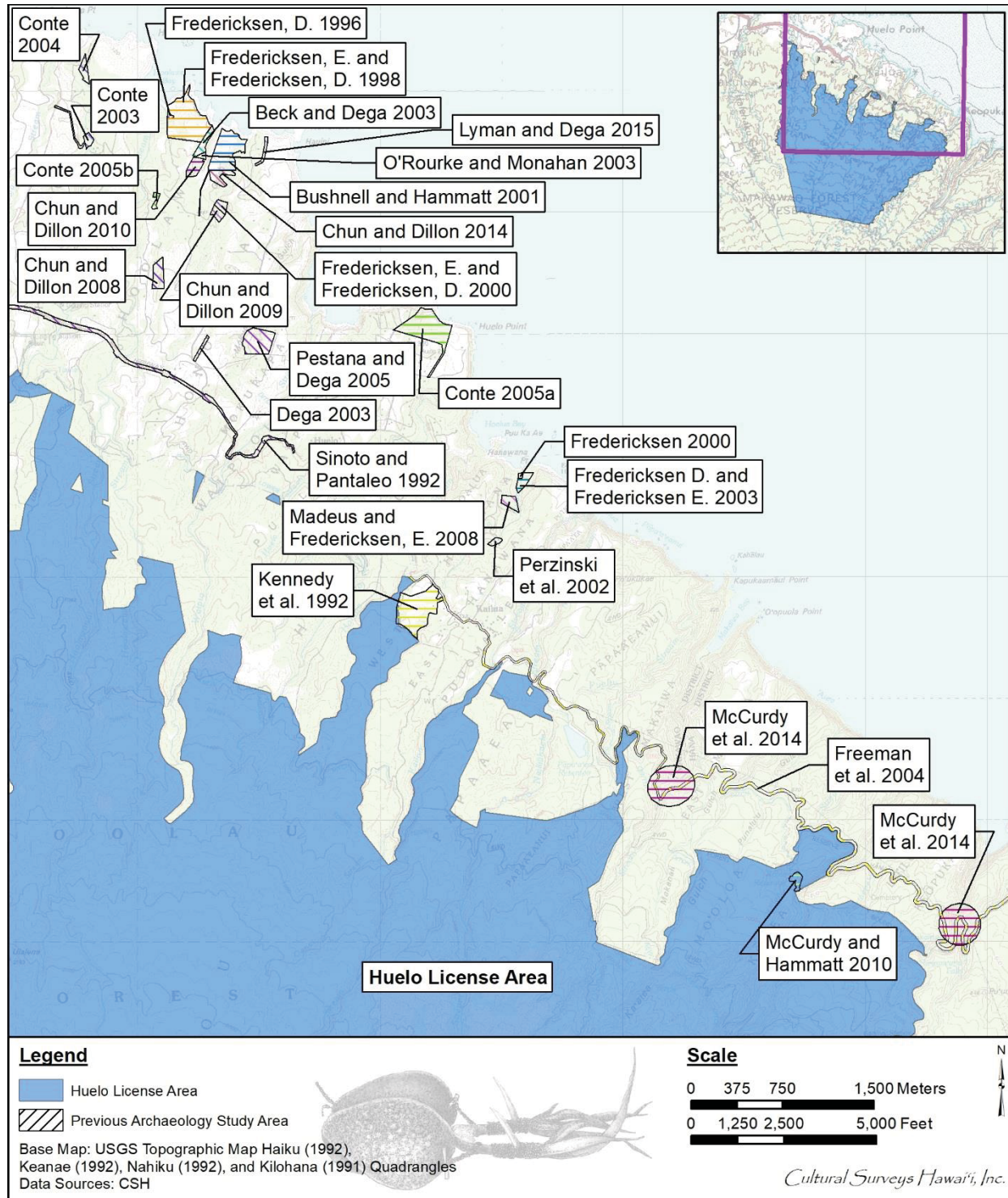


Figure 43. Previous archaeological studies within or near the Huelo License Area (U.S. Geological Survey 1991, 1992a, c, d)

Table 9. Previous Archaeological Studies within the Huelo License Area

| Reference                  | Type of Study | Location  | Results (SIHP # 50-50-06)  |
|----------------------------|---------------|---|--|
| Sinoto and Pantaleo (1992) | AIS           | East Maui Waterline Project (TMKs: [2] 2-5-003, 004, 005; 2-7-003, 007-011, 013, 016-020; 3-8-051, 059, 061, 070, and 071)                              | No significant findings  |
| Kennedy et al. (1992)      | AIS           | Parcel located about a mile inland from the ocean, near Hanawana Stream, and adjacent to the Hāna Hwy in West Hanawana Ahupua'a, (TMK: [2] 2-9-010:003) | Documented three sites, including a set of five mounds (SIHP # 50-50-06-3132), six agricultural terraces with two 'auwai and three walls (SIHP # -3133), and a complex of two irrigated terraces with one 'auwai and five wall segments (SIHP # -3134)   |
| D. L. Fredericksen (1996)  | Limited AIS   | 25.12-acre Ho'olawa Point parcel in Ho'olawa Bay, Huelo (TMK: [2] 2-9-002:014 por.)   | Documented SIHP # -4196, a historic grave and SIHP -4167, an old roadway with associated artifacts; noted SIHP # -2956 (Hoolawa Landing) with associated brick and concrete footings, four large pieces of rusting machinery, and a set of railroad car wheels to the east of Ho'olawa Stream near the surveyed area; noted a rockshelter near, but beyond the property boundaries |



| Reference  | Type of Study | Location  | Results (SIHP # 50-50-06)   |
|--|---------------|---|---|
| Erik M. Fredericksen and Demaris L. Fredericksen (1998a) | AIS           | 25.12-acre Ho'olawa Ranch Property at Ho'olawa Point (TMK: [2] 2-9-002:014)   | Reidentified SIHP # -4167 (Ho'olawa Landing Road) and SIHP # -2956 (historic grave). Documented five additional sites: SIHP #s -4234 (historic grave); -4235 and -4236 (surface scatters); -4237 (subsurface pre-Contact fire pit with a 14C date range from AD 1435 to 1660); -4238 (stone feature with a possible burial; observed SIHP # -2956 (Hoolawa Landing) and a rockshelter/temporary habitation site (SIHP # -4239) outside property borders |
| E. Fredericksen (2000)                                   | AIS Phase I   | Northwestern terraced area on a parcel of land near the mouth of Hanawana Stream in Hanawana Valley, Hanawana Ahupua'a (TMK: [2] 2-9-011:018)                                 | Documented two terraced features of agricultural and habitation complex SIHP # -4153; reported 14C date range from AD 1425 to 1665 for a charcoal sample; noted three small terraces, a cobble and boulder platform, an enclosure, a rock cupboard, a possible canoe landing area, and a depression for ground salt water evaporation on state lands beyond the property borders  |
| E. M. Fredericksen and Fredericksen (2000)               | AIS           | 2-acre Lot 7-B of Huelo Hui Partition Subdivision located within 400 m of the ocean crossed by Honokala Stream, and bordered by North Honokala Rd (TMK: [2] 2-9-002:005 por.) | Documented two historic properties: a pre-Contact wetland agricultural site (SIHP # -4084) and a leveled area associated with post-Contact ranching or agriculture (SIHP # -4816)   |



| Reference                   | Type of Study             | Location   | Results (SIHP # 50-50-06)   |
|-----------------------------|---------------------------|--|---|
| Bushnell and Hammatt (2001) | AIS                       | Roadway access easement and 15-acre parcel in coastal Ho'olawa, bordered by Honokala Stream and Waikakulu Gulch (TMKs: [2] 2-9-02:017, 021, and 035) | No significant findings   |
| Perzinski et al. (2002)     | AIS                       | West Hanawana, between Hāna Hwy. and the coast (TMKs: [2] 2-9-011:004 and 005)   | Documented an agricultural complex consisting of 15 terraces (SIHP # -5206), and an <i>'auwai</i> (SIHP # -5205); reported a 14C date range from AD 990 to 1220 obtained from sediments underlying a terrace retaining wall |
| Dega (2003)                 | Archaeological assessment | 5 acres at Ho'olawa Point (TMKs: [2] 2-9-001:071, 072 and 075)   | No significant findings   |
| Beck and Dega (2003)        | AIS                       | Approximately 3.5 acres in coastal Ho'olawa, transected by Waikakulu Gulch and Stream (TMK: [2] 2-9-012:016)   | No significant findings   |
| O'Rourke and Monahan (2003) | AIS                       | Approximately 0.75 acres in the Ahupua'a of Ho'olawa, Hawaii (TMK: [2] 2-9-002:042)  | Described SIHP # -5459, a human burial, and SIHP # -5460, a lithic reduction center   |
| Conte (2003)                | Limited AIS               | 0.371-acre access easement corridor in coastal Honopou Ahupua'a (TMKs: [2] 2-9-001:004, 018 and 019)   | No significant findings   |

| Reference                                  | Type of Study             | Location   | Results (SIHP # 50-50-06)   |
|--|---------------------------|--|---|
| D. L. Fredericksen and Fredericksen (2003) | AIS Phase II              | 3.094 acres in Hanawana Gulch in Hanawana Ahupua'a (TMK: [2] 2-9-011:018)  | Documented 52 previously unreported features from SIHP # -4153, including a leveled area, pavement, a cupboard, 47 terraces, an alignment, and a possible terrace remnant; identified numerous artifacts; reported date ranges for five charcoal samples: AD 1520 to 1590, AD 1620 to 1680 and AD 1730 to 1810 (Sample 1), AD 1640 to 1960 (Sample 2), AD 1460 to 1640 (Sample 4), AD 1670 to 1950 (Sample 5), and AD 1420 to 1520 and AD 1580 to 1630 (Sample 6) |
| Conte (2004)                               | AIS and preservation plan | 2.541-acre Souza Property (TMK: [2] 2-9-001:009) at coastal Honopou Point, Honopou Ahupua'a                        | Documented three features of SIHP # -5638, including two terraces and an alignment, interpreted as <i>māla'ai</i>   |
| Conte (2005b)                              | AIS                       | 1.095-acre parcel located a half a mile from Ho'olawa Bay bordered north by Ho'olawa Stream (TMK: [2] 2-9-001:075) | Documented Features A-E ( <i>lo'i</i> terrace remnants) of SIHP # 50-50-04-5720   |
| Conte (2005a)                              | AIS                       | Bolles Property, a 20-acre parcel located on the coast between Waipi'o Bay and Huelo Point (TMK: [2] 2-9-07:052)   | Identified SIHP #s: 50-50-06-5746, -5747, -5748, -5749, -5750, and -5751, which included terraces, walls, and a possible trail alignment.   |
| Pestana and Dega (2005)                    | Archaeological assessment | 11.15 acres near Waipi'o Bay, Huelo (TMK: [2] 2-9-005:023)   | No significant findings   |
| Chun and Dillon (2008)                     | AIS                       | 5.128-acre lot in Ha'iku, Ho'olawa Ahupua'a (TMK: [2] 2-9-003:028)   | Documented SIHP # -6438, a stacked rock wall interpreted as remnants of an <i>'auwai</i>  |

| Reference                      | Type of Study             | Location   | Results (SIHP # 50-50-06)  |
|--------------------------------|---------------------------|--|--|
| Madeus and Fredericksen (2008) | AIS                       | 3.136-acre parcel in Hanawana Ahupua'a, (TMK: [2] 2-9-011:017)   | Reported SIHP # -6362, a pre-Contact agricultural complex with 19 stepped agricultural terrace features  |
| Chun and Dillon (2009)         | AIS                       | 2-acre lot in Huelo, coastal Honokalā (TMK: [2] 2-9-002:041)   | Identified five <i>lo'i</i> and three terraces in pre-Contact agricultural complex SIHP # -4084; documented SIHP # -6627, a historic trash pit |
| McCurdy and Hammatt (2010)     | AIS                       | 4-acre parcel in Kolea Ahupua'a (TMK: [2] 1-1-001:050)   | Identified one plantation era reservoir/water control system SIHP # 50-50-13-6682; with six associated features                                |
| Chun and Dillon (2010)         | AIS                       | 3.75-acre Lot in Ha'iku, coastal Ho'olawa on an easement of Ho'olawa Road (TMK: [2] 2-9-002:011)       | Reported one site previously documented by O'Rourke and Monahan (2003): SIHP # 50-50-06-5460, a lithic reduction center                        |
| Chun and Dillon (2014)         | Archaeological assessment | 3.65-acre lot in Ha'iku on a Ho'olawa Road easement bordered by Honokala Stream (TMK: [2] 2-9-002:020) | No significant findings  |
| Lyman and Dega (2015)          | AIS                       | Rohr Family access road at Honokalā Point in Honopou Ahupua'a (TMK: [2] 2-9-002:019 por.)              | Identified SIHP # -8254, a terrace retaining wall, and SIHP # -8255, a pre-Contact to historic ditch for <i>'auwai</i>                         |

industry. Also, a rockshelter that was likely used historically and during the pre-Contact era was observed near but beyond the property boundary.

#### **2.5.3.4 Erik M. Fredericksen and Demaris L. Fredericksen (1998a)**

In 1996, Xamanek Researches continued an AIS of a 25.12 acre Ho'olawa Ranch Property at Ho'olawa Point (TMK: [2] 2-9-02:014) (Erik M. Fredericksen and Demaris L. Fredericksen 1998a). An earlier survey of this property was limited to the western portion where Ho'olawa Landing Road (SIHP # -4167) with associated artifacts and a historic grave (SIHP # -2956) were reported (D. L. Fredericksen 1996); these two sites were reidentified during this more thorough subsequent AIS, which included both pedestrian surface survey throughout the property and subsurface testing. Five additional archaeological sites were also documented: a historic grave (SIHP # -4234), two surface scatter remnants (SIHPs # -4235 and -4236), a pre-Contact fire pit (SIHP # -4237) and a rock alignment including a possible burial (SIHP # -4238). Artifacts observed at the surface associated with the surface scatter remnant SIHP # -4235 include a basalt adze blank, utilized basalt flakes, a utilized volcanic glass flake, and red ochre, and waterworn pebbles; subsurface artifacts include a volcanic glass flake, two basalt flakes (one fire-cracked), charcoal, rusted metal, a possible fishing hook tab and pig bone. No artifacts were encountered during subsurface testing of the surface scatter remnant SIHP # -4236; however, a volcanic glass flake, two pieces of volcanic glass shatter, and a basalt flake were observed at the surface. The fire pit (SIHP # -4237) was encountered below the surface at a level area overlooking Ho'olawa Bay and the Hāna Coast. Associated subsurface cultural materials include rusted metal waterworn pebbles, fire-cracked rocks, charcoal, basalt flakes, volcanic glass debitage, and a pecking stone. Analyzed charcoal collected from the fire pit (SIHP # -4237) returned a calibrated (2 sigma, 95% probability) 14C date range of AD 1435 to 1660. A possible basalt pecking stone was observed at the surface in association with the stone feature with a possible burial (SIHP # -4238), while subsurface testing revealed modern bottle glass, utilized basalt and waterworn pebbles. Also, Ho'olawa Landing (SIHP # -2956) and a rockshelter were again observed outside the property boundary, as they had been in the D. L. Fredericksen (1996) AIS. The rockshelter, which had been interpreted as a temporary habitation site, was designated SIHP # -4239.

#### **2.5.3.5 E. Fredericksen (2000)**

In February 2000, Xamanek Researches, conducted Phase 1 of an AIS of a northwestern terraced area on a parcel of land near the mouth of Hanawana Stream in Hanawana Valley, Hanawana Ahupua'a (TMK: [2] 2-9-011:018). The AIS included a visual inspection with mapping of the area and two test unit excavations (E. Fredericksen 2000). Two terraced features were documented: an approximately 15-m x 6-m leveled area with a partially intact retaining wall (Feature A), and a narrow approximately 14-m long terrace (Feature B) located upslope from Feature A. Only one artifact was observed on the surface, a grindstone located near Feature A. During subsurface testing, charcoal deposits, a red ochre manuport, four basalt flakes, and a piece of *kukui* nut shell were encountered. A charcoal sample yielded radiocarbon dates from AD 1425 to 1665. The features documented in this study appeared to be part of SIHP # -4153, likely an agricultural and habitation complex, which was noted as extending both downstream and upstream on adjacent parcels of State-owned land. The adjacent features of SIHP # -4153 on State lands include three small terraces, a cobble and boulder platform, an enclosure, a rock cupboard, a possible canoe landing area, and a depression for ground salt water evaporation.

### **2.5.3.6 E. M. Fredericksen and Fredericksen (2000)**

From December 1999 through February 2000, Xamanek Researches conducted an AIS on a 2-acre (Lot 7-B) of the Huelo Hui Partition Subdivision, located within 400 m of the ocean shore and crossed in the west by Honokala Stream (TMK: [2] 2-9-002:005 por.) (E. M. Fredericksen and Fredericksen 2000). Two historic properties are reported: SIHP # -4084, a pre-Contact wetland agricultural site, and SIHP # -4816, a leveled area associated with post-Contact ranching or agriculture.

### **2.5.3.7 Bushnell and Hammatt (2001)**

On 29 March 2001, CSH conducted an AIS for a proposed Kahui Pono L.L.C. Roadway Access Easement and 15-acre parcel (TMKs: [2] 2-9-002:017, 021, and 035) in coastal Ho'olawa, bordered to the east by Honokala Stream, and partially on the west by Waikakulu Gulch (Bushnell and Hammatt 2001). No historic properties were identified.

### **2.5.3.8 Perzinski et al. (2002)**

On 22 February 2002, CSH conducted an AIS of a proposed approximate 800-foot easement and one-acre lot in West Hanawana (TMKs: [2] 2-9-011:004 and 005) (Perzinski et al. 2002). The survey identified an agricultural complex consisting of 15 terraces (SIHP # -5206), and an 'auwai (SIHP # -5205) supplying the complex of *lo'i*. Several of the terraced *lo'i* still support feral taro plants; two large stands of 'awa were also observed in the area. Remnants of recent squatters' sheds were also present on the property. A 14C date of AD 990-1220 was obtained from sediments underlying a terrace retaining wall.

### **2.5.3.9 Dega (2003)**

On 4 April 2003, Scientific Consultant Services, Inc. (SCS) conducted a surface survey for 5 acres at Ho'olawa Point (TMKs: [2] 2-9-001:071, 072, and 074) (Dega 2003). No historic properties were observed; therefore, the report was submitted as an archaeological assessment.

### **2.5.3.10 Beck and Dega (2003)**

On 6-7 April 2003, SCS conducted an AIS of approximately 3.5 acres in coastal Ho'olawa with Waikakulu Gulch and Stream transecting the east end of the property (TMK: [2] 2-9-002:016) (Beck and Dega 2003). The AIS consisted of a pedestrian survey and two shovel test probes. No historic properties were identified.

### **2.5.3.11 O'Rourke and Monahan (2003)**

Between 7 May and 11 June 2003, SCS conducted an AIS of approximately 0.75 acres of land located in coastal Ho'olawa (TMK: [2] 2-9-002:042), which consisted of pedestrian survey and subsurface testing (O'Rourke and Monahan 2003). The study describes two historic properties: SIHP # -5459, a human burial, and SIHP # -5460, a lithic reduction center.

### **2.5.3.12 Conte (2003)**

On July 8, 2002, CRM Solutions Hawai'i, Inc, conducted an AIS of a designated access easement corridor through the Huelo Hui Partition on 0.37- acres at coastal Honopou Ahupua'a, (TMKs: [2] 2-9-001:004, 018, and 019) (Conte 2003). No historic properties were identified.



### 2.5.3.13 D. L. Fredericksen and Fredericksen (2003)

In 2002, Xamanek Researches carried out Phase 2 of an AIS of 3.094 acres in Hanawana Gulch in Hanawana Ahupua'a (TMK: [2] 2-9-011:018), consisting of pedestrian survey and five manual test excavations (D. L. Fredericksen and Fredericksen 2003). Phase I had been limited to a northwestern terraced area, in which two features and a few pre-Contact artifacts were identified as being constituents of agricultural complex SIHP # -4153 (E. Fredericksen 2000). During Phase 2, 52 previously unreported features were documented as part of SIHP # -4153: a leveled area, pavement, a cupboard, an alignment, 47 terraces, and a possible terrace remnant. A polishing stone and lithic debitage were found on the surface. Numerous artifacts were encountered during subsurface testing, including polished basalt flakes, utilized basalt flakes, a basalt hammerstone/chopper, a worked urchin spine tip, a utilized volcanic glass flake, an adze fragment, and Lead printer's type. Mammal and fish bone, *kukui* nut shell, charcoal, lithic debitage, unworked coral pieces, waterworn pebbles, fire-cracked rocks, metal pieces, coal and a lead fishing weight were also documented cultural materials. Five charcoal samples (Samples 1-2; 4-6) returned the following radiocarbon dates (calendrical date 2 Sigma 95%): AD 1520 to 1590, AD 1620 to 1680 and AD 1730 to 1810 (Sample 1), AD 1640 to 1960 (Sample 2), AD 1460 to 1640 (Sample 4), AD 1670 to 1950 (Sample 5), and AD 1420 to 1520 and AD 1580 to 1630 (Sample 6).

### 2.5.3.14 Conte (2004)

On 4 September 2004, CRM Solutions Hawai'i conducted an AIS for the 2.541-acre Souza Property (TMK: [2] 2-9-001:009) at coastal Honopou Point, bisected by Honopou Stream in Honopou Ahupua'a (Conte 2004). The AIS consisted of pedestrian survey and the backhoe excavation of three test trenches. No cultural materials were encountered during subsurface testing. During pedestrian survey, three features were observed above the east side of Honopou Stream. These features were reported as one site, SIHP # -5638, which included two terraces (Features A and C) and an alignment (Feature B), collectively interpreted as a *māla'ai*. A preservation plan recommending passive preservation was submitted as part of this study.

### 2.5.3.15 Conte (2005b)

On 15 and 18 July 2005, CRM Solutions Hawai'i, Inc. (Conte 2005b) conducted an AIS of a 1.095-acre parcel located a half a mile from Ho'olawa Bay bordered north by Ho'olawa Stream (TMK: [2] 2-9-001:075). During this pedestrian survey, five *lo'i* terrace remnants (Features A-E) comprising SIHP # 50-50-04-5720 were observed along the northern slope of the property.

### 2.5.3.16 (Conte 2005a)

Intermittently between July and October 2005, CRM Solutions Hawai'i, Inc. conducted an AIS of the Bolles Property (TMK: [2] 2-9-007:052), a 20-acre parcel located on the coast between Waipi'o Bay and Huelo Point (Conte 2005a). Six historic properties were identified during the study: a double linear terrace (SIHP # 50-50-06-5746), a walled terrace with lower terraces (SIHP # -5747), a walled terrace with lower terraces and possible trail alignment (SIHP # -5748), a remnant wall (SIHP # -5749), a small, historic-era terrace (SIHP # -5750), and a discontinuous rock wall (SIHP # -5751).

### 2.5.3.17 Pestana and Dega (2005)

In June 2005, SCS conducted an AIS for 11.15 acres of land near Waipi'o Bay (TMK: [2] 2-9-005:023), consisting of pedestrian surface survey and mechanical and manual subsurface testing (Pestana and Dega 2005). No historic properties were identified therefore, this study was deemed an archaeological assessment.

### 2.5.3.18 Chun and Dillon (2008)

On 18 February 2008, Affordable Cultural & Ecological Services, LLC (ACES) carried out an AIS for 5.128 acres in Ha'iku, Ho'olawa (TMK: [2] 2-9-003:028) (Chun and Dillon 2008). During this 100% pedestrian survey, one historic property was documented. SIHP # -6438 is a stacked rock wall located on the west and east sides of a stream that was interpreted as remnants of an *'auwai*.

### 2.5.3.19 Madeus and Fredericksen (2008)

In October 2007, Xamanek Researches, LLC conducted an AIS for a 3.136-acre parcel near the coast in Hanawana Valley bordered by Hanawana Stream, in Hanawana Ahupua'a, (TMK: [2] 2-9-011:017) (Madeus and Fredericksen 2008). The AIS included a pedestrian survey and the excavation of five shovel test units that identified one historic property. SIHP # -6362 is a pre-Contact agricultural complex with 19 component features consisting of stepped agricultural terraces.

### 2.5.3.20 Chun and Dillon (2009)

In December 2008 and January 2009, ACES conducted an AIS for a 2.0-acre lot located approximately 650 m from the shore in Honokalā (TMK: [2] 2-9-002:041) (Chun and Dillon 2009). The surveyed parcel is bound by N. Honokalā Road to the west and contains a stream gully from Honokalā Stream oriented from south to north through the western third portion of the property. Fieldwork consisted of pedestrian survey and subsurface testing, including six shovel test probes, four test units, one shovel excavated stratigraphic trench, and five backhoe trenches. Eight features, comprising a portion of previously identified SIHP # -4084, a pre-Contact agricultural complex, were documented in this AIS: a remnant *lo'i* (Feature 1), a 11.5-m by 7.6-m rectangular *lo'i* (Feature 2), a 7.6-m by 6.6-m *lo'i* (Feature 3), an 11.8-m by 8.4-m *lo'i* (Feature 4), a 12.2-m by 5-8-m *lo'i* (Feature 5), a terrace measuring approximately 12 m by 5 m (Feature 6), a narrow terrace at least 30 m long (Feature 7), and a terrace at least 4 m long retained by a 4-m long wall (Feature 8). SIHP # -6627, an historic trash pit, was also identified during this study. The only historic cultural materials encountered during subsurface testing were metal, glass, and porcelain associated with SIHP # -6627.

### 2.5.3.21 McCurdy and Hammatt (2010)

On 23 and 24 February 2010, CSH conducted an AIS of 4.0 acres located approximately 430 m southwest of the Waikamoi Ridge trailhead for the Kolea Reservoir Decommissioning Project (TMK: [2] 1-1-001:050) (McCurdy and Hammatt 2010). The project is located within the northeast portion of the Huelo License Area of the current project. One historic property was identified during this survey: SIHP # 50-50-13-6682, a plantation-era reservoir/water control system constructed in 1901 with six associated features. These features include the spillway (Feature A),

reservoir (Feature B), a catwalk (Feature C), the dam (Feature D), the reservoir outlet (Feature E), and a water diversion structure (Feature F).

#### **2.5.3.22 Chun and Dillon (2010)**

On 14 and 19 March and 19 April 2010, ACES carried out an AIS for a 3.75-acre lot in Ha'iku approximately 1.8 km *makai* of Hāna Highway on a Ho'olawa Road easement (TMK: [2] 2-9-002:011), consisting of pedestrian survey and three backhoe excavated test trenches (Chun and Dillon 2010). During the surface survey, SIHP # 50-50-06-5460, a lithic reduction center previously documented by O'Rourke and Monahan (2003) was observed with a few associated basalt flakes and a hammerstone. Light scatters of waterworn cobble manuports were encountered in the first stratum of all three test excavations.

#### **2.5.3.23 Chun and Dillon (2014)**

During four days in June 2014, ACES conducted an archaeological assessment for a 3.65-acre lot in Ha'ikū on an easement off Ho'olawa Road along the western bank of Honokala Stream (TMK: [2] 2-9-002:020), which included a 100% pedestrian survey and nine backhoe excavated trenches (Chun and Dillon 2014). No historic properties were identified.

#### **2.5.3.24 Lyman and Dega (2015)**

In March 2015, SCS conducted an AIS of a Rohr Family access road at Honokalā Point in Honopou Ahupua'a (TMK [2] 2-9-002:019 por.) (Lyman and Dega 2015). During this 100% pedestrian survey, two historic properties were identified. SIHP # -8254 is a terrace retaining wall for slope stabilization and SIHP # -8255 is a pre-Contact to historic ditch for *'auwai*.

### **2.5.4 Honomanū License Area Archaeological Studies**

Previous archaeological studies conducted in the vicinity of the Honomanū license area have been addressed elsewhere in this report, since the studies associated with this license area either occurred near all license areas (S. D. M. Freeman et al. 2004; Madeus and Hammatt 2017; McCurdy et al. 2014) or were located closer to adjacent license areas (Group 70 International et al. 1995; A. Haun and Henry 2003; Hill et al. 2008; Kennedy 1990; McCurdy and Hammatt 2010; Palama 1981; Soehren 1963). The portions of these previous archaeological study areas within the Honomanū License Area are depicted in Figure 44.

### **2.5.5 Ke'anae License Area Archaeological Studies**

Previous archaeological studies conducted within or near the Ke'anae License Area are depicted in Figure 45 and summarized in Table 10.

#### **2.5.5.1 Soehren (1963)**

In 1963, Bernice P. Bishop Museum conducted an archaeological survey of portions of East Maui, which included Ke'anae and Wailua (Soehren 1963). Two *heiau*, Kukuiaupun Heiau and Makehau Heiau, previously documented by Walker (1931), were located. Both *heiau* were densely overgrown with vegetation and in poor condition. Additionally, several coastal Wailuanui sites were documented including, Pu'u Olu Pond bordered to the north by a stone wall, a small house platform overlooking Pu'u Olu Pond, a house platform near Paepaemoana Point, a possible post-Contact cemetery consisting of a cluster of 14 graves, several scattered probable graves with rough



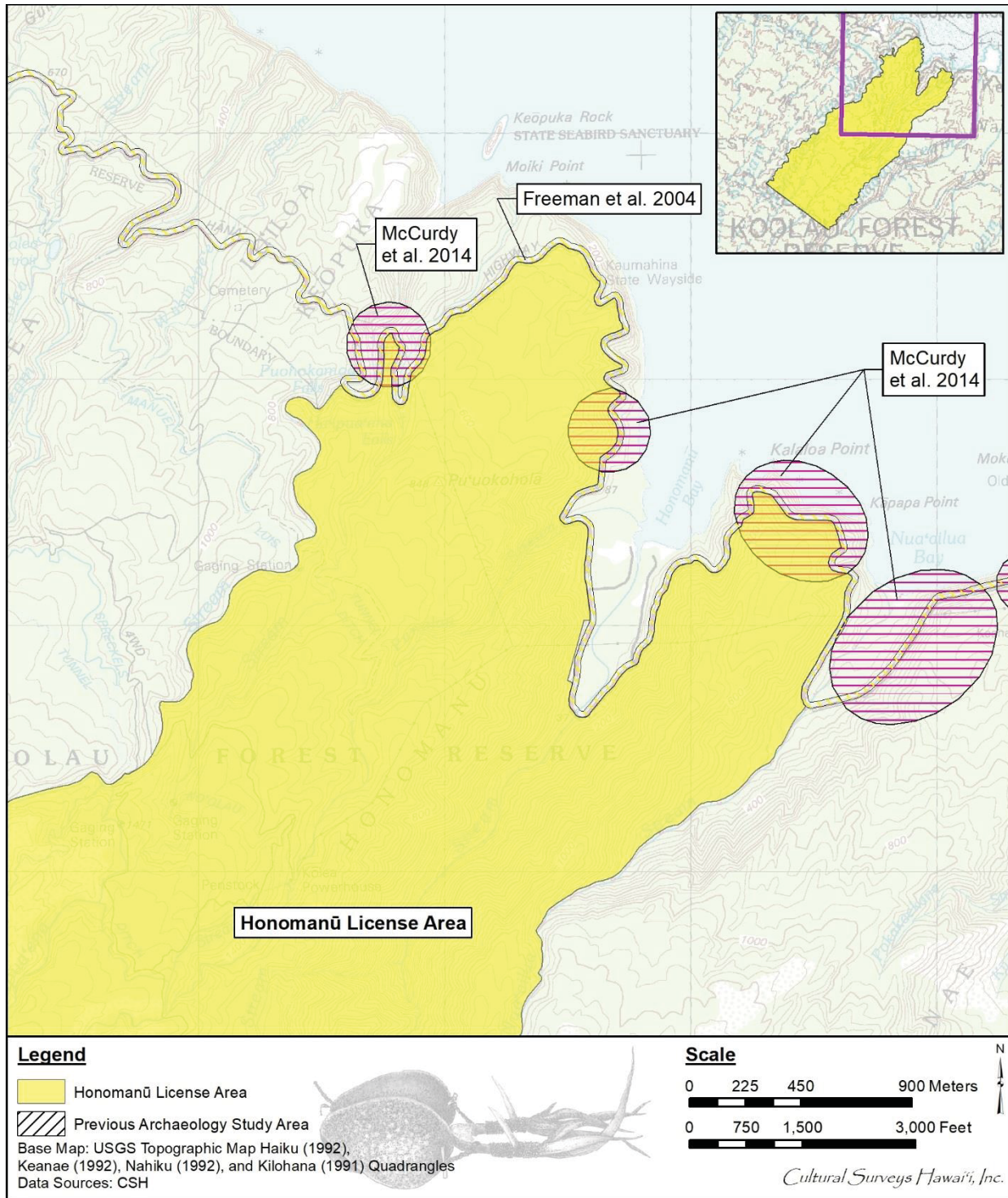


Figure 44. Previous archaeological studies within or near the Honomanū License Area (U.S. Geological Survey 1991, 1992a, c, d)



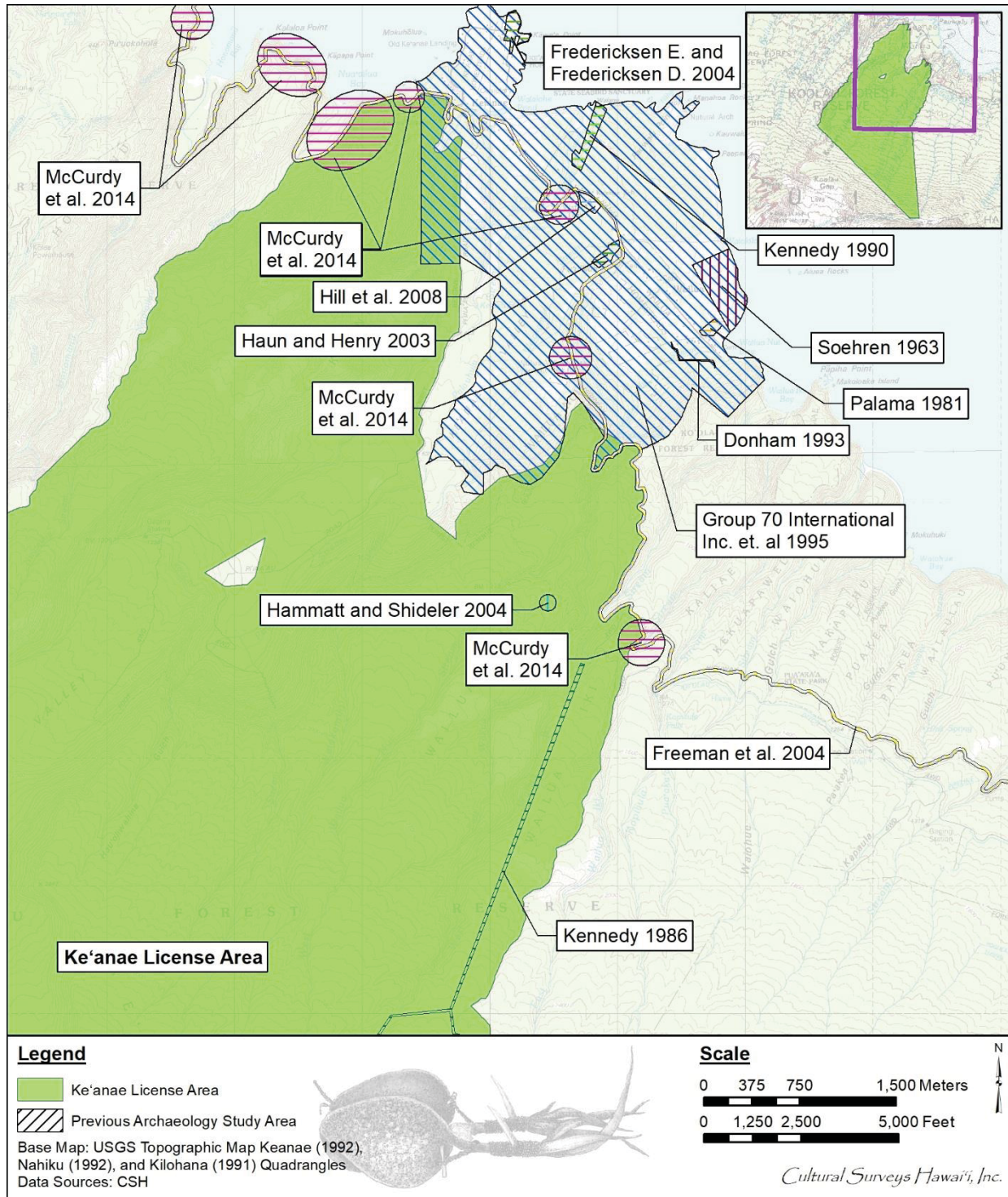


Figure 45. Previous archaeological studies within or near the Ke'anae License Area (U.S. Geological Survey 1991, 1992a, c, d)



Table 10. Previous Archaeological Studies within the Ke‘anae License Area

| Reference      | Type of Study                   | Location  | Results (SIHP # 50-50-07)   |
|----------------|---------------------------------|---|---|
| Soehren (1963) | Archaeological survey           | Portions of east Maui, including Ke‘anae and Wailua                                   | Documented Pu‘u Olu Pond bordered north by a stone wall, a small house platform overlooking Pu‘u Olu Pond, a house platform near Paepaemoana Point, a possible post-Contact cemetery consisting of a cluster of 14 graves and several scattered probable rough stone outlined graves, remnants of stone walls forming adjoining enclosures (either house or shrine site), and a stone wall enclosure with a doorway and associated nearby possible grave and collapsed stone wall; confirmed Kukuiaupun Heiau and Makehau Heiau   |
| Palama (1981)  | Archaeological field inspection | Parcel of Wailua State Land   | No significant findings on inspected parcel; noted stone alignments outside the property boundaries   |
| Kennedy (1986) | Archaeological land inspection  | Land along a 1930s Civilian Conservation Corps (CCC) trail in East and West Wailuaiki | No archaeological sites observed during survey; possible sites reported from interviews with locals include two contemporary hunting or gathering sites, a shrine near West Wailuaiki Stream destroyed in a 1975 flood, a shrine in a nonspecific location where <i>wauke</i> and <i>Olona</i> grow, and a canoe builders shrine where a <i>koa</i> tree was removed to construct a Hawaiian canoe in the 1950s; one resident also reported the nearby presence of a cave containing a feathered cloak, but another local informant provided a contrary location near Haleakala Volcano summit for the cave |
| Kennedy (1990) | Archeological reconnaissance    | Parcel near Kainalimu Bay   | Identified Site 79, Kauleiula Heiau, previously documented by Walker (1931)   |
| Donham (1993)  | Field inspection                | Revised route for a road easement beginning at  | Documented structural remnants of an old wooden slaughterhouse with a likely associated well or cistern;  |

| Reference                                  | Type of Study   | Location  | Results (SIHP # 50-50-07)   |
|--|---|---|---|
|  |   | Makehau Road and partially oriented along Wailuanui Stream                    | rock terraces; an old roadbed with retaining wall (SIHP # 50-50-07-43); part of terrace complex (SIHP # -2942); a ditch-like feature; an agricultural terrace wall (SIHP # -2945); and a terraced-walled late 19th/early 20th century habitation site with associated cultural materials  |
| Group 70 International et al. (1995)       | Cultural landscape study that included an archaeological field survey | Ke'anae and Wailuanui   | Documented SIHP # -3940, a habitation complex in Kilo consisting of terraces and an enclosure; SIHP #s -3932 thru -3938, and -3941, eight taro complexes; SIHP # -3943, Ke'anae Quarry with associated machinery, World War II gun emplacement, and possible stone platformed grave of a former quarry; confirmed SIHP # -0096 Kukuipuni Heiau; SIHP # -0097, Makehau Heiau; SIHP # -0538, Pu'u Olu Pond, a fishpond with an associated house platforms; SIHP # -1513, Wailua Stone Church Ruins; and SIHP # -2957, Ke'anae Landing |
| A. Haun and Henry (2003)                   | AIS   | 4.0-acres bordered north by Hanau Stream in the Pauwalu area of Hāna District | Documented two features from SIHP # -5237: a pre-Contact temporary habitation shelter (Feature A) and a 63.0-m trail section; reported a charcoal sample with a C14 date range from AD 1420 to 1650   |
| E. M. Fredericksen and Fredericksen (2004) | Archaeological monitoring   | Ke'anae Park restrooms  | Documented SIHP # -5534, a late pre-Contact agricultural site with associated subsurface deposits; reported a charcoal sample with 14C date ranges of AD 1410 to 1530 and AD 1560 to 1630; noted a possible 'auwai at northwestern edge of SIHP # -5534   |
| Hammatt and Shideler (2004)                | Archaeological assessment   | Along Wailuaiki Stream, about 1 km west of 1923                               | No significant findings   |

| Reference          | Type of Study             | Location   | Results (SIHP # 50-50-07)   |
|--------------------|---------------------------|--|---|
|                    |                           | Wailuaiki Bridge on the East Maui Irrigation access road. (TMK: [2] 1-1-02:001 por.) |   |
| Hill et al. (2008) | Archaeological monitoring | Ke'anae Elementary School grounds (TMK: [2] 1-1-008:020)                             | No significant findings during monitoring; noted Ke'anae Elementary School is designated SIHP # -1630 and National Register of Historic Places Building # -00000665; observed SIHP # -0096, Kukui o Puni Heiau, located within approximately 450 ft from License Area |

stone outlines (many with sunken centers) in an approximately 3,000 ft<sup>2</sup> area, remnants of stone walls forming adjoining enclosures interpreted as either a house site or shrine, and a stone wall enclosure with a doorway and associated nearby possible grave and collapsed stone wall.

#### **2.5.5.2 Palama (1981)**

On 27 October 1981, Stephen Palama (1981), Pacific Association of Professional Archaeologists member, conducted a field inspection of State Land, Wailua, Hana, Maui (TMK: [2] 1-1-005:001). His results were reported in a short letter dated 28 October 1981 to Mr. Elden K. Liu, in which no archaeological sites were documented on the inspected parcel, though some stone alignments were noted outside the property boundaries.

#### **2.5.5.3 Kennedy (1986)**

During two days in early June 1986, Archaeological Consultants of Hawai'i, Inc. conducted an archaeological land inspection for proposed East and West Wailuaiki Hydroelectric Project, consisting of pedestrian survey along a Civilian Conservation Corps (CCC) trail constructed in the 1930s (TMKs: [2] 1-1-002:001 and 002; 1-2-004:003, 005, 006, 009 and 010; 1-2-001:002) (Kennedy 1986). No archaeological sites were encountered during the survey. However, the entire project area grounds were not surveyed due to dense vegetation causing limited visibility. As a result, consultations with local residents supplemented the investigation. Informants provided mixed accounts regarding the presence or absence of cultural sites in the area. While some residents said that no archaeological sites existed on the project lands, others disagreed. Possible cultural sites reported by residents included two contemporary hunting or gathering sites, a shrine near West Wailuaiki Stream that was destroyed in a 1975 flood, a shrine in a nonspecific location where *wauke* (*Broussonetia papyrifera*) and *Olona* (*Touchardia latifolia*) grow, and a canoe builders shrine. Additionally, one resident reported the nearby presence of a cave containing a feathered cloak, but another local informant provided a contrary location of near Haleakala Volcano summit for the cave. Two residents agreed that the canoe builders shrine referred to the site where a *koa* tree was removed to build a Hawaiian canoe in the mid-1950s. Archaeological monitoring was recommended for the project area.

#### **2.5.5.4 Kennedy (1990)**

In a letter dated 7 March 1990, Joseph Kennedy (1990) discusses an archaeological reconnaissance of a land parcel located near Kainalimu Bay (TMK: [2] 1-3-007:016). Only one archaeological site was identified, Site 79 (Kauleiula Heiau) previously documented by Walker (1931).

#### **2.5.5.5 Donham (1993)**

On 9 December 1992 and 6 January 1993, a field inspection of a revised route for a road easement beginning at Makehau Road and partially oriented along Wailuanui Stream (TMKs: [2] 1-1-006:071 and 1-1-008:001) was conducted (Donham 1993). Twenty meters from Makehau Street near a standing wooden shed, a fallen wooden structure was observed, which appeared to be an old slaughterhouse. Structural remnants included intact beams, corrugated metal roofing, meal cooking pans, glass, and wooden shelving. The age of the site was indeterminate, but observed artifacts were modern. An abandoned well or cistern constructed from dry-laid stones and covered with corrugated metal roofing was located nearby (50 m from Makehau St.) and is probably associated with the wooden structure since water pipes were observed between the two

features. The route's closest point to Makehau Heiau is 19 m east from centerline and small terraces were observed within 9 m of centerline between the route and Makehau Heiau. Further along the route, rock terraces attributed to the terrace complex SIHP # 50-50-07-2942, were observed. Along the southern section of the route, three historic properties were observed: an intact retaining wall for an old roadbed (SIHP # -0043), and two terrace walls (SIHP #s -2944 and -2945). SIHP # -2944, comprised of natural outcrop boulders and stacked cobbles and small boulders, is interpreted as a possible late nineteenth to early twentieth century habitation site due to the associated cultural materials encountered at the site, which include 'opihi shells, kukui nuts, dark-brown bottle glass, clear glass, whiteware bowl sherds (some hand-painted), three sizes of clear bottles with applied glass manufacturer stamps, embossed proprietary panel bottles, dark-brown bottles with kick-up bases, gallon-size glass jugs, English transfer print whiteware plate sherds, and impressed yellowware bowl sherds. SIHP # -2945 is interpreted as an agricultural terrace wall. A ditch-like feature, which may have derived naturally, was also observed along the southern portion of the route.

#### 2.5.5.6 Group 70 International et al. (1995)

In May 1995, Group 70 International, Inc., Dr. Davianna McGregor, and CSH prepared a multidisciplinary cultural landscape study of Ke'anae and Wailuanui, reporting information obtained from literature and document searches, field surveys, and personal interviews (Group 70 International et al. 1995). Archaeological field surveys were conducted during September and October 1994, which also included interviewing local residents and mapping and describing taro cultivation areas. In total, 41 sites are discussed in this study including 14 *heiau*, a shrine, eight taro complexes, two habitation complexes, three rock terrace sites, an old roadbed wall, a fishpond, and 11 post-Contact historic places. The 14 *heiau* (SIHP #s 50-50-07-0082 thru -0084, -0088, and -0090 thru -0097, Kanekaono Lono Heiau, and Paliuli Heiau) and the shrine (Leleiwai) were previously documented by Walker (1931), and of these, only two, Kukuipuni Heiau (SIHP # -0096) and Makehau Heiau (SIHP # -0097), were investigated during the study. Both confirmed *heiau* were noted as being densely overgrown and in conditions similar to previous reports. Pu'u Olu Pond, a fishpond with an associated small house platform overlooking the pond and a historic to modern foundation platform of grass house near Paepaemoana point (SIHP # -0538), was another previously recorded site confirmed during the study. Nine complexes were first documented during this study: SIHP #s 50-50-07-3932, -3933, -3934, -3935, -3936, -3937, -3938, -3940, and -3941. All these sites are taro complexes with the exception of SIHP # -3940, a habitation complex in Kilo consisting of terraces and an enclosure. The other habitation complex discussed in the study (though not investigated) is previously documented SIHP # -0539 (Wailuanui Complex), which consists of 15 graves, two possible house sites, a wall, a terrace, and three modified outcrops. While noted in the report as being documented in previous studies, none of the terrace sites (SIHP #s -2942, -2944, and -2945) nor the wall for a roadbed (SIHP # -2943) were confirmed. Although not included as an archaeological site, the traditional Pi'ilani Trail in the Ko'olau region is listed as an important cultural resource (Group 70 International et al. 1995:145). Post-Contact historic places mentioned, but not investigated during this study, include Puohokamoa Bridge (SIHP # -1509), Lin Hing Society Building (SIHP # -1510), Lanakila Ihiihi o Iehova Ona Kau/ Lanakila Ihiihi o Iehova Ona Kauwa (Congregational church, SIHP # -1511), St. Gabriel Shrine (SIHP # -1512), Wailua Mormon Church (SIHP # -1514), Ramos House (SIHP # -1515), and Waikani Bridge (SIHP # -1516). Wailua Stone Church Ruins (SIHP # -1513) and



Ke'anae Landing (SIHP # -2957) were both confirmed, and SIHP # -3943 (Ke'anae Quarry) was first reported during this study. At the quarry, old machinery, a World War II gun emplacement, and a possible stone platformed grave of a former quarry worker who died in a blasting accident were observed.

#### **2.5.5.7 A. Haun and Henry (2003)**

On 3 August 2002, Haun & Associates conducted an AIS of 4.0-acres bordered north by Hanau Stream in the Pauwalu area of Hāna District (TMKs: [2] 1-1-008:015 and 023) (A. Haun and Henry 2003). During surface survey, two features from SIHP # -5237 were documented: a pre-Contact temporary habitation shelter in the form of a linear overhang with an associated exterior narrow, level ledge (Feature A) and a 63.0-m trail section (Feature B). Only one *'opihi* shell fragment was observed at the surface in Feature A, while five *kukui* nut shells, eight basalt flakes, and 77 charcoal fragments were encountered during subsurface testing at Feature A. A charcoal sample yielded a calibrated (2 sigma, 95% probability) 14C date range from AD 1420 to 1650.

#### **2.5.5.8 E. M. Fredericksen and Fredericksen (2004)**

During January and February 2004, Xamanek Researches, LLC monitored ground disturbing activities for Ke'anae Park restroom improvements (TMK: [2] 1-1-003:001) (E. M. Fredericksen and Fredericksen 2004). While monitoring excavation for the septic leach field, SIHP # 50-50-07-5534, a late pre-Contact agricultural site, was encountered with associated subsurface deposits, including two bivalve shell fragments (*Isognoman* spp.), charcoal flecks, and pieces of angular and waterworn coral. A charcoal sample returned calibrated (2 sigma, 95% probability) 14C date ranges of AD 1410 to 1530 and AD 1560 to 1630. A possible *'auwai* or stream meander was observed at the northwestern edge of SIHP # -5534.

#### **2.5.5.9 Hammatt and Shideler (2004)**

On 2 July 2003, CSH conducted a field inspection (accepted as an archaeological assessment) of the Wailuaiki and Waihe'e proposed stream gage relocation project areas (TMKs: [2] 1-1-02:001por. and [2] 3-2-014:001por.) (Hammatt and Shideler 2004). For purposes related to the current proposed project, only the Wailuaiki project area inspection (TMK: [2] 1-1-02:001por.) part of this field study is relevant. The Wailuaiki field inspection occurred on lands located along Wailua-iki Stream approximately one kilometer west of the 1923 Wailuaiki Bridge on the East Maui Irrigation access road. The field check found no archaeological sites or historic preservation concerns, with the exception of the Ko'olau Ditch infrastructure that would not be affected by the proposed undertaking.

#### **2.5.5.10 Hill et al. (2008)**

In June and July 2007, Cultural Surveys, Hawai'i, Inc. (Hill et al. 2008) monitored the excavation of trenches for cesspool conversion at Ke'anae Elementary School (TMK: [2] 1-1-008:020). The single room classroom at Ke'anae Elementary School was previously designated SIHP # 50-50-07-1630 and National Register of Historic Places Building # -00000665. Within approximately 450 feet and visible from the school campus is Kukui o Puni Heiau. No subsurface cultural deposits were revealed during excavations.

## 2.5.6 Nāhiku License Area Archaeological Studies

### 2.5.6.1 W. M. Fredericksen and Fredericksen (1978)

On 14 July 1978, Xamanek Researches (W. M. Fredericksen and Fredericksen 1978) conducted an archaeological survey of six power pole sites in a Conservation District in Upper Nāhiku for East Maui Irrigation Company Kuhiwa Well (TMK: [2] 1-2-004:007). No historic properties or archaeological materials were reported.

### 2.5.6.2 W. M. Fredericksen and Fredericksen (1980)

On 6 April 1980, Xamanek Researches conducted the field component of research aimed at determining the degree of prehistoric indigenous Hawaiian activities at Hanawi Stream (TMK: [2] 1-2-001:001) (W. M. Fredericksen and Fredericksen 1980). The stream and adjacent land was surveyed from a horse and/or foot trail that roughly followed “the old Government Road” (W. M. Fredericksen and Fredericksen 1980:3). The study concludes that Hanawi Stream area would not have been a substantial site for prehistoric activities due to its remoteness, surrounding rugged terrain, and lack of significant archaeological features observed. Structural-size stones and *‘ili‘ili* stones observed along the old Government Road were the only indication of a possible pre-Contact archaeological site; these stones may or may not have been part of a *heiau* that was reported to exist on the east rise of Hanawi Stream. A small paved area, interpreted as a modern temporary pavement for fishing/gathering parties, was observed east of the mouth of Hanawi Stream. A heavy walled pot and rusty iron grating were associated with this paved area.

### 2.5.6.3 Erik M. Fredericksen and Demaris L. Fredericksen (1998b)

From January through March 1998, Xamanek Researches conducted an AIS for a 26.967-acre parcel located in Ko‘olau (TMK: [2] 1-2-002:026), consisting of pedestrian survey and subsurface testing (Erik M. Fredericksen and Demaris L. Fredericksen 1998b). Poho‘ula Heiau (SIHP # 50-50-12-99), previously identified by Walker (1931), was encountered, and 11 archaeological properties (SIHP #s 50-50-12-4514 through -4523 and -4548) were documented during this AIS.

SIHP # -4514 is a pre-Contact agricultural and habitation complex, consisting of 24 features including four rock walls (Features A, D, E, and H), five lava tube caves (Features B, F, G, L, and T), five possible temporary habitation rock overhangs (Features C, M, N, K, and R), a modified outcrop interpreted as a possible agricultural shrine (Feature I), a natural enclosure (Feature J), seven terraces (Features O, P, S, U, V, W, and X), and a retaining wall (Feature Q). Two of the lava tubes (Features G and L) are interpreted as burial caves, since they contain human skeletal remains. Artifacts encountered at SIHP # -4514 include two hand axes or hammerstones, two choppers, volcanic glass debitage, and utilized basalt flakes. SIHP # -4515 has four documented features: boundary wall (Feature A), two probable burial mounds (Features B and C), and a burial cave with visible human remains and a ground stone (Feature D). The burials were first addressed on 2 March 1998, in a letter report (E. M. Fredericksen 1998) noting the discovery of additional human remains located in a 7-m long lava tube in a small gully that also contained two probable post-Contact burials.

SIHP # -4516 is interpreted as a pre-Contact agricultural site with five features: a rock wall (Feature A), two terraces (Features B and C), a rock enclosure interpreted as a possible habitation/activity area (Feature D), and a rock alignment (Feature E). Utilized basalt flakes, volcanic glass flakes, and possible quartz flake were encountered at SIHP # -4516.



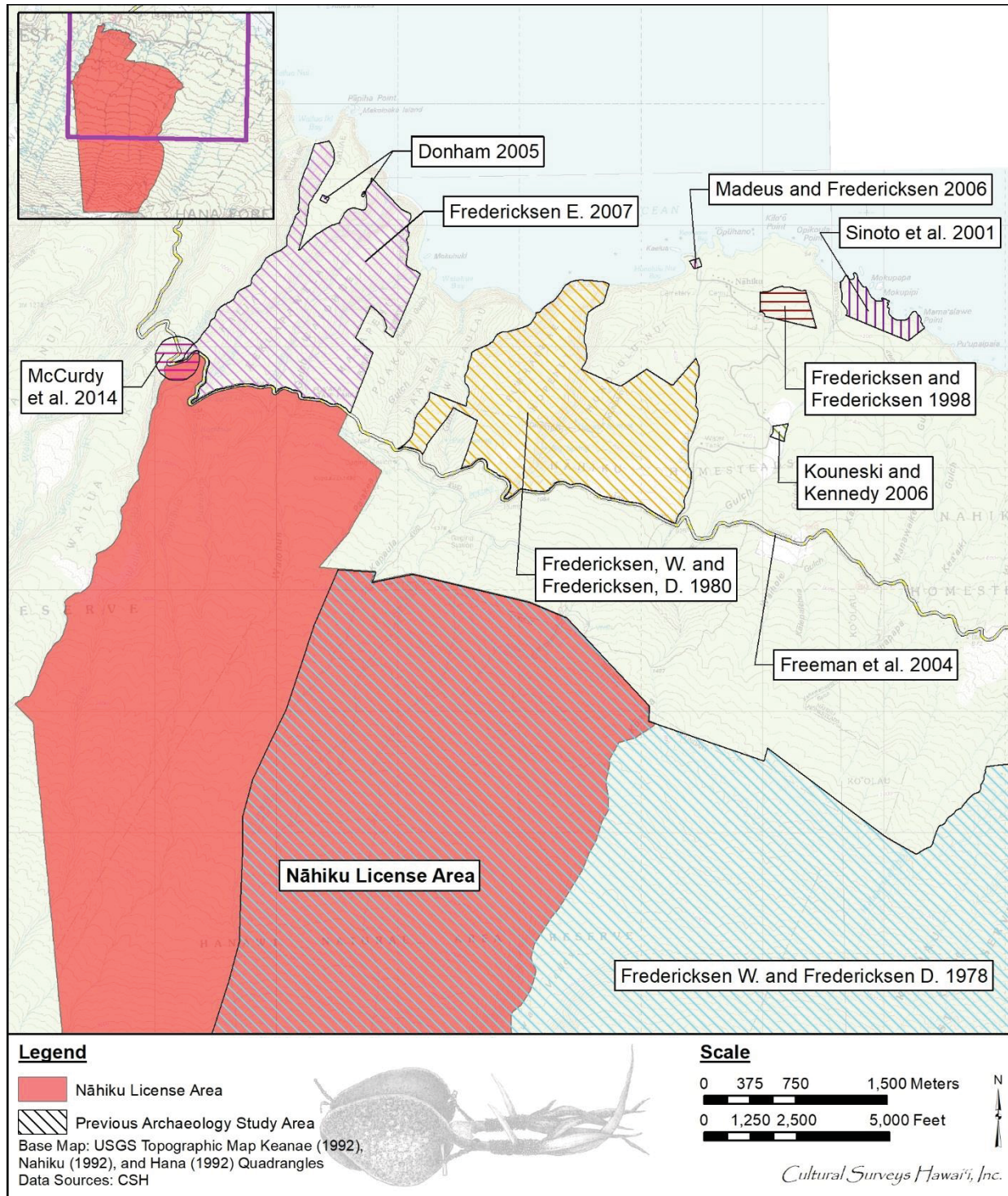


Figure 46. Previous archaeological studies with or near the Nāhiku License Area (U.S. Geological Survey 1991, 1992a, c, d)

Table 11. Previous Archaeological Studies in the Vicinity of the Nāhiku License Area

| Reference   | Type of Study         | Location  | Results (SIHP # 50-50-12)   |
|---|-----------------------|---|---|
| W. M. Fredericksen and Fredericksen (1978)  | Archaeological survey | Six power pole sites in a Conservation District in Upper Nāhiku for East Maui Irrigation Company Kuhiwa Well (TMK: [2] 1-2-004:007) | No significant findings   |
| W. M. Fredericksen and Fredericksen (1980)  | Report of research    | Hanawi Stream (TMK: [2] 1-2-001:001)  | Concluded an absence of archaeological features but noted a horse or foot trail, a paved area interpreted as a place for modern temporary gatherings and structural-size stones and 'ili 'ili stones observed along the old Government Road that may or may not have been part of a <i>heiau</i>  |
| (Erik M. Fredericksen and Demaric L. Fredericksen 1998; Erik M. Fredericksen and Demaris L. Fredericksen 1998b) | AIS                   | 26.97 acres in Ko'olau, Hāna District (TMK: [2] 1-2-002:026)  | Documented 11 cultural sites including five agriculture and possible habitation sites (SIHP #s 50-50-12-4516 thru -4518, -4522, and -4523); a temporary habitation and agricultural site with burial caves and possible shrine (SIHP # -4514); a site with a boundary wall, burial cave and two probable burial mounds (SIHP # -4515); an agricultural complex with terraces and walls (SIHP # -4519); clear piles (SIHP # -4520); a boundary wall and temporary habitation overhang (SIHP # -4521); and a boundary wall and habitation terraces (SIHP # -4548); confirmed SIHP # -0099, Poho'ula Heiau |

| Reference                      | Type of Study             | Location  | Results (SIHP # 50-50-12)   |
|--------------------------------|---------------------------|---|---|
| Sinoto et al. (2001)           | AIS                       | 26-acre ocean front parcel (TMK: [2] 1-2-003:021) located between Kuhiwa Gulch and Kahakapuaa Gulch in Nāhiku | Documented SIHP # -5057, a surface scatter of lithics, and two features of SIHP # -5056: a notched heiau (Feature 1) and a small rectangular depression (Feature 2); reported a possible subsurface pit feature containing rocks, boulders, charcoal flecking, and 'opihi shell fragments |
| Donham (2005)                  | Archaeological assessment | 3.2 acres within TMK: [2] 1-2-001:004, located within Ko'olau Forest Reserve                                  | No significant findings   |
| Kouneski and Kennedy (2006)    | Archaeological assessment | 2.628-acre parcel in Nahiku Homesteads (TMK: [2] 1-2-002:050)   | No significant findings   |
| Madeus and Fredericksen (2006) | AIS                       | 0.84-acre parcel in Nāhiku (TMK: [2] 1-2-001:026)   | Documented two features of SIHP # -5961: a small pre-and post-Contact habitation platform (Feature A) and a retaining wall (Feature B)  |
| E. M. Fredericksen (2007)      | Archaeological monitoring | Approximately .5 acre at Pua'a Ka'a State Wayside Park (TMK: [2] 1-2-001:003)                                 | No significant findings   |



At SIHP # -4517, three features were documented: large rock enclosure (Feature A), a terrace (Feature B), and a rock mound and small terrace (Feature C). Several artifacts were observed at this site, including basalt flakes, a basalt core, a utilized possible quartz flake, an adze tip fragment, metal pieces, green glass, clear glass, and ceramic sherds.

SIHP # -4518 is a small agricultural site with three components: two terraces (Features A and B) and a rock clear pile (Feature C). A basalt core and utilized basalt flakes were observed SIHP # -4518.

At SIHP # -4519, a pre-Contact agricultural site, five components were recorded, including two terraces (Features A and B), a pair of parallel rock wall sections (Feature C), a partial rock wall enclosure (Feature D), and a clear pile (Feature E). Two hammerstones, a hand axe, utilized basalt and volcanic glass flakes, an adze fragment, and a pecking stone were encountered at this site.

SIHP # -4520 consists of three rock mound agricultural clear piles (Features A through C). SIHP # -4521 is comprised of a historic boundary wall (Feature A) and a rock overhang used as a temporary shelter during pre- and post-Contact times (Feature B). Cultural materials observed at this site include early twentieth century bottles and ceramics, two basalt cores, a possible hammerstone, and several '*opihi* shells.

SIHP # -4522 is a pre-Contact agricultural site also utilized post-Contact that contains three features: a large terrace with associated retaining wall interpreted as a possible temporary habitation area (Feature A) and two smaller terraces (Features B and C). Artifacts encountered include clear glass, green glass, brown glass, ceramic sherds, a white button fragment, a glass bead, a slate fragment, utilized polished basalt flakes, a retouched adze fragment, and a hammerstone/chopper.

SIHP # -4523 is a small agricultural terrace with a poorly constructed retaining wall and associated volcanic glass debitage, unworked basalt flakes, waterworn pebbles; and a waterworn boulder.

SIHP # -4548 is comprised of a terrace with a retaining wall interpreted as a pre-Contact habitation area also utilized post-Contact (Feature A) and a likely historic, boundary wall (Feature B). Both pre-and post-Contact artifacts were encountered, including utilized basalt flakes and volcanic glass flakes, three pecking stones, three hammerstones, a ground stone, four adze fragments, polished basalt flakes, four slate fragments, a copper button fragment, and a blue glass bead. An '*ili 'ili* pavement, a mammal tooth, and shell (*Cellana* sp.) were also encountered subsurface at this site.

#### **2.5.6.4 Sinoto et al. (2001)**

On 6 December and 8 December 2000, Archaeological Services Hawaii, LLC in association with Aki Sinoto Consulting conducted an AIS for a 26-acre ocean front parcel (TMK [2] 1-2-003:021) located between Kuhiwa Gulch and Kahakapuaa Gulch in Nāhiku 'Ili, Ko'olau Moku, Hāna District, which included surface inspection and subsurface testing consisting of seven backhoe trenches (Sinoto et al. 2001). At the surface, two historic properties (SIHP # 50-50-12-5056 and -5057) were documented, consisting of a notched *heiau* (SIHP # -5056 Feature 1), a small rectangular depression (SIHP # -5056 Feature 2), and a surface scatter of lithics (SIHP # -5057). A possible subsurface pit feature containing rocks, boulders, charcoal flecking, and '*opihi* shell fragments was observed in Trench 5.

#### **2.5.6.5 Donham (2005)**

On 24 August 2005, Akahele Archaeology conducted an archeological inventory survey of two proposed areas totaling 3.2 acres within TMK: [2] 1-2-001:004, located in Ko'olau Forest Reserve (Donham 2005). No historic properties or cultural materials were identified; therefore, the study was termed an archaeological assessment.

#### **2.5.6.6 Kouneski and Kennedy (2006)**

On 25 January 2006, Archaeological Consultants of the Pacific, Inc. carried out an AIS of a 2.628-acre parcel in Nahiku Homesteads (TMK: [2] 1-2-002:050) (Kouneski and Kennedy 2006). No historic properties were identified during this 100% pedestrian survey, so the study was accepted as an archaeological assessment.

#### **2.5.6.7 Madeus and Fredericksen (2006)**

Intermittently from November 2005 through March 2006, Xamanek Researches, LLC conducted an AIS for a 0.84-acre parcel in Nahiku (TMK: [2] 1-2-001:026), consisting of subsurface testing and 100% surface survey (Madeus and Fredericksen 2006). This AIS documented one historic property (SIHP # 50-50-12-5961), which included a small habitation platform (Feature A) and a retaining wall paralleling an access road to Nahiku Landing (Feature B). During subsurface testing, cultural materials were only encountered in the two test excavations near Feature A. The following pre- and post-Contact materials were observed: volcanic glass flakes, basalt flakes, a probable hammerstone, 'opihi shell fragments, an unidentified shell, charcoal, pieces of porcelain, clear glass fragments, and a white glass button.

#### **2.5.6.8 (E. M. Fredericksen 2007)**

In May 2007, Xamanek Researches, LLC monitored excavations for wastewater improvements on approximately 0.5 acre at Pua'a Ka'a State Wayside Park (TMK: [2] 1-2-001:003) (E. M. Fredericksen 2007). No cultural materials were encountered.

## Section 3 Field Inspection

---

### 3.1 Field Methods

#### 3.1.1 Pedestrian/Vehicular Inspection

CSH archaeologists Trevor Yucha, B.S. (project manager), Zachariah Royalty, B.S., and Jonas Madeus, B.A. completed a combined pedestrian and vehicular inspection of portions of the License Area between 15 and 18 May 2018 in conjunction with an assessment of the EMI infrastructure conducted by Mason Architects. CSH archaeologists were accompanied by Dee Ruzicka of Mason Architects, CSH cultural advisor, Aulii Mitchell, and CSH cultural researcher, Nicole Ishihara. Fieldwork included the inspection of the License Area's access road network by four-wheel drive vehicle followed by the pedestrian inspection of various ditch trails and the locations surrounding 21 sluice gates throughout the EMI Aqueduct System. The inspection was guided by EMI personnel who provided access through locked gates and navigation of the system.

#### 3.1.2 Fieldwork Documentation

Documentation included descriptions and photographs of any potential findings as well as descriptions of the natural and built environment observed throughout the License Area. Descriptions and photographs were recorded using Apple Ipads equipped with standard digital form software as well as with digital cameras.

#### 3.1.3 GPS Location

A handheld Garmin GPS unit (accuracy +/- 1 m) was used to record points of interest that were then uploaded to ArcGIS for inclusion on project maps.

### 3.2 Laboratory Methods

No material was collected from the License Area during fieldwork, therefore no laboratory analysis was conducted.

### 3.3 Disposition of Materials

All data generated during the archaeological literature review and field inspection are stored at the CSH offices.

### 3.4 Results of Field Inspection

CSH completed an archaeological field inspection between 15 and 18 May 2018 in conjunction with an assessment of the EMI infrastructure conducted by Mason Architects. While the primary focus of the survey was to visit 21 sluice gates along the EMI Aqueduct System for architectural recordation, CSH used the opportunity to inspect portions of the License Area along access roads, ditch trails, and within upland stream valleys (Figure 47). Access to many of these remote areas included a combination of four-wheel drive roads leading from Hāna Highway to the aqueduct system followed by narrow ditch trails and drainages nearest the sluice gates and intakes. The field inspection provided an opportunity to inspect some of the upland areas of the License Area within steep-sided valleys that have not been formally surveyed by archaeologists. No previous



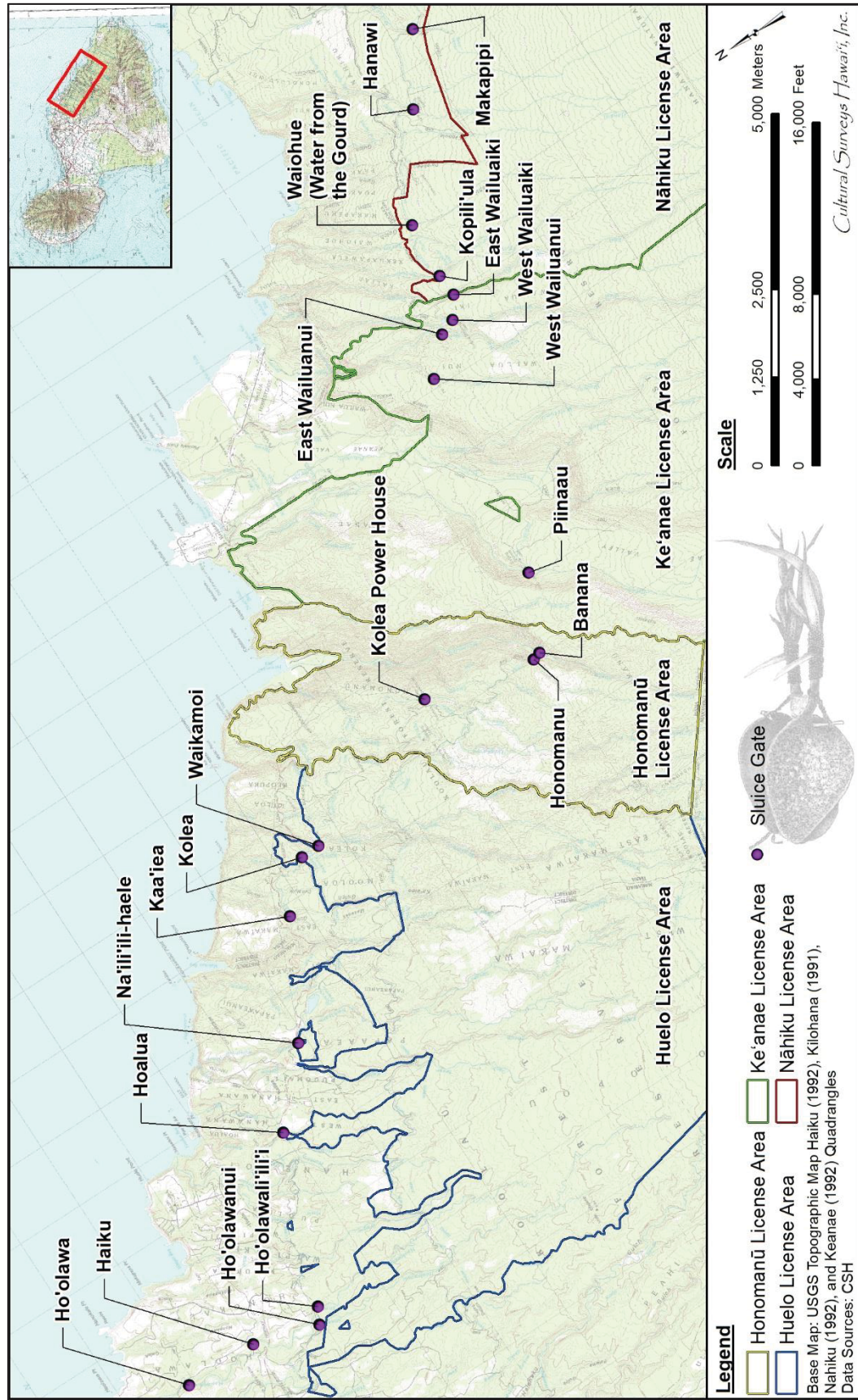


Figure 47. Portions of the Haiku (1992a), Keanae (1992c), Kilohana (1991), Nahiku (1992d), and Hana (1992b) USGS 7.5-minute topographic quadrangles showing the location of the sluice gates visited during the field inspection (note that the field inspection also included the access roads and trails connecting these locations to Hāna Highway)

LRFI for Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, Multiple Ahupua'a, Makawao and Hāna, Maui

TMKS: [2] 1-1 (various plats and parcels), 1-2-004-005, 007 (por.), and 2-9-014:(various parcels)

historic properties have been recorded in these areas, and no potential historic properties, apart from infrastructure related to the EMI Aqueduct System, were observed during the field inspection.

As expected, ground visibility was poor due to thick vegetation cover throughout the License Area. Additionally, in many cases, the terrain on both the upslope and downslope sides of the access roads and trails consisted of nearly vertical valley walls that were inaccessible (Figure 48 through Figure 50). Archaeologists also inspected the areas within the narrow, boulder-filled streambeds that have been cut by centuries of stream flow and rearranged by occasional freshets (Figure 51). These areas consisted of deposits of predominately boulder-sized basalt stone overlying bedrock with little to no soil accumulation. No potential archaeological sites were observed.

As there were no potential archaeological sites observed during the brief field inspection, fieldwork focused on the documentation of the natural and built environment including the EMI Aqueduct System. Documentation included photographs and GPS location of various features of the system including sluice gates, ditches, tunnel openings, access roads, bridges, and meter stations. These structures are built with combinations of locally sourced stone, both cut and natural, that were mortared or dry stacked (Figure 52 through Figure 55). Portions of the ditches were also constructed of formed concrete (Figure 56). Concrete/metal grates, metal walkways, and metal control mechanisms were also observed throughout the system (Figure 57 through Figure 59). Numerous concrete bridges were traversed during the inspection, all of which appear to be of similar construction style and age, with “E.M.I.CO.” and the date “1924” inscribed at several locations (Figure 60 through Figure 62). Additional documentation of the infrastructure of the EMI Aqueduct System was recorded by Mason Architects during the study.





Figure 48. General view of the 4WD access road to the Makapipi sluice gate showing vegetation cover, including large quantities of *ti*, view to northeast





Figure 49. General view of the ditch trail in the vicinity of the Banana sluice gate showing the steep terrain above and below the trail as well as the extend of vegetation cover, view to southeast



Figure 50. General view of the surface of the ditch trail in Honomanū Valley that was inspected by archaeologists showing nearly vertical valley walls on the upslope and downslope edges of the trail, view to south





Figure 51. View of archaeologist inspecting the Honomanū Stream bed in the vicinity of the Honomanū sluice gate, view to south



Figure 52. General view of a cut and faced mortared basalt retaining wall located at the West Wailuanui sluice gate, view to northeast





Figure 53. General view of the West Wailuanui diversion dam showing basalt and mortar masonry, view to west





Figure 54. Oblique profile view of a stacked basalt stone wall at the Banana sluice gate, view to south



Figure 55. General view of a stacked basalt stone wall on the western edge of Na'ili'ili Haele Stream and adjacent to a diversion dam, view to west





Figure 56. General view of concrete ditches at the Ho'olawali'ili'i sluice gate, view to south





Figure 57. Close-up view of a concrete grate at the East Wailuanui Iki sluice gate, view to west



Figure 58. General view of a metal walkway above a flume crossing Waiohue Stream, view to southeast





Figure 59. Close-up view of an abandoned iron sluice gate mechanism located along the ditch trail near the Banana sluice gate, view to southeast



Figure 60. General view of the bridge spanning Honomanū Stream showing “1924” inscribed on side, view to south





Figure 61. General view of the bridge over Honomanū Stream showing construction that utilizes a massive boulder, view to northeast

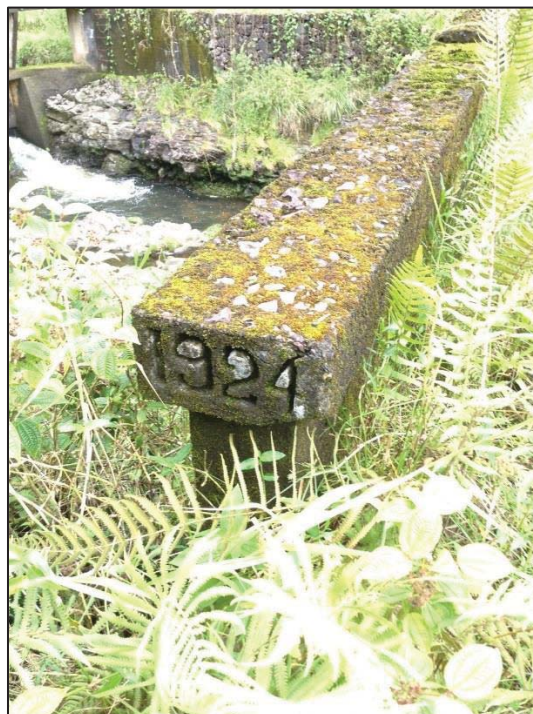


Figure 62. Close-up view of the "1924" date inscription on the bridge nearest to the East Wailua Iki sluice gate, view to west

## Section 4 Summary, Analysis, and Recommendations

### 4.1 Summary

At the request of Wilson Okamoto Corporation CSH has prepared this LRFI for the Proposed Lease (Water Lease) for the License Area, which includes the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua‘a, Makawao and Hāna District, Maui Island, TMKs: [2] 1-1-001:044, 50, 1-1-002:002, 1-2-004:005, 007 (por.), 2-9-014:001, 005, 011, 012, 017.

This report presented a summary of the environmental setting of the License Area including a discussion of hydrology, rainfall, common vegetation, and soils. The License Area includes 37 named streams, 35 of which have been historically diverted into the EMI Aqueduct System, the focus of the current study. Vegetation within the License Area is categorized as Hawaii Lowland Rainforest and Hawaiian Introduced Wet Mesic Forest and includes a mix of exotic (non-native) and exotic and Polynesian cultigens (Giambelluca et al. 2014). Soils within the License Area are predominated by silty clays that have developed in this steep mountainous region and within stream valleys. The built environment of the License Area includes the EMI Aqueduct System comprised of numerous tunnels, ditches, siphons, intakes, and reservoirs. Additionally, the northern boundary of the License Area is generally bounded by the Hāna Highway that includes 56 bridges or culverts that are located adjacent to the License Area. Several coastal communities are located on the seaward side of Hāna Highway and outside of the current License Area.

Traditional background research included a review of place names, legendary accounts, and documentation of pre-Contact land use within Hāmākua Loa Moku and Ko‘olau Moku. The more than 150 place names gathered and translated during the study highlight the abundance of resources in the region and associations with past cultural practices and land use. Additional documentation of the traditional background of the area included details of a legendary shore visit to Hāmākua Loa from the gods Kāne and Kanaloa, the special significance of the deep valleys and inland forests of the region, the history of the construction of the *alaehele* and *alaloa*, a summary of the 39 recorded *heiau* in the region, and testimony describing the abundance of agriculture and other resources that supported a thriving pre-Contact population in East Maui.

Early historic background research presented a regional perspective of the earliest Western accounts recorded in East Maui including Captain James Cook’s brief stop at Hāna in 1778, the arrival of the British ship, the *Iphigenia* at Hāna in 1788, the role of East Maui in the 1790 *Kaua o Kawa‘anui* (Battle of Great Canoes), and the arrival of the first missionaries to East Maui in the early 1800s.

Documentation collected during The Māhele of 1848 provides information on the types and locations of terrestrial and marine resources in the region including agricultural plots, fishing grounds, naturally occurring plant resources, and water supply. Historic maps and claimant records were used to map the location of known LCA awards located in the vicinity of the License Area. The Māhele also marked a turning point in Hawai‘i’s history as Western commercial interests and travelers began their influence on the remote region of East Maui and elsewhere. One of the earliest effects, was the proliferation of Old World diseases. A review of early newspapers throughout the state documented outbreaks of influenza and smallpox specific to portions of East Maui.



The earliest records of Western industry in East Maui included L. L. Torbert's potato plantation at Honua'ula and the beginning of the construction of ditches, tunnels, and siphons to transport the waters of East Maui to the central isthmus for commercial sugarcane agriculture. On 30 September 1876, the government of Hawai'i gave permission to the plantations of Maui to take water from the principal six streams of the region and convey the water by ditch to their fields, for an annual rental of \$100 (Kuykendall 1967:64). The project was completed on schedule and, in July 1877, the first water began flowing through the ditch to the Haiku Plantation. The transfer of water sparked the rise of the commercial sugar industry on Maui and prompted the expansion of the EMI Aqueduct System to include a present-day estimate of 50 miles of tunnels, 24 miles of ditches, inverted siphons and flumes, 388 intakes, eight reservoirs, 62 miles of private roads, and a solar-powered radio telemetry system to monitor ditch flows (ASCE 2001).

The changes that were underway in East Maui at the turn of the century are poetically captured in an excerpt from a 19 December 1898 article in *The Hawaiian Star* documenting a large land sale in Nāhiku:

The district, one of the most fertile on the Islands, awakes out of its lethargy. The valleys which have only heard the roar of the cataract and the rush of the stream will wake to the sound of the steam whistle and the ax, and man will enter upon his kingdom. Cultivation and civilization will reign, but the wild beauty of the Koolau district will be gone. Again this is progress under annexation. (*The Hawaiian Star* 1898)

Rubber plantations in portions of East Maui soon followed sugar with the start of the Nāhiku Rubber Company, Koolau Rubber Company, American-Hawaiian Rubber Company, and the planting of rubber by the Nāhiku Sugar Company throughout the early 1900s. Ultimately a decline in the price of rubber doomed the Maui rubber industry. After testing for several years, the rubber growers concluded that it would not be profitable to continue. It was found that the temperature was hardly warm enough for rubber to grow best and that labor was much more expensive than at Malaysian plantations (O. W. Freeman 1927:64).

Additional research into the history of East Maui included a summary of the development of the community of Ke'ānae, the construction of the Hāna Belt Road and subsequent designation of the corridor as an historic district, and a review of modern land use in the region focused on the activities of the more than 700,000 tourists that travel annually throughout this region.

Previous archaeological research included a summary of approximately 45 archaeological studies conducted in the vicinity of the current License Area including early island-wide surveys, studies specific to the Hāna Highway, and studies conducted in the vicinity of each license area. In general, these studies document the rich archaeological landscape along the coast of the region and extending upward into many of the stream valleys. Findings include agricultural complexes, habitation areas, *heiau*, trails, walls, historic structures and remnants, WWII-era structures, and other associated artifacts and deposits. Few of these previous studies are within or overlap with the current License Area.

CSH completed an archaeological field inspection between 15 and 18 May 2018 in conjunction with an assessment of the EMI infrastructure conducted by Mason Architects. While the primary focus of the survey was to visit 21 sluice gates along the EMI Aqueduct System for architectural recordation, CSH used the opportunity to inspect portions of the lease area along access roads,

ditch trails, and within upland stream valleys. The field inspection provided an opportunity to inspect some of the upland areas of the License Area within steep-sided valleys that have not been formally surveyed by archaeologists. As expected, ground visibility was poor due to thick vegetation cover throughout the License Area. Additionally, in many cases, the terrain on both the upslope and downslope sides of the access roads and trails consisted of nearly vertical valley walls that were inaccessible. No potential archaeological sites were observed.

As there were no potential archaeological sites observed during the brief field inspection, fieldwork focused on the documentation of the natural and built environment including the EMI Aqueduct System. Documentation included photographs and GPS location of various features of the system including sluice gates, ditches, tunnel openings, access roads, bridges, and meter stations.

## 4.2 Analysis and Recommendations

### 4.2.1 Defining Project Impacts

As defined by HAR§ 13-284-7(2)(b), effects or impacts of a project on significant historic properties “include, but are not limited to, partial or total destruction or alteration of the historic property, detrimental alteration of the properties’ surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with chance of resulting damage, and neglect resulting in deterioration or destruction.” These effects are generally considered in terms of direct and indirect impacts. Potential impacts to archaeological historic properties as a result of the Proposed Action and alternatives are discussed and based on the research conducted during this LRFI. As there were no archaeological historic properties identified during this study within the License Area, effects to specific significant historic properties are not presented.

### 4.2.2 Proposed Action

The Proposed Action constitutes the issuance of one long term (30 years) Water Lease from the BLNR for the continued *“right, privilege, and authority to enter and go upon”* the License Area for the *“purpose of developing, diverting, transporting, and using government owned waters”* through the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease will enable the lessee to continue to go on lands owned by the State in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System, and will allow continued operation of the EMI Aqueduct System to deliver water to the County of Maui DWS for domestic and agricultural water needs in Upcountry Maui, including the agricultural users as the Kula Agricultural Park (KAP), as well as for the Nāhiku community. It will also allow the continued provision of water to approximately 30,000 acres of agricultural lands in Central Maui. The proposed action is subject to the terms of the Interim Instream Flow Standard (IIFS) established by the Commission on Water Resource Management.

In their 6 October 2017 Chapter 6E-8 historic preservation review letter (Log No. 2017.00026; Doc. No: 1706MBF11), the SHPD states that “the proposed water lease will not involve any ground disturbance, and that the potential impact of flooding from abandoning the diversions on five of the streams will not be greater than periodic naturally occurring events”.

The Proposed Action will not include partial or total destruction or alteration of historic properties, detrimental alteration of the surrounding environment, detrimental visual, spatial, noise

or atmospheric impingement, increasing access with chance of resulting damage, nor neglect resulting in deterioration or destruction. The Proposed Action does not include project-related ground disturbance or changes in water flow greater than periodic natural stream freshets. As such, the Proposed Action will have no impact to archaeological historic properties.

#### **4.2.3 No Action Alternative**

The No Action alternative is understood as the termination or non-issuance of the subject Water Lease (described in Section 4.2.1). Under this alternative, A&B would be permitted to 30% of the water from the larger 50,000-acre Collection Area based on previous agreements.

If the No Action alternative includes the continued maintenance and repair of the existing EMI Aqueduct System regardless of the issuance of the subject Water Lease, then the No Action alternative will not include partial or total destruction or alteration of historic properties, detrimental alteration of the surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with chance of resulting damage, nor neglect resulting in deterioration or destruction. Therefore, the No Action alternative with continued maintenance will have no impact to archaeological historic properties.

If the No Action alternative does not include continued maintenance and repair of the existing EMI Aqueduct System, then the No Action alternative has the potential to pose an impact to historic properties. Components of the EMI Aqueduct System that deteriorate and begin to fail, such as broken ditch walls or collapsed tunnels, have the potential to alter natural drainage patterns and increase erosion in downstream areas that are outside of established stream channels. These areas have the potential to contain surface and subsurface historic properties that could be affected by flooding and erosion. As an architectural resource, the EMI Aqueduct System would also be affected by “neglect resulting in deterioration or destruction” if maintenance and repair of the system are discontinued.

#### **4.2.4 Water Sources Alternative**

The Water Sources alternative is understood as the decision to obtain water from new sources other than from the diversion of East Maui streams into the existing EMI Aqueduct System. These sources could include new wells, desalinization facilities, and reservoirs located on Maui Island.

The construction of new wells, desalinization facilities, and reservoirs is assumed to include some level of project-related ground disturbance on Maui Island. Project-related ground disturbance has the potential to include partial or total destruction or alteration of historic properties, detrimental alteration of the surrounding environment, and/or detrimental visual, spatial, noise or atmospheric impingement. Therefore, the Water Sources alternative has the potential to impact historic properties that may be located within the footprint of new wells, desalinization facilities, and reservoirs. Prior to construction, consultation with the SHPD is recommended in order to determine the appropriate historic preservation requirements for the construction of new wells, desalinization facilities, and reservoirs.

#### **4.2.5 Water Lease Volume Alternative**

The Water Lease Volume alternative is understood as a modification (reduction) to the volume of water that is diverted from East Maui streams.

A reduction in the volume of water diverted from East Maui streams will not include partial or total destruction or alteration of historic properties, detrimental alteration of the surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with chance of resulting damage, nor neglect resulting in deterioration or destruction. As such, the Water Lease Volume alternative will have no impact to archaeological historic properties.

#### **4.2.6 Lease Terms Alternative**

The Lease Terms alternative is understood as a modification to the length of the proposed lease term for the “*right, privilege, and authority to enter and go upon*” the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas for the “*purpose of developing, diverting, transporting, and using government owned waters* through the existing EMI Aqueduct System. The Proposed Action constitutes the issuance of one long term (30 years) Water Lease, and this alternative considers either a shorter or longer lease term.

The duration of the Water Lease will not necessarily include partial or total destruction or alteration of historic properties, detrimental alteration of the surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with chance of resulting damage, nor neglect resulting in deterioration or destruction. As such, the Lease Terms alternative will have no impact to archaeological historic properties.

#### **4.2.7 Management Alternative**

The Management alternative is understood as a change of the entity that manages the diversion of water from East Maui streams.

A change in management will not include partial or total destruction or alteration of historic properties, detrimental alteration of the surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with chance of resulting damage, nor neglect resulting in deterioration or destruction. As such, the Management alternative will have no impact to archaeological historic properties.

#### **4.2.8 Public Access**

An increase in unmanaged public access to the License Area, or any part thereof, as part of any proposed project alternative is identified as having the potential to impact historic properties. Potential impacts from unmanaged access could include looting and “rock-robbing” of surface and subsurface historic properties, littering, harvesting of archaeologically associated flora such as *ti* (*Cordyline fruticosa*), trampling or erosion from pedestrian/vehicular access, and unpermitted ground disturbance. Consultation with the SHPD is recommended in order to determine the appropriate historic preservation requirements if project alternatives are selected that present an increase in vehicular/pedestrian traffic or uncontrolled public access within the License Area.

## Section 5    References Cited

---

### ASCE

2001    Historic Civil Engineering Landmark Nomination East Maui Irrigation System. American Society of Civil Engineers, Hawaii Section, Honolulu, Hawai'i.

### Ashdown, Inez

1971    *Ke Alaloe O Maui: The Broad Highway of Maui*, edited by I. Kama'aina Historians. Ace Printing Company, Wailuku, Hawai'i.

### Bartholomew, Gail and Bren Bailey

1994    *Maui Remembers: A Local History*. Mutual Publishing, Honolulu.

### Beck, Juanita Aguerrebere and Michael F. Dega

2003    *Archaeological Inventory Survey of Approximately 3.5 Acres of Land Located in the Ahupua'a of Ho'olawa, Makawao District, Maui Island, Hawai'i [TMK:2-9-02:16]*. Scientific Consultant Services, Inc., Honolulu, Hawai'i.

### Beckwith, Martha W.

1970    *Hawaiian Mythology*. University of Hawai'i Press, Honolulu.

### Bishop, S.E.

1861    *Report to the Board of Sandwich Islands Mission*. Honolulu, Hawai'i.

### Bushnell, Kristina W. and Hallett H. Hammatt

2001    *Archaeological Inventory Survey for Proposed Kahui Po No L.L.C. Roadway Access Easement and 15 Acre Parcel, Ho'olawaahupua'a, Makawao District, Island of Maui (TMK 2-9-02:017, -21, -35)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

### Chinen, Jon J.

1958    *The Great Mahele: Hawaii's Land Division of 1848*. University of Hawai'i Press, Honolulu.



**Chun, Allison and David D. Dillon**

2008 *Archaeological Inventory Survey Report for a 5.128 Acre Lot in Ha'ikū, Maui Ho'olawa Ahupua'a, Hāmākualoa District, Maui Island TMK (2) 2-9-003: 028.* Affordable Cultural and Ecological Services, LLC, Makawao, Hawai'i.

2009 *Archaeological Inventory Survey Report for A 2.0 Acre Lot in Huelo, Maui Honokala Ahupua'a, Hāmākualoa District, Maui Island TMK (2) 2-9-002: 041.* Affordable Cultural and Ecological Services, LLC, Makawao, Hawai'i.

2010 *Archaeological Inventory Survey Report for a 3.75-Acre Lot in Ha'ikū, Maui Ho'olawa Ahupua'a, Hāmākualoa District, Maui Island TMK (2) 2-9-002:011.* Affordable Cultural and Ecological Services, LLC, Makawao, Hawai'i.

2014 *Archaeological Assessment Report for a 3.65-Acre Lot in Ha'ikū Ho'olawa Ahupua'a, Makawao District, Maui Island TMK (2) 2-9-002:020.* Affordable Cultural and Ecological Services, LLC, Makawao, Hawai'i.

**Conde, Jesse C.**

1993 *Fowler Locomotives in the Kingdom of Hawaii. The Narrow Gauge* (Special Issue of the Narrow Gauge Railway Society).

**Conte, Patty J.**

2003 *Limited Archaeological Inventory Survey of a Designated Access Easement Through the Huelo Hui Partition, Honopou Ahupua'a, Hamakualoa District, Maui, Hawai'i TMK (2) 2-9-01: 4, 18, and 19.* CRM Solutions Hawai'i, Inc., Makawao, Hawai'i.

2004 *Archaeological Inventory Survey and Passive Preservation Plan for the Souza Property, TMK (2) 2-9-01:009, Honopou Ahupua'a, Makawao District, Maui, Hawai'i* CRM Solutions Hawai'i, Inc., Makawao, Hawai'i.

2005a *Archaeological Inventory Survey of the Bolles Property TMK (2) 2-9-07:052, Puolua Ahupua'a, Makawao District, Maui, Hawai'i.* CRM Solutions Hawai'i, Inc., Makawao, Hawai'i.

2005b *Archaeological Inventory Survey of TMK (2) 2-9-01:075, Ho'olawa Ahupua'a, Makawao District, Maui, Hawai'i.* CRM Solutions Hawai'i, Inc., Makawao, Hawai'i.

**Cordy, Ross**

2000 *Exalted Sits the Chief.* Mutual Publishing, Honolulu.

**Cushing, Robert L.**

1985 The Beginning of Sugar Production in Hawaii. *Hawaiian Journal of History* 19:22.

**Daily Honolulu Press.**

1883 "Reminiscences of Honolulu." *Daily Honolulu Press*, Saturday 10 February.1, Honolulu, Hawai'i.

**Daws, Gavan**

1968 *Shoal of Time: A History of the Hawaiian Islands*. University of Hawai'i Press, Honolulu, Hawai'i

**Dean, Arthur L.**

1950 *Alexander & Baldwin, Ltd. and the Predecessor Partnerships*. Alexander & Baldwin Ltd. and Advertiser Publishing Company, Honolulu.

**Dega, Michael F.**

2003 *Archaeological Assessment Report on a 3/4-Acre Portion of a Total 7.55-Acres of Land, A Portion of Land Grant 2041: Apana 1, in Paia Honokala Ahupua'a, Hamakualoa District, Island of Maui, Hawai'i (TMK:2-9-05:10)*. Scientific Consultant Services, Inc., Honolulu, Hawai'i.

**Dodge, Rowland B.**

1916 Maui No Ka Oi. In *The Mid-Pacific Magazine*. Vol. XI. Ford, Alexander Hume, Honolulu, Hawai'i.

**Donham, Theresa K.**

1993 *Field Inspection of Revised Road Easement for Mike Adams, Wailua, Koolau, Maui*. State of Hawai'i Department of Land and Natural Resources, State Historic Preservation Division Honolulu, Hawai'i

2005 *Archaeological Assessment of Two Proposed Use Areas Within TMK Parcel 1-2-01: 04, Kaliae Ahupua'a, Hana (Ko'olau) District, Maui* Akahele Archaeology, Kihei, Hawai'i.

**Duensing, Dawn E.**

2001 *National Register of Historic Places Registration Form: Hana Belt Road*. National Park Service, United States Department of the Interior, Hawai'i

2005 *Historic American Engineering Record: Hana Belt Road*. HAER HI-75. Prepared for U.S. Department of the Interior, HI-75. National Park Service, United States Department of the Interior, Washington, D.C.

**Esri, Inc.**

2009 Map Image Layer. Esri, Inc., Redlands, California.

**Fleming, Martha Foss**

1933 *Old trails of Maui, being the research of Martha Foss Fleming*. [n.p.].

**Foote, Donald E., E. L. Hill, S. Nakamura and F. Stephens**

1972 *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. United States Soil Conservation Service, Washington DC.

**Fornander, Abraham**

1880 *An Account of the Polynesian Race, its Origins and Migrations, and the Ancient History of the Hawaiian People to the Times of Kamehameha I*. Vol. II, 6 Vols, edited by J. F. G. Stokes. Trubner & Co., London.

1916 Legend of Kana and Niheu. In *Fornander Collection of Hawaiian Antiquities and Folklore*. vol. IV, Part III. Bernice Pauahi Bishop Museum, Honolulu, Hawaii.

1918 Legend of Kihapiilani. In *Fornander Collection of Hawaiian Antiquities and Folklore the Hawaiians' Account of the Formation of Their Islands and Origin of Their Race, with the Traditions of Their Migration, Etc., as Gathered from Original Sources*, Vol. V, Part I, edited by T. G. Thrum, pp. 176-182. Bishop Museum Press, Honolulu.

**Fredericksen, Demaris L.**

1996 *Limited Archaeological Inventory Survey on the Marquard Ho'olawa Parcel (TMK: 2-9-02: 14 por.) Ho'olawa Ahupua'a, Makawao District, Maul Island*. Xamanek Researches, Pukalani, Hawai'i.

**Fredericksen, Demaris L. and Erik M. Fredericksen**

2003 *Phase 2 of an Archaeological Inventory Survey of a Parcel of Land in Hanawana Valley, Hanawana Ahupua'a, Hamakualoa Moku, Makawao District, Maui (TMK: 2-9-11: 18), X*. Researches, general editor. Xamanek Researches, LLC, Pukalani, Hawai'i.

**Fredericksen, Erik**

2000 *Phase 1 of an Archaeological Inventory Survey of a Parcel of Land in Hanawana Valley, Hanawana Ahupua'a, Hamakualoa Moku, Makawao District, Maui (TMK:2-9-11:18).* Pukalani, Hawai'i.

**Fredericksen, Erik M.**

1998 *Letter Report on the Discovery of Additional Human Remains located on the proposed Nahiku Ocean View Lot Subdivision, Nahiku, Maui, Hawaii, (TMK: (2) 1-2-02:26).* Xamanek Researches, Pukalani, Hawai'i.

2007 *An Archaeological Monitoring Report for Individual Wastewater System Improvements at Pua'a Ka'a State Wayside Park, Nakapehu Ahupua'a, Hana District, Maui Island (TMK: (2) 1-2-01: 03) (Job No: F00CF59A)* Xamanek Researches, LLC, Pukalani, Hawai'i.

**Fredericksen, Erik M. and Demaric L. Fredericksen**

1998 *Archaeological Inventory Survey on a 26.967-Acre Parcel, Located in Makapipi Ahupua'a, Ko'olau Moku, Hana District, Maui Island (TMK: 1-2-02:26).* Xamanek Researches, Pukalani, Hawaii.

**Fredericksen, Erik M. and Demaris L. Fredericksen**

1998a *Archaeological Inventory Survey of Ho'olawa Ranch Property, Ho'olawa Ahupua'a, Makawao District, Maui Island (TMK: 2-9-02: 14).* Xamanek Researches, Pukalani, Hawai'i.

1998b *Archaeological Inventory Survey on a 26.967-Acre Parcel, Located in Makapipi Ahupua'a, Ko'olau Moku, Hana District, Maui Island (TMK: 1-2-02:26).* Xamanek Researches, Pukalani, Hawai'i.

2000 *An Archaeological Inventory Survey on Lot 7-B of Huelo Hui Partition Subdivision, Honokala Ahupua'a Makawao District, Maui Island (TMK: 2-9-02: por. 05).* Xamanek Researches, Pukalani, Hawai'i.

2004 *Archaeological Monitoring Report for the Ke'anae Park Restroom Improvements Project, Ke'anae Ahupua'a, Hana District, Maui Island (TMK: (2) 1-1-03: 01).* Xamanek Researches, Pukalani, Hawai'i.

**Fredericksen, Walter M. and Demaris L. Fredericksen**

1978 *Archaeological Survey in a Conservation District in Upper Nahiku, Eastern Maui, Hawaii.* Xamanek Researches, Pukalani, Hawai'i.

1980 *Report of Research on Hanawi Stream Maui* Xamanek Researches, Pukalani, Hawai'i.

**Freeman, Otis Willard**

1927 *The Economic Geography of Hawaii*. Research Publications No. 2. University of Hawai'i, Honolulu, Hawai'i.

**Freeman, Sallie D.M. , Holly J. Formolo and Hallet H. Hammatt**

2004 *An Archaeological Monitoring Report for Hāna Highway Improvements Huelo to Hāna, M.P. 4.20 to 23.70 Districts of Makawao (Hāmākualoa and Ko'olau) and Hāna, Island of Maui* Kailua, Hawai'i.

**Giambelluca, Thomas W., Q. Chen, A.G. Frazier, J.P. Price, Y.L. Chen, P.S. Chu, J.K. Eischeid and D.M. Delparte**

2013 Online The Rainfall Atlas of Hawai'i, Bull. Amer.Meteor. Soc., University of Hawai'i at Mānoa, Honolulu, <http://rainfall.geography.hawaii.edu>. (last accessed 17 April 2018).

**Giambelluca, Thomas W., X. Shuai, M.L. Barnes, R.J. Alliss, R.J. Longman, T. Miura, Q. Chen, A.G. Frazier, R.G. Mudd, L. Cuo and A.D. Businger**

2014 Evapotranspiration of Hawai'i. Final report submitted to the U.S. Army Corps of Engineers—Honolulu District, and the Commission on Water Resource Management, State of Hawai'i, University of Hawai'i at Mānoa, Honolulu, <http://climate.geography.hawaii.edu/>. (last accessed 17 April 2018).

**Google Maps**

2018 Google Maps Online Database.

**Green, Jonathan S.**

1857 "Editorial." *The Pacific Commercial Advertiser*, Thursday 5 November.1, Honolulu, Hawai'i.

**Griffin, Agnes**

1987 *Report on a Field Inspection of Hana Ranch Inc. Construction Site*. State of Hawai'i Department of Land and Natural Resources, State Historic Preservation Division, Honolulu, Hawai'i.



**Group 70 International, Inc., Davianna McGregor and Inc. Cultural Surveys Hawai'i**

1995 Kalo Kunu O Ka 'Āina A Cultural Landscape Study of Ke'anae and Wailuanui, Island of Maui. The County of Maui Planning Department and The Maui County Cultural Resources Commission, Wailuku, Hawai'i.

**Hammatt, Hallett H. and David W. Shideler**

2004 *Archaeological Assessment in Support of Streamgage Relocation at Wailua Iki, Ko'olau District and Waihe'e, Wailuku District, Maui (TMK 1-1-02: por. 1 and TMK 3-2-14: por. 1)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

**Hana Cultural Center and Museum**

2017 Hana Cultural Center and Museum. vol. 2017. Business Website Center, Petaluma, California.

**Hana Picnic Lunch Co.**

2018 Coral Miracle Church. In *The Road to Hana, Tips and Essential Blog*, edited by Annabel. vol. 2018. Hana Picnic Lunch Co., Hana, Hawai'i.

**Handy, Craighill E. S.**

1940 *The Hawaiian Planter*. Bernice P. Bishop Museum bulletin 161. The Bishop Museum, Honolulu, .

**Handy, E.S. Craighill, Elizabeth Green Handy and Mary Kawena Pukui**

1991 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Revised ed. Bernice P. Bishop Museum Bulletin 233. Bishop Museum Press, Honolulu.

**Hatch, Frederick**

1922 *Moody's Manual of Railroads and Corporation Securities*. Poor's Publishing Company, New York, New York.

**Haun, Alan E., Jack Dave Henry and Maria Orr**

2004 *Archaeological Inventory Survey Wai'anapanapa State Park, Lands of Honokalani, Wakiu, and Kawaipapa, Hana District, Island of Maui*. Haun and Associates, Keaau, Hawai'i.

**Haun, Alan and Jack D. Henry**

2003 *Archaeological Inventory Survey TMK: 1-1-008:015, 023 Land of Pauwalu, Hana District, Island of Maui*.

**Hawaii TMK Service**

2014 *Tax Map Key [2] 4-4 [map]*. Hawaii TMK Service, Honolulu, Hawai'i.

**Hawaii Web Group**

2017 *Road to Hana: Hana Town*. Hawaii Web Group,, Makawao and Haiku, Hawai'i.

**Hawaiian Gazette.**

1906 "Eighteen Feet of Tree in Fourteen Months." *Hawaiian Gazette*, 23 March 1906.6, Honolulu, Hawai'i.  
<https://www.newspapers.com/image/49682378/?terms=koolau%2Brubber%2Bcompany#>.

**Hill, Robert R., Tanya L. Lee-Greig and Hallett H. Hammatt**

2008 *Archaeological Monitoring Report for the Cesspool Conversion Project at Ke'anae School, Kali'i Ahupua'a, Hāna District, Maui Island TMK: (2)1-1-08:020*. Cultural Surveys Hawai'i Inc., Wailuku, Hawai'i.

**Honolulu Advertiser.**

1901a "A Chinaman's Rice Junk Makes a Trip." *The Honolulu Advertiser*, September, 2.11, Honolulu, Hawai'i.  
<http://www.newspapers.com/image/258843047>.

1901b "The House Excited: Humphreys Latest Plot Roundly Scored." *The Honolulu Advertiser*, 26 June.9-14, Honolulu, Hawai'i.  
<https://www.newspapers.com/image/258822000/?terms=nahiku%2Bsugar%2Bco>.

1902 "Protest of Maui: Boyd Explains the Nahiku Water License, Homesteaders Have Rights." *Honolulu Advertiser*, 6 January 1902.2, Honolulu, Hawai'i.  
<https://www.newspapers.com/image/258222004/?terms=nahiku%2Bsugar%2Bco>.

1978 "Mixing H with 3 R's." *The Honolulu Advertiser*, Wednesday, April 26.1, Honolulu, Hawai'i.  
<http://www.newspapers.com/image/261659312>.

**Honolulu Republican.**

1901 "An Enterprising Chinese." *The Honolulu Republican*, September 22.9, Honolulu, Hawai'i.  
<https://www.newspapers.com/image/71003142>.

**Honolulu Star Bulletin.**

1914 "Koolau Rubber Company Nears Its Last Days." *Honolulu Star Advertiser*, 26 October 1914. Honolulu, Hawai'i. <https://www.newspapers.com/image/290284210/?terms=koolau%2Bbrubber%2Bcompany#>.

1917 "Mortgagees' Notice of Intention to Foreclose and of Foreclosure Sale." *Honolulu Star Bulletin*, Monday, 4 September 1917.10, Honolulu, Hawaii. Main Edition edition.

1925 "Luau at Opening of Keanae Road." *Honolulu Star Bulletin*, Friday, June 5.21, Honolulu, Hawaii. <http://www.newspapers.com/image/275029205>.

1943 "Walter E. Shaw Was Pioneer In Island Rubber." *Honolulu Star Bulletin*, 24 July 6, Honolulu, HI. <https://www.newspapers.com/image/275618378/?terms=nahiku%2Bsugar%2Bco>.

1969 "Education Week: With a Visit to the Smallest School in State-20 Pupils in Eight Grades." *Honolulu Star Bulletin*, Saturday, November 15.43, Honolulu, Hawaii. Main edition edition. <http://www.newspapers.com/image/271075988>.

**James, Van**

2002 *Ancient Sites of Maui, Moloka'i and Lāna'i: Archaeological Places of Interest in the Hawaiian Islands*. Mutual Publishing, Honolulu.

**Judd, Albert F., II, Bernice Judd, Barbara S. Wilcox and Elizabeth G. Alexander**

1969 *Missionary Album*. Sesquicentennial Edition. Hawaiian Mission Children's Society, Honolulu.

**Kahā'ulelio, Daniel**

2006 *Ka 'Oihana Lawai'a Hawaiian Fishing Traditions*. Translated by M. K. Pukui. Bishop Museum Press, Honolulu.

**Kamakau, Samuel Mānaiakalani**

1991 *Tales and Traditions of the People of Old: Nā Mo'olelo a ka Po'e Kahiko*, edited by D. B. Barrère. Translated by M. K. Pukui. Bernice P. Bishop Museum Special Publication 51. Bishop Museum Press, Honolulu.

1992 *Ruling Chiefs of Hawai'i*. Revised ed. The Kamehameha Schools Press, Honolulu, Hawai'i.

**Kennedy, Joseph**

1986 *Archaeological Investigations for Proposed East And West Wailuaiki Hydroelectric Project*. Honolulu, Hawai'i

1990 *Archaeological Reconnaissance Report Concerning TMK: 01-3-7:16, Located Near Kainalimu Bay, Hana Maui*. Archaeological Consultants of Hawaii, Inc., Haleiwa, Hawai'i.

**Kennedy, Joseph, Patrick Trimble, Laura Reintsema and MaryAnne B. Maigret**

1992 *Archaeological Inventory Survey with Subsurface Testing Report at TMK: 2-9-103; West Hanawana Ahupua'a, Makawao District Island of Maui* Archaeological Consultants of Hawaii, Inc., Kihei, Hawai'i

**Kirch, Patrick V.**

1996 *Legacy of the Landscape: An Illustrated Guide to Hawaiian Archaeological Sites*. University of Hawaii Press, Honolulu, Hawai'i.

2000 *On the Road of the Winds: An Archaeological History of the Pacific Islands before European Contact*. University of California Press, Berkeley and Los Angeles, California.

2012 *A Shark Going Inland is My Chief: The Island Civilization of Ancient Hawai'i*. University of California Press, Berkeley, California.

**Kouneski, Elena and Joseph Kennedy**

2006 *An Archaeological Assessment for a Property Located at TMK (2) 1-2-02:50 in Nahiku Homesteads, Ko'olau District, Island of Maui*. Archaeological Consultants of the Pacific, Haleiwa, Hawaii.

**Kuykendall, R.S.**

1967 *The Hawaiian Kingdom 1874-1893: The Kalakaua Dynasty*. Vol. III. University of Hawaii Press, Honolulu, Hawai'i.

**Lindsay, D.C.**

1907 Rubber in Hawaii. *The Hawaiian Forester and Agriculturalist* IV(October 1907).

**Linnekin, Jocelyn**

1985 *Children of the Land*. Rutgers University Press, New Brunswick.

**Lucas, Paul F. Nahoia (editor)**

1995 *A dictionary of Hawaiian legal land-terms*. Native Hawaiian Legal Corp. : University of Hawai'i Committee for the Preservation and Study of Hawaiian Language, Art, and Culture, Honolulu, Hawai'i.

**Lum, Arlene.**

1969 "With a Visit to the Smallest School in State - 20 Pupils in Eight Grades." *Honolulu Star-Bulletin*, November 15, 1969.43Honolulu, Hawai'i. The Star-Bulletin Saturday Magazine edition.

**Lyman, Kepa and Michael F. Dega**

2015 *An Archaeological Inventory Survey of the Rohr Family Access Road in the Ahupua'a of Honopou, Makawao District, Maui Island, Hawai'i [TMK: (2) 2-9-002:019(por.)]*. Scientific Consultant Services, Inc., Honolulu, Hawai'i.

**Macfarlane, E.C.**

1892 "Proclamation." *The Daily Bulletin*, Tuesday, 4 October 1892. Vol. Volume IV. No. 539. No. 2:2, Honolulu, Hawai'i <https://www.newspapers.com/image/49967668>.

**Madeus, Jonas K. and Erik M. Fredericksen**

2006 *Archaeological Inventory Survey of a 0.84 Acre Parcel in Honoluluui Ahupua'a, Ko'olau Moku, Hana District, Island of Maui (TMK [2] 1-2-01:26)*. Xamanek Researches, LLC, Pukalani, Hawaii.

2008 *Archaeological Inventory Survey of a 3.136 Acre Parcel in Hanawana Ahupua'a, Hamakualoa Moku, Makawao District, Island of Maui (TMK: (2) 2-9-011: Parcel 17)*. Xamanek Researches, LLC, Pukalani, Hawai'i.

**Madeus, Jonas K. and Hallett H. Hammatt**

2017 *An Archaeological Monitoring Report for the Hāna Highway Emergency Road Repairs, Keōpuka, Honomanū, and Ke'anae Ahupua'a, Hana District, Maui Island, TMKs: [2] 1-1-001:022, 023 (por.), 044, 999 (por.), and 1-1-002:002, 012 (por.)*. Cultural Surveys Hawai'i, Inc., Wailuku, Hawai'i.

**Maly, Kepā and Onaona Maly**

2001 *Volume I Wai o ke Ola: He Wahi Mo'olelo no Maui Hikina: A Collection of Native Traditions and Historical Accounts of the Lands of Hāmākua Poko, Hāmākua Loa and Ko'olau, Maui Hikina (East Maui), Island of Maui*. Kumu Pono Associates, Hilo, Hawai'i.



**McCurdy, Todd D. and Hallett H. Hammatt**

2010 *Archaeological Inventory Survey Report for the Kolea Reservoir Decommissioning Project, Kolea Ahupua'a, Hana District, Maui Island, TMK: [2] 1-1-001:050.* Prepared for Oceanit laboratories, Inc. Cultural Surveys Hawaii, Wailuku, HI.

**McCurdy, Todd D., Tanya L. Lee-Greig and Hallett H. Hammatt**

2014 *Literature Review and Field Inspection for the Proposed Hana Highway Improvements, Huelo to Hāna, Phase II, Project, Makaīwa Ko'olau Ahupua'a, Hāna District, Maui Island TMK: [2] 1-1-001:999; [2] 1-1-002:999; [2] 1-1-007:999; [2] 1-1-008:999; [2] 1-1-009:999 and [2] 1-2-001:999 (pors).* Cultural Surveys Hawaii, Wailuku, HI.

**McGregor, Davianna Pomaikai**

2007 *Nā Kua'āina: Living Hawaiian Culture.* University of Hawai'i Press, Honolulu, Hawai'i

**Meares, John**

1791 *Extracts from: Voyages Made in the Years 1788 and 1789 From China to the Northwest Coast of America, with an Introductory Narrative of a Voyage Performed in 1786, from Bengal, in the Ship "Nootka".* Translated by B. Cartwright. Hawaiian Historical Society Reprints. Legographic Press, London.

**Mifflin, Thomas**

1983 *Schooner from Windward.* University of Hawaii Press, Honolulu, Hawaii.

**MKE Associates LLC and Inc. Fung Associates**

2013 *Hawaii State Historic Bridge Inventory and Evaluation.* Hawaii.

**Moffat, Riley M. and Gary L. Fitzpatrick**

1995 *Surveying the Mahele: Mapping the Hawaiian Land Revolution.* Palapala'āina. Editions Limited, Honolulu.

**Nagamine Okawa Engineers Inc. and Inc. Fung Associates**

2015 *Hana Highway, Route 360 Bridge Preservation Plan,* Honolulu, Hawai'i.

**Nellist, George F.**

1925 *The Story of Hawaii and Its Builders.* Honolulu Star Bulletin, Honolulu.

**O'Rourke, Laura C. and Christopher M. Monahan**

2003 *Archaeological Inventory Survey of Approximately 0.75 Acres of Land Located in the Ahupua'a of Ho'olawa, Makawao District, Maui Island, Hawai'i [TMK:2-9-02:42].* Honolulu, Hawai'i.

**Oceanit**

2000 *Hana Highway Rockfall Mitigation Plan.* Oceanit Laboratories, Inc., Honolulu, Hawai'i.

**Pacific Commercial Advertiser.**

1910 "Three Hundred Thousand Trees Approaching the Tapping Stage - Managers View Prospect with Optimism." *Pacific Commercial Advertiser*, 02 September 1910.9-12, Honolulu, HI. <https://www.newspapers.com/image/258540521/?terms=koolau%2Brubber%2Bcomp%2Bany>.

**Palama, Stephen**

1981 *Archaeological Field Inspection, Wailua, Hana, Maui, Makawao, Hawai'i.*

**Penkiunas, Daina**

1992 *National Register of Historic Places Submission Form: Keanae School.* Honolulu, Hawai'i.

**Perzinski, David, Tina Bushnell, William H. Folk and Hallett H. Hammatt**

2002 *An Archaeological Inventory Survey of an Approximately One-Acre Parcel in West Hanawana Ahupua'a, Makawao District, Island of Maui (TMK 2-9-11 :04 & 5).* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

**Pestana, Elizabeth and Michael F. Dega**

2005 *An Archaeological Assessment Report for 11.15-Acres of Land in Huelo, Puolua Ahupua'a, Honokala/Hamakualoa District, Island of Maui, Hawai'i [TMK 2-9-05:23].* Scientific Consultant Services, Inc., Honolulu, Hawai'i.

**Pignataro, Anthony**

2017 *RIP Former Hawaii and Maui Resident Jim Nabors, edited by M. Time.* Maui Time, Wailuku, Hawai'i.

**Pukui, Mary Kawena and Samuel H. Elbert**

1986 Hawaiian Dictionary Hawaiian-English English-Hawaiian. Revised and Enlarged ed. University of Hawai'i Press, Honolulu.

**Pukui, Mary Kawena, Samuel H. Elbert and Esther T. Mookini**

1974 *Place Names of Hawaii*. Revised and Enlarged ed. University Press of Hawaii, Honolulu.

**Real Geeks**

2013 Celebrities in Maui Hawaii, edited by W. R. Group.

**Richards, William, Lorrin Andrews and Jonathan Green**

1829 *A Tour of Maui*, edited by ABCFM. The Missionary Herald, Proceedings At Large of the American Board of Commissioners for Foreign Missions with a General View of Other Benevolent Operations. Crocker and Brewster, Boston.

**Richards, William and Charles Samuel Stewart**

1825 *The Missionary Herald*. Vol. 21, edited by ABCFM. The Proceedings At Large of the American Board of Foreign Missions with a General View of Other Benevolent Operations. Crocker and Brewster, Boston.

**Schmitt, Robert C.**

1977 *Historical Statistics of Hawaii*. University Press of Hawaii, Honolulu.

**Schoofs, Robert**

1978 *Pioneers of the Faith. History of the Catholic Mission in Hawaii (1827-1940)*. Sturgis Printing Co, Honolulu.

**Siddall, John Williams**

1917 *Men of Hawaii: Being a Biographical Reference Library, Complete and Authentic*. Vol. Vol. I. Honolulu Star Bulletin, Honolulu, Hawaii.

**Sinoto, Aki and Jefferey Pantaleo**

1992 Archaeological Inventory Survey of the East Maui Waterline Project, Wailuku and Makawao, Maui Island (TMK 2-5-03 thru 05; 2-7-03; 2-7-07 thru 11; 2-7-13, 2-7-16 thru 20; 3-8-01; 3-8-06 thru 07, 3-8-59; 3-8-61, 3-8-71). Aki Sinoto Consulting, Honolulu, Hawai'i.

**Sinoto, Aki, Lisa Rotunno-Hazuka and Jeffrey Pantaleo**

2001 *An Archaeological Inventory Survey of a 26-Acre Ocean Front Parcel Nahiku 'Ili, Ko'olau Moku, Hana, Maui (TMK (2) 1-2-03:21)*. Aki Sinoto Consulting, Honolulu, Hawai'i.

**Smith, Jared G.**

1943 "Nahiku Rubber." *Honolulu Advertiser*, 19 January 1943. Honolulu, Hawaii. <https://www.newspapers.com/image/259718830/?terms=nahiku%2Brubber%2Bcompany%2Bcloses>.

**Soehren, Lloyd J.**

1963 *An Archaeological Survey of Portions of East Maui, Hawai'i*. Bernice Puahi Bishop Museum, Honolulu.

2002-2010 Nupawai o Kukuioipiikea [Web Page], Ulukau: The Hawaiian Electronic Library. (last accessed April 2015).

**Speakman, Cummins E.**

1978 *Mowee: An Informal History of the Hawaiian Island*. Peabody Museum of Salem, Salem, Massachusetts

**State of Hawaii**

2015a *Hana Forest Reserve Unit A* [map].

2015b *Koolau Forest Reserve Unit B* [map].

2018 State of Hawaii, Division of Forest and Wildlife: Outdoor Recreation.

**Sterling, Elspeth P.**

1998 *Sites of Maui*. Bishop Museum Press, Honolulu.

**Stokes, John F.G.**

1916 Maui Heiau. Department of Anthropology. Manuscript. Bernice Pauahi Bishop Museum. Honolulu, Hawai'i.

**SWCA Environmental Consultants**

2018 *Terrestrial Flora and Fauna Technical Report for the Proposed East Maui Water Lease*. Bishop Square ASB Tower, 1001 Bishop Street, Suite 2800, Honolulu, Hawaii 96813. SWCA Environmental Consultants, Honolulu, HI.

**Tanji, Edwin.**

1978 "Mixing H with 3 R's." *The Honolulu Advertiser*, April 26, 1978.1Honolulu, Hawai'i.

**Taylor, Frank J., Earl M. Welty and David W. Eyre**

1976 *From Land and Sea: The Story of Castle and Cooke of Hawaii*. Chronicle Books, San Francisco, California.

**The Hawaiian Gazette.**

1871 "Death of L. L. Torbert." *The Hawaiian Gazette*, Wednesday, 23 August 1871.2, Honolulu, Hawaii.

1907 "First Rubber Convention Held on American Soil." *The Hawaiian Gazette*, Friday, 18 October 1907.2, Honolulu, Hawaii.

1908 "In the Nahiku Rubber Groves." *The Hawaiian Gazette*:2, Honolulu, Hawaii.

**The Hawaiian Star.**

1897 "Hana's Future." *The Hawaiian Star*, February 2, 1897. Vol. III No.:5, Honolulu, Hawaii. 1186 edition.

1898 "Big Prices." *The Hawaiian Star*, December 19, 1898. Vol. V No.:4, Honolulu, Hawaii. 2061 edition.

1906a "Homesteads Opened on Maui." *The Hawaiian Star*, May 26, 1906.5Honolulu, Hawai'i.

1906b "Liquor Traffic in Koolau, Maui." *The Hawaiian Star*, May 26, 1906.5Honolulu, Hawai'i.

1906c "News in a Nutshell." *The Hawaiian Star*, Saturday, 8 December 1906.8, Honolulu, Hawaii.<https://www.newspapers.com/image/49617807>.



1907 "Rubber Lands at Nahiku a Surprise." *The Hawaiian Star*, 14 October 1907.5, Honolulu, Hawaii.

### **The Honolulu Advertiser.**

1908 "Hevea Rubber Trees Doping Exceptionally Well." *The Honolulu Advertiser*, Friday, 1 May 1908.5, Honolulu, Hawaii.

1910 "Through the Hana District of Maui." *The Honolulu Advertiser*, 4 September 1910.13, Honolulu, Hawaii. <http://www.newspapers.com/image/258541235>.

1914 "The "Ditch Country"--A Wonder Land--By Jack London." *The Honolulu Advertiser*, Saturday, 28 November 1914.10 Honolulu, Hawaii. [www.newspapers.com/image/267770412](http://www.newspapers.com/image/267770412).

2010 "Nonprofit aims to establish charter school in East Maui." *The Honolulu Advertiser*, June 2, 2010.14 Honolulu, Hawai'i.

### **The Maui News.**

1906 "Rubber Has Bright Prospects." *The Maui News*, 19 May 1906. Vol. Volume XII No. Wailuku, Hawai'i. <https://www.newspapers.com/image/64200102/?terms=koolau%2Brubber%2Bcompany#>.

1907 "Makawao Lines." *The Maui News*, 28 December 1907. Vol. Vol. XIV, Number 47 No.:1, Wailuku, Hawai'i. <https://www.newspapers.com/image/49594829/?terms=Nahiku%2Bsugar%2Bco%2Brubber>.

1912 "Hawaiian Rubber: Experiment Give Encouraging Results Says Expert Wilcox." *The Maui News*, Saturday, 10 August 1912.1, Wailuku, Hawaii.

1926 "Valley Isle May Be Proud of Officals." *Maui News*, December 4. Wailuku. Industrial Special Edition edition.

### **The Pacific Commercial Advertiser.**

1862 "Passengers." *The Pacific Commercial Advertiser*, Thursday, 25 September 1862.2, Honolulu, Hawai'i

1869a "Around East Maui. Editorial Correspondence. ." *The Pacific Commercial Advertiser*, 4 September 1869.3 Honolulu.

1869b "The Epidemic." *The Pacific Commercial Advertiser*, October 2, 1869.3Honolulu, Hawaii.

### **The Polynesian.**

1850 "Agricultural Meeting." *The Polynesian*, Saturday, 24 August 1850.2, Honolulu, Hawaii.

1851a The Best Quality of Irish Potatoes in any Quantity, at the Lowest Prices, on the Shortest Notice by L. L. Torbert at Honuaula, East Maui, pp. 3.

1851b "For the Polynesian." *The Polynesian*, Saturday, 7 June 1851.1, Honolulu, Hawaii.

1852 "Report of the Committee to Award Premiums." *The Polynesian*, Saturday, 5 June 1852.2, Honolulu, Hawaii.

1853a *The Polynesian* November 19, 1853. Vol. 10 No. 2Honolulu, Hawaii. 28 edition.

1853b "For the Polynesian." *The Polynesian* December 24, 1853. Vol. 10 No. 2Honolulu, Hawaii. 33 edition.

1854 *The Polynesian* January 21, 1854. Vol. 10 No. 2Honolulu, Hawaii. 37 edition.

1855a "To the President and Gentlemen of the Royal Hawaiian Agricultural Society." *The Polynesian*, Saturday, 23 June 1855.2, Honolulu, Hawaii.

1855b "Will Be Sold At Auction..." *The Polynesian*, Saturday, 28 July 1855.2, Honolulu, Hawaii.

### **Thompson, W.J.**

1902 Hawaii. vol. 37. Louisiana Planter and Sugar Manufacturer Company, New Orleans, Louisiana.

### **Thrum, Thomas G.**

1877 *Hawaiian Annual and Almanac for 1878*. Press Publishing Company, Honolulu.

1909a Chapter of Firstling's. In *The Hawaiian Annual*, edited by T. G. Thrum, pp. 129. Thos. G. Thrum, Honolulu, HI.

1909b Heiaus: Their Kinds, Construction, Ceremonies, Etc. In *The Hawaiian Almanac and Annual for 1910*, edited by T. G. Thrum, pp. 53-71. Thos. G. Thrum, Honolulu, Hawai'i

### **TripAdvisor LLC**

2018 Road to Hana Tours: Tours and Tickets Hana.

### **U.S. Department of Agriculture, Natural Resources Conservation Service**

2001 Soil Survey Geographic (SSURGO) database for Island of Maui, Hawaii (hi980), U.S. Department of Agriculture, Natural Resources Conservation Service, <http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/>. (last accessed March 2005).

### **U.S. Geological Survey**

1991 *Kilohana Topographic Quadrangle* [map]. 1:24,000. United State Department of the Interior, USGS, Reston, VA.

1992a *Haiku Quadrangle* [map].

1992b *Hana Topographic Quadrangle* [map].

1992c *Keanae Topographic Quadrangle* [map]. 1:24,000. United State Department of the Interior, USGS, Reston.

1992d *Nahiku Topographic Quadrangle* [map].

### **Ulukau, The Hawaiian Electric Library**

2006, Sponsored by the University of Hawaii and online at, <http://www.ulukauorg>.

### **Ulupalakua Ranch**

2017 Ulupalakua Ranch History, pp. synopsized history of the ranch. vol. 2017.

### **Waihona 'Aina**

2000 Mahele Database, Waihona 'Aina Corporation, <http://www.waihona.com/>. (last accessed September, 2018).

**Walker, Winslow**

1931 *Archaeology of Maui*. Bernice Pauahi Bishop Museum, Honolulu.

**Wenkam, Robert**

1970 *Maui: the Last Hawaiian Place*. Friends of the Earth, San Francisco.

**Westervelt, W.D.**

1910 *Legends of Ma-ui - A Demi-God of Polynesia and of His Mother Hina*. The Hawaiian Gazette Company, Honolulu.

**Wikimedia**

2016 Maui, Keanae School, edited by P. Joel Bradshaw. Wikimedia Commons.

**Wilcox, Carol**

1996 *Sugar Water: Hawaii's Plantation Ditches*. University of Hawai'i Press, Honolulu.

**Wilson Okamoto & Associates, Inc.**

2001 *Final Preservation Plan for County of Maui Bridges Within the Hana Highway Historic District*. County of Maui, Department of Public Works and Waste Management.

**Wood, Paul**

2003 Hanna's Heritage,. In. Hawaii Magazine, March-April 2003, Honolulu.

**Wright, J.C.**

1974a *Hawaii Register of Historic Places Submission Form: Keanae Church*. Bureau of Conveyances, Honolulu, Hawai'i.

1974b *Hawaii Register of Historic Places Submission Form: Li Hing Society*. Honolulu, Hawai'i.

**Youngblood, Ron, Leonard Lueras, Carl Lindquist, Beverly Creamer and Ka upena Wong**



1983 *On the Hana coast : being an accounting of adventures, past and present, in a land where the hand of man seems to rest lightly*. 1st ed. The Wanderer. Published by Emphasis International Ltd. and Carl Lindquist, Honolulu, HI.

**Yucha, Trevor M. and Hallett H. Hammatt**

2017 *Archaeological Inventory Survey Report for the Proposed Nahiku Community Center Project, Nahiku Ahupuaa, Hana District, Maui Island, TMK: [2] 1-2-002:023 (por.)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.



# Appendix A SHPD Correspondence

|  |   |  |
|--|---|--|
| <p>DAVID Y. IGE<br/>GOVERNOR OF HAWAII</p>    |  <p><b>STATE OF HAWAII</b><br/><b>DEPARTMENT OF LAND AND NATURAL RESOURCES</b><br/>STATE HISTORIC PRESERVATION DIVISION<br/>KAKUHIHEWA BUILDING<br/>601 KAMOKILA BLVD, STE 555<br/>KAPOLEI, HAWAII 96707</p> | <p>SUZANNE D. CASE<br/>CHAIRPERSON<br/>BOARD OF LAND AND NATURAL RESOURCES<br/>COMMISSION ON WATER RESOURCE MANAGEMENT</p> <p>KEKOA KALUHIWA<br/>FIRST DEPUTY</p> <p>JEFFREY T. PEARSON<br/>DEPUTY DIRECTOR - WATER</p> <p>AQUATIC RESOURCES<br/>BOATING AND OCEAN RECREATION<br/>BUREAU OF CONVEYANCES<br/>COMMISSION ON WATER RESOURCE MANAGEMENT<br/>CONSERVATION AND COASTAL LANDS<br/>CONSERVATION AND RESOURCES ENFORCEMENT<br/>ENGINEERING<br/>FORESTRY AND WILDLIFE<br/>HISTORIC PRESERVATION<br/>KAOHOLAWE ISLAND RESERVE COMMISSION<br/>LAND<br/>STATE PARKS</p> |
| <p>January 25, 2017</p> <p>Russell Y. Tsuji, Administrator<br/>Land Division<br/>Department of Land and Natural Resources<br/>P.O. Box 621<br/>Honolulu, HI 96809</p> <p>Dear Mr. Tsuji:</p> <p>SUBJECT: <b>Chapter 6E-7 and 6E-42 Historic Preservation Review –<br/>Environmental Impact Statement Preparation Notice for Proposed Lease for the<br/>Nāhiku, Kēānae, Honomanu and Huelo License Areas<br/>East, Central and Up County Maui (EMI Aqueduct System)<br/>Kēānae, Kōʻolau, Honomanu, East Makaiwa, Honopu, Papaʻaʻea, Waipionui, Waipiʻiki Ahupuaʻa,<br/>Kōʻolau, Hamakualoa, Honopu, Mokupapa, and West Makaiwa District, Island of Maui<br/>TMKs: (2) 1-1-001:044, 050, 1-1-002:002, 1-2-004: 005, 007</b></p>  |   |  |
| <p>Thank you for the opportunity to comment on the proposed Environmental Impact Statement Preparation Notice (EISP) (Wilson Okamoto Corporation, January 2017) for the proposed lease of the Nāhiku, Kēānae, Honomanu, and Huelo License Areas by Alexander and Baldwin, Inc. and East Maui Irrigation Company, Limited (A&amp;B). SHPD received this submittal on December 2, 2016 (Log No. 2016.02785) and again on January 5, 2017 (Log No. 2017.00026). The proposed water lease will encompass approximately 33,000 acres of State owned lands spanning through the Kōʻolau Natural Area Reserve, Conservation lands and undeveloped lands. The applicant, A&amp;B, seeks a long-term 30-year lease for the right, privilege, and authority to enter and go upon State owned lands (Nāhiku, Kēānae, Honomanu and Huelo license areas) for the purpose of developing, diverting, transporting, and using government-owned waters; including the right to maintain and repair existing access roads and trails used in connection with the privately owned water aqueduct system. The submittal indicates that the purpose and need for the water lease is to continue service for agricultural and domestic purposes, and to continue cultivation of naturally non-arable lands in Central Maui.</p> <p>According to the submittal there are 39 identified streams within the Nāhiku, Kēānae, Honomanu, and Huelo License Areas and one waterfall on the Wailuanui Stream. Of these 39 streams and 1 waterfall, A&amp;B has historically operated diversions on 36 streams, and is in the process of abandoning all of its diversions on 5 of those 36 streams. These five streams include East and West Wailuanui, Palauhulu, Piʻinaʻau, Pualoa/Hanehoi and Honopou Streams.</p> <p>A SHPD records review indicates that numerous archaeological and cultural sites were identified in <i>A Cultural Landscape Study of Keʻānae and Wailuanui for the County of Maui, Planning Department</i> (Group 70 International, Cultural Surveys Hawaii, Inc., Davianna McGregor, PhD, July 1995) and in <i>East Maui Resource Inventory</i> (NPS, Rivers Trails, and Conservation Assistance Program, February 1998). The East Maui Irrigation Company Ditches (SHIP 50-50-07-1508) includes 24 miles of ditches, 50 miles of tunnels, various flumes, weirs, aqueducts, small dams, and intakes. The construction of these ditches, tunnels and aqueducts began in 1876 and was completed in 1923. The Hāmākua Ditch completed in 1878; Haʻikū Ditch constructed in 1879; Manuel Luis Ditch completed in 1900; Kōʻolau Ditch completed in 1904; New Haʻikū Ditch completed in 1914; and the Wailoa Ditch which was the last ditch to be completed, in 1923.</p> |   |  |

Mr. Tsuji  
January 25, 2017  
Page 2

At this time SHPD is unable to make a determination on the potential impact to historic properties by the requested issuance of a long-term lease.

Pursuant to HAR §13-284-5(b)(5)(A and C), SHPD requests the following prior to issuance of the lease:

- 1) An archaeological inventory survey, and
- 2) An architectural inventory survey

Pursuant to HAR §13-284-5(c), SHPD also requests the following due to the expansive size of the project area and the complexity of the irrigation system:

- (1) An inventory plan for the archaeological inventory survey, and
- (2) An inventory plan for the architectural inventory survey

The archaeological inventory survey shall be conducted by a qualified archaeologist in order to adequately identify and document any archaeological historic properties that may be present, to assess their significance, to determine the potential impacts of this project on any identified archaeological historic properties, and to identify and ensure appropriate mitigation is implemented, if needed. A list of permitted archaeological firms is provided on the SHPD website at: <http://dlnr.hawaii.gov/shpd/about/branches/archaeology/>.

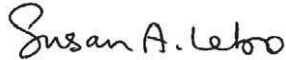
The architectural inventory survey shall be conducted by a qualified architectural historian or historic architect in compliance with the Secretary of the Interior's Professional Qualifications Standards.

SHPD also requests the landowner, project proponent and/or representative, archaeological firm, and architectural firm consult with our office regarding development of the AIS plans.

SHPD will notify you when the required reports and/or plans have been reviewed and accepted and permit issuance may proceed.

Please contact Anna Broverman, Architectural Historian, at (808) 692-8208 or at [Anna.E.Broverman@hawaii.gov](mailto:Anna.E.Broverman@hawaii.gov) for questions regarding architectural resources. Please me at [Susan.A.Lebo@hawaii.gov](mailto:Susan.A.Lebo@hawaii.gov) or at (808) 692-8019 for any questions regarding archaeological resources or this letter.

Aloha,



Susan A. Lebo, PhD  
Archaeology Branch Chief

cc: Dean D. Uyeno, [Dean.D.Uyeno@hawaii.gov](mailto:Dean.D.Uyeno@hawaii.gov)  
Lydia M. Morikawa, [Lydia.M.Morikawa@hawaii.gov](mailto:Lydia.M.Morikawa@hawaii.gov)  
Keola Cheng, [WOC@wilsonokamoto.com](mailto:WOC@wilsonokamoto.com)

DAVID Y. IGE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION  
KAKUHIHEWA BUILDING  
601 KAMOKILA BLVD, STE 555  
KAPOLEI, HAWAII 96707

SUZANNE D. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA  
FIRST DEPUTY

JEFFREY T. PEARSON, P.E.  
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

October 6, 2017

Russell Y. Tsuji, Administrator  
Land Division  
Department of Land and Natural Resources  
P.O. Box 621  
Honolulu, HI 96809

IN REPLY REFER TO:  
Log No. 2017.00026  
Doc. No. 1706MBF11  
Archaeology

Dear Mr. Tsuji:

SUBJECT: Chapter 6E-8 Historic Preservation Review –  
DLNR Land Division Request Regarding Historic Properties Concerns Related to  
Environmental Impact Statement Preparation Notice for Proposed Lease for the  
Nāhiku, Keanae, Honomanu and Huelo License Areas  
East, Central and Up County Maui (EMI Aqueduct System)  
Keanae, Ko'olau, Honomanu, East Makaiwa, Honopu, Papa'a'ea,  
Waipionui, Waipioki Ahupua'a, Ko'olau, Hamakualoa, Honopu, Mokupapa, and  
West Makaiwa District, Island of Maui  
TMKs: (2) 1-1-001:044, 050, (2) 1-1-002:002, (2) 1-2-004:005, 007

This letter updates our earlier correspondence dated January 25, 2017 regarding the proposed Environmental Impact Statement (EIS) being prepared in support of the proposed issuance of a State lease to Alexander and Baldwin, Inc. and East Maui Irrigation Company, Limited (A&B) for the Nāhiku, Keanae, Honomanu, and Huelo License Areas. This update reflects additional information SHPD received during several consultations with the applicant and other interested parties.

The SHPD received the original submittal requesting early consultation on the preparation of an EIS on December 2, 2016 (Log No. 2016.02785) and a second request for SHPD comments from the Department of Land and Natural Resources, Land Division (DLNR Land Division) on January 5, 2017 (Log No. 2017.00026). The SHPD commented on the latter, requesting both archaeological and architectural inventory surveys (January 25, 2017; Log No. 2017.00026, Doc. No. 1701GC08).

The proposed State water lease will encompass approximately 33,000 acres of State-owned lands spanning through the Ko'olau Natural Area Reserve, Conservation lands, and undeveloped lands. The applicant, A&B, seeks a long-term 30-year lease for the right, privilege, and authority to enter and go upon State owned lands (Nāhiku, Keanae, Honomanu and Huelo license areas) for developing, diverting, transporting, and using government-owned waters.

According to the submittal there are thirty-nine identified streams within the Nāhiku, Keanae, Honomanu, and Huelo License Areas and one waterfall on the Wailuanui Stream. Of these thirty-nine streams and one waterfall, A&B has historically operated diversions on thirty-six streams, and is in the process of abandoning all of its diversions on five of those thirty-six streams. These five streams include East and West Wailuanui, Palauhulu, Pi'ina'au, Pualoa/Hanehoi and Honopou Streams.

The additional information indicates that the proposed water lease will not involve any ground disturbance, and that the potential impact of flooding from abandoning the diversions on five of the streams will not be greater than periodic naturally occurring events. Therefore, the SHPD **no longer requests an archaeological inventory survey plan**



Mr. Tsuji  
October 6, 2017  
Page 2

**(AISP) or archaeological inventory survey (AIS) be completed** in the project area in conjunction with the proposed lease.

If historic properties such as lava tube openings, concentrations of artifacts, structural remains or human skeletal remains are found during construction activities please cease work in the immediate vicinity of the find, protect the find from additional disturbance, and contact the State Historic Preservation Division, Maui Office, at (808) 243-1285.

Please contact Dr. Matthew Fariss, Maui Lead Archaeologist, at (808) 243-4626 or at [Matthew.B.Fariss@hawaii.gov](mailto:Matthew.B.Fariss@hawaii.gov) for any questions regarding this letter.

Aloha,



Alan S. Downer, PhD  
Administrator, State Historic Preservation Division  
Deputy State Historic Preservation Officer

cc: Dean D. Uyeno, [Dean.D.Uyeno@hawaii.gov](mailto:Dean.D.Uyeno@hawaii.gov)  
Lydia M. Morikawa, [Lydia.M.Morikawa@hawaii.gov](mailto:Lydia.M.Morikawa@hawaii.gov)  
Keola Cheng, [WOC@wilsonokamoto.com](mailto:WOC@wilsonokamoto.com)  
David Shideler, [Dshideler@culturalsurveys.com](mailto:Dshideler@culturalsurveys.com)





---

## **APPENDIX F:**

Cultural Impact Assessment for the Proposed  
Lease for the Nāhiku, Ke‘anae, Honomanū,  
and Huelo License Areas

Cultural Surveys Hawai‘i, Inc.



---

**Final**  
**Cultural Impact Assessment for the Proposed Lease (Water**  
**Lease) for the Nāhiku, Ke‘anae, Honomanū, and Huelo**  
**License Areas (East Maui Aqueduct System), Multiple**  
**Ahupua‘a, Makawao and Hāna District, Maui Island,**  
**TMKs: [2] 1-1-001:044, 50, 1-1-002:002, 1-2-004:005, 007**  
**(por.), 2-9-014:001, 005, 011, 012, 017**

**Prepared for**  
**Wilson Okamoto Corporation**

**Prepared by**  
**Hallett H. Hammatt, Ph.D.**

**Cultural Surveys Hawai‘i, Inc.**  
**Kailua, Hawai‘i**  
**(Job Code: MAUI 27)**

**June 2019**

---

**O‘ahu Office**  
**P.O. Box 1114**  
**Kailua, Hawai‘i 96734**  
**Ph.: (808) 262-9972**  
**Fax: (808) 262-4950**

[www.culturalsurveys.com](http://www.culturalsurveys.com)

**Maui Office**  
**1860 Main St.**  
**Wailuku, Hawai‘i 96793**  
**Ph.: (808) 242-9882**  
**Fax: (808) 244-1994**

---

## Management Summary

|                            |   |
|----------------------------|---|
| <b>Reference</b>           | Cultural Impact Assessment for the Proposed Lease (Water Lease) for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua‘a, Makawao and Hāna District, Maui Island, TMKs: [2] 1-1-001:044, 50, 1-1-002:002, 1-2-004:005, 007 (por.), 2-9-014:001, 005, 011, 012, 017 (Hammatt 2019)  |
| <b>Date</b>                | June 2019   |
| <b>Project Number</b>      | Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: MAUI 27  |
| <b>Agencies</b>            | Department of Health – Office of Environmental Quality Control (DOH-OEQC)   |
| <b>Land Jurisdiction</b>   | State of Hawai‘i  |
| <b>Project Proponent</b>   | Alexander & Baldwin Inc. (A&B) / East Maui Irrigation Company, Limited (EMI), collectively referred to as “A&B”   |
| <b>Project Location</b>    | The proposed Water Lease includes the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas (herein referred to as “License Area”) within the State of Hawai‘i Forest Reserve on the northern slope of Haleakalā. The License Area includes portions of the modern judicial districts of Makawao and Hāna, the traditional <i>moku</i> of Hāmākua Loa and Ko‘olau, and numerous <i>ahupua‘a</i> . The License Area is depicted on portions of the 1992a Haiku, 1992c Keanae, 1991 Kilohana, 1992d Nahiku, and 1992b Hana U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles.   |
| <b>Project Description</b> | The Proposed Action constitutes the issuance of one long-term (30 years) Water Lease from the Board of Land and Natural Resources (BLNR) for the continued “ <i>right, privilege, and authority to enter and go upon</i> ” the License Area for the “ <i>purpose of developing, diverting, transporting, and using government owned waters</i> ” through the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease will enable the lessee to continue to go on lands owned by the State in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. It will allow continued operation of the EMI Aqueduct System to deliver water to the Maui County Department of Water Supply (MDWS) for domestic and agricultural water needs in Upcountry Maui, including agricultural users at the Kula Agricultural Park (KAP) and the future 262-acre KAP expansion, as well as the Nāhiku community. It also will allow for the continued provision of water to approximately 30,000 acres of agricultural lands in Central Maui. |
| <b>Project Acreage</b>     | The License Area encompasses a total of approximately 33,000 acres (13,355 hectares).   |
| <b>Document</b>            | This Cultural Impact Assessment (CIA) provides information pertinent to   |

|                                       |   |
|---------------------------------------|---|
| <b>Purpose</b>                        | the proposed project’s potential impacts to cultural beliefs, practices, and resources pursuant to the State of Hawai‘i environmental review process under Hawai‘i Revised Statutes (HRS) Chapter 343. The CIA follows the Environmental Council’s <i>Guidelines for Assessing Cultural Impacts</i> . The document will likely also support the project’s historic preservation review under HRS §6E and HAR §13-275 and §13-284.   |
| <b>Results of Background Research</b> | <p>Background research for this project yielded the following results (presented in approximately chronological order):</p> <ol style="list-style-type: none"> <li>1. The License Area covers four license areas: Huelo, Honomanū, Ke‘anae, and Nāhiku (collectively referred to as the License Area). The License Area encompasses the following <i>ahupua‘a</i> (land division usually extending from the uplands to the sea): Honopou, Mokupapa, Waipi‘oiki, Waipi‘onui, Hanehoi, West Hanawana, East Hanawana, Pu‘uomālie, Pāpa‘a‘ea, West Makaīwa, East Makaīwa, Honomanū, Ke‘anae, Wailuanui, Wailuaiki, Ko‘olau, and Pa‘akea.</li> <li>2. The following streams can be found within the License Area: Makapipi, Hanawī, and Kapā‘ula in the Nāhiku License Area; Waia‘aka, Pa‘akea, Puakea, Waiohue, Kopili‘ula, Pua‘aka‘a Tributary, East Wailuāiku, West Wailuāiki, Wailuānui (Waikani Waterfall), Kualani (or Hāmau), Waiokamilo, ‘Ōhi‘a (or Waianu), Palauhulu (Hauoli Wahine and Kano Tributaries), Pi‘ina‘au in the Ke‘anae License Area; Nua‘ailua, Honomanū, Punala‘u (Kōlea and Ulunui Tributaries), Ha‘ipua‘ena in the Honomanū License Area; and Puohokamoa, Wahinepe‘e, Waikamoi (Alo Tributary), Kōlea, Punalu‘u, Ka‘aiea, ‘O‘opuola (Makanali Tributary), Puehu, Nā‘ili‘ilihaele, Kailua, Hanahana (Ohanui Tributary or Hanawana or Hanauna), Hoalua, Hanehoi, Huelo (Puolua Tributary), Waipi‘o, Mokupapa, Ho‘olawa (Ho‘olawa ili and Ho‘olawa nui Tributaries), and Honopou (Puniawa Tributary) in the Huelo License Area</li> <li>3. According to <i>mo‘olelo</i> (story), in “The Epic Tale of Hi‘iakaikapoliopole,” retold by Ho‘oulumāhiehie, Hi‘iaka and her friend Wahine‘ōma‘o sail to Maui and travel to the windward side of the island. They stop in Wailua Iki Ahupua‘a where they encounter a group of people celebrating the hula. The <i>hālau</i> (meeting hall) was filled with men, women, and children (Ho‘oulumāhiehie 2008:199). Hi‘iaka spies her cousin, Kapokūlani (Kapo), in hopes that an invitation to dine and rest will be extended to both her and her traveling companion. In order to capture Kapo’s attention, Hi‘iaka offers a chant. It should be noted that Kapo is a goddess of sorcery on Maui where she acts as an <i>akua noho</i> (spirit that takes possession of people and speaks through them as a medium).</li> </ol> |



|  |  |
|--|--|
|  | <p>4. Kihapi'ilani is the son of the <i>ali'i nui</i> (high chief) Pi'ilani. Kihapi'ilani is known for his <i>lelekawa</i> (cliff diving) skills and for building a stone paved road around the island of Maui (Beckwith 1970). According to legend, Kihapi'ilani fled from his brother and took up residence in Makawao but kept his identity a secret. He left Makawao after he was accused of being lazy and stayed in Kalaua'ama in Ha'ikū to obtain sweet potato growing skills. He later took his skill set to Kalaniwai and Wailuku.</p> <p>5. In the legend of Kāne and Kanaloa, the two demi-gods are in search for water to accompany their appetite for 'awa (kava; <i>Piper methysticum</i>). One of the first places the pair travel to is in the mountains of Ke'anae where Kāne thrusts his <i>kauila</i> (<i>Alphitonia ponderosa</i>) wood staff into the ground and a spring appears. According to author, Martha Beckwith, two holes can be seen across from 'Ōhia Gulch (1970:65).</p> <p>6. 'Ai'ai, son of Ku'ula the Fish God, instructed his friends to venture into the deep waters off of Wailua Nui Ahupua'a and kill the giant <i>he'e</i> (general term for octopus) that lived there. Canoes were drawn and people came down ready. 'Ai'ai brought the <i>hokeo</i> (fishing gourd) and <i>leho</i> (general name for cowrie shell) that his father gave him. The canoes and people sailed out. It was here that Ku'ula and Hina were called upon for their assistance and the <i>hokeo</i> and <i>leho</i> were taken out and lowered into the ocean. The <i>he'e</i> was attracted by the radiance the <i>leho</i> brought out but due to its overwhelming size, scared the people. 'Ai'ai's friend brought a stone with him and at the right time, shoved the stone into the head of the squid. The weight of the stone sunk the <i>he'e</i> and one of the men cut off one of the tentacles of the squid. When the <i>he'e</i> died it turned into stone and a formation resembling a squid can be seen just outside of Wailua Nui (Thrum 1907:234-235).</p> <p>7. Of the 230 structures that Walker (1931) surveyed on Maui, 39 of the recorded <i>heiau</i> (pre-Christian place of worship) (Walker Sites 64 through 102) were documented in this portion of East Maui. Of the 39 documented <i>heiau</i> sites, only one lies within the License Area. This <i>heiau</i> is named Pu'u o Koholā and was presumed to be located within the current Honomanū License Area. Pu'u o Koholā was listed as "destroyed/not found" by Walker (1931).</p> <p>8. The Alaloa (Long Road) of Kihapi'ilani or the Kihapi'ilani Highway, was constructed during the sixteenth century during the reign of Kihapi'ilani. The chief is credited with completed the paved road from Hāna to Wailuku, which was initiated by his father, Pi'ilani (Fleming 1933). The road provided a means of trade,</p> |
|--|--|

|  |  |
|--|--|
|  | <p>commerce, and war time protection.</p> <ol style="list-style-type: none"> <li>9. Honomanū Valley was once the site of a large Hawaiian community. The residents of this area utilized the bay for canoe fishing and the uplands for agricultural terracing and house sites (Handy and Handy 1978). Another account states that many burials can be found in the upper reaches of the valley (Sterling 1998:109).</li> <li>10. Keʻanae Peninsula is a lava plain that extends a mile into the ocean from Keʻanae Valley. This area is known for <i>loʻi</i> (irrigated terrace) cultivation and still continues to celebrate a traditional Native Hawaiian lifestyle today (Handy 1940).</li> <li>11. The earliest estimation of occupation along the coastal region of East Maui is approximately AD 1200 (Haun et al. 2004). The abundance of traditional land divisions and place names between Hāmākua Loa and Hāna suggest habitation was extensive after initial establishment.</li> <li>12. Documentation regarding Native Hawaiian tenancy reveal that ocean resources were just as important as products of the land for sustenance. The preferred method of fishing was open ocean fishing for the people who lived along the coast of East Maui. In waters of ten or more fathoms deep, the favored technique was <i>kākā</i> (hook and line with no pole) or <i>kūkaula</i> (deep water fishing with hook and line).</li> <li>13. It has been noted that there was some rivalry between the <i>ahupuaʻa</i> of Keʻanae and neighboring Wailua Nui. This rivalry gave way to larger political battles concerning rule of Maui Island between the sons of Piʻilani (Kamakau 1992:22-29) and later the consolidation of power and unification of the Hawaiian Islands under Kamehameha (Group 70 International Inc. et al. 1995).</li> <li>14. In 1778, after Captain James Cook's ships returned from their North American explorations, the crew stopped in Hāna and encountered Hawaiians for the first time on board their ships (Cordy 2000:294).</li> <li>15. Prior to the establishment of the Hāna Protestant mission in 1837, missionaries would visit East Maui once or twice a year. Hāna was considered to be "one of the most isolated places in these islands, remote and difficult to access" (Bishop 1861). The journey was made by horseback to Keʻanae then traveled by canoe for the remainder of the trip.</li> <li>16. It may be inferred from Māhele documentation that there was dense and widespread occupation of East Maui, especially in the Honopou, Mokupapa, and Keʻanae regions. According to records, the landscape was modified for the cultivation of traditional crops. The</li> </ol> |
|--|--|

|  |   |
|--|---|
|  | <p>region was characterized by the presence of agricultural fields such as <i>lo 'i kalo</i> and <i>kula</i> (plain or open country) for potato growing and <i>olonā</i> (<i>Touchardia latifolia</i>), <i>'ie</i> (<i>Freyceinetia arborea</i>), <i>wauke</i> (paper mulberry; <i>Broussonetia papyrifera</i>), <i>koa</i> (<i>Acacia</i>; <i>Acacia koa</i>), <i>'ulu</i> (breadfruit; <i>Artocarpus altilis</i>), and <i>'ōhi 'a</i> (<i>Metrosideros macropus</i>) plantings. In addition, many streams, <i>'auwai</i> (irrigation ditch), and <i>loko i 'a</i> (fishpond) were identified within land claims as well. A unique trait to this area was that specific areas including the sea shore, <i>pali</i> (cliff), government roads, and streams that contained <i>'ōpae</i> (general name for shrimp) and <i>'o 'opu</i> (general name for fishes in the families <i>Eleotridae</i>, <i>Gobiidae</i>, and <i>Blennidae</i>) were also claimed.</p> <p>17. The Māhele of 1848 set the precedence of private land ownership across the entire Hawaiian Island chain and Maui was no exception to the age of Western development. The Māhele enabled foreigners and foreign nationals to acquire land for the establishment of ranching and plantation operations, including any infrastructure projects that were to support these land intensive industries.</p> <p>18. With the decline of the whaling industry in the mid- to late 1800s, the Hawaiian Islands attracted a new generation of entrepreneurs. Samuel T. Alexander and Henry P. Baldwin were prominent in this movement. Alexander was credited with using irrigation for improving sugar cane and banana yields (Dean 1950), while Baldwin's father had been granted 2,675-acres of land in northwest Maui.</p> <p>19. In 1867, S.T. Alexander proposed a massive construction project to bring mountain water from the streams of East Maui to the Central Maui isthmus, where many sugar crops were experiencing drought (Kuykendall 1967:64). This would later be known as the East Maui Irrigation Company (EMI) Aqueduct System.</p> <p>20. The digging of the EMI Aqueduct System from East Maui to Central Maui was a great feat. Hundreds of men were employed at a time with food, shelter, and tools supplied to them. The work required brute strength as heavy timber for flumes would need to be transported from the main road to the upper reaches of the forest (Thrum 1877:39-42). The crew dealt with torrential rains and landslides. Sometimes workers hacked their way through the thick forests and were required to descend sheer cliffs by way of rope.</p> <p>21. In July 1877, the first water began to flow through the EMI Aqueduct System and reached Haiku Plantation 24 hours later. Approximately 60 million gallons of water per day ran through the EMI Aqueduct System. The system cost \$80,000, which was paid</p> |
|--|---|

|  |   |
|--|---|
|  | <p>for by Castle &amp; Cooke.</p> <p>22. The EMI Aqueduct System has been in use for over 134 years and continues to collect water today for private and municipal entities. The ditch system in its current state contains 50 miles of tunnels, 24 miles of open ditches, 13 inverted siphons and flumes, 388 intakes, eight reservoirs, and a solar powered radio telemetry system to monitor ditch flow. The catchment begins at roughly 1,300 ft elevation and delivers water to Central Maui at an elevation of 1,150 ft, covering 18 miles from its western to eastern extent.</p>  |
| <b>Results of Community Consultation</b> | <p>CSH contacted a total of 136 parties including the Office of Hawaiian Affairs (OHA), the State Historic Preservation Division (SHPD), the County of Maui, other agencies, Department of Hawaiian Homelands (DHHL) beneficiaries, Native Hawaiian Organizations (NHOs) and knowledgeable community members. NHOs consulted included: Aha Moku o Maui, Inc. (Ke‘eaumoku Kapu and Kyle Nakanelua); Kuloloi‘a Lineage – I Ke Kai o Kuloloi‘a (Les Kuloloi‘a); Waiehu Kou Phase 3 Association (Roy Oliveira); Moku o Kaupō (Jade Alohalani Smith); and Aha Moku o Kahikinui (Donna Sterling).</p> <p>Of the 136 parties consulted, a total of 15 people/agencies responded to the consultation letter. Three people participated in formal interviews. CSH initiated its outreach effort in November 2017 which included letters, phone calls, emails, and in-person interviews. Below is a list of individuals and agencies who shared their <i>mana‘o</i> (thoughts, opinions) and <i>‘ike</i> (knowledge) about the License Area:</p> <ol style="list-style-type: none"> <li>1. Dr. Kamana‘opono Crabbe, Ka Pouhana – OHA</li> <li>2. Pomaika‘i Crozier. Conservation Manager – Pu‘u Kukui Watershed Preserve</li> <li>3. Skippy Hau, <i>Kama‘āina</i> (native born) and Aquatic Biologist – Division of Aquatic Resources – State of Hawai‘i</li> <li>4. Garrett Hew, <i>Kama‘āina</i>, Upcountry Maui farmer, and former East Maui Irrigation (EMI) employee</li> <li>5. Robert Hobdy, Retired naturalist and forester</li> <li>6. Roslyn Lightfoot, Director – Alexander &amp; Baldwin Sugar Museum</li> <li>7. Kyle Nakanelua, <i>Kama‘āina</i>, Aha Moku o Maui, and <i>kalo</i> (taro; <i>Colocasia esculenta</i>) farmer</li> <li>8. Jerry Sakugawa, Upcountry Maui farmer</li> <li>9. Sandy Takeshita, Upcountry Maui farmer</li> <li>10. Mahealani Wendt, Member of Nā Moku Aupuni o Ko‘olau Hui</li> <li>11. Mavis Oliveira-Medeiros, <i>Kama‘āina</i> of Hāna</li> <li>12. Dawn Lono, Long-time resident of Hāna</li> <li>13. Shane Sinenci, holds the County Council seat for the East Maui residency area</li> <li>14. Dorothy “Aunty Dottie/Kumu Kamalu” Kaho‘okele and ‘Ohana,</li> </ol> |

|  |  |
|--|--|
|  | <p><i>Kama'āina</i> of Nāhiku</p> <p>15. Moses “Moke Boy” Bergau, <i>Kama'āina</i> of Nāhiku</p> <p>In addition, CSH asked permission to use declarations made by members of the community and [members of] Nā Moku Aupuni o Ko'olau that were given to CWRM in late 2014 prior to the CWRM D&amp;O on the IIFS. CWRM's final decision on the IIFS was issued on June 20, 2018. Although the declarations are part of the public domain, CSH nevertheless attempted to contact each individual to obtain approval to include these declarations in the CIA. Below is a list of individuals who approved use of their declaration:</p> <ol style="list-style-type: none"> <li>1. Dan Clark</li> <li>2. Jonah Jacintho</li> <li>3. Lezley Jacintho</li> <li>4. Kauai L. Kanaka'ole</li> <li>5. Pualani Kimokeo</li> <li>6. Davianna McGregor, Ph.D</li> <li>7. Lurlyn Scott</li> <li>8. Earl Smith, Sr.</li> <li>9. Ty Kāwika Tengan</li> <li>10. Edward Wendt</li> <li>11. Emily Wendt</li> </ol> <p>Tabulated results of approved declarations that relay traditional cultural practices, which includes fishing, gathering, hunting, sites, traditional knowledge, and values can be found in Table 13. Tabulated results of declarations that declarants requested not be used are arranged anonymously in Table 14.</p> |
| <b>Non-Cultural Community Concerns and Recommendations</b> | <p>Community consultation was conducted from December 2017 through March 2019. Based on information gathered from the community consultation, participants voiced the following concerns not related to the cultural context. These concerns were expressed prior to the CWRM D&amp;O.</p> <ol style="list-style-type: none"> <li>1. Community participant Skippy Hau noted that “not all lands belong to the State” and recommends that private lands should and need to be identified by signs and safe parking areas. In addition, many visitors and tour groups assume that most lands belong to the State resulting in illegal trespassing. Also noted that rental cars regularly block Hana Highway creating and blocking traffic.</li> <li>2. Mr. Hau states that the EMI Aqueduct System requires mapping that shows the 388 intakes, ditches, dams, pipes, and flumes. Each diversion should be located and identified accurately with GPS coordinates. Elevations should also be recorded. The amount of water moving through the system should be measured at specific locations within the EMI Aqueduct System as well.</li> </ol>   |



|  |  |
|--|--|
|  | <p>3. Other questions and clarifications from Mr. Hau included the following (please note that these questions were asked prior to the June 2018 decision on the East Maui Interim Instream Flow Standards ):</p> <ul style="list-style-type: none"> <li>a. Is the 20,000 gallons per day for Nahiku and Kula Agricultural Park a minimum?</li> <li>b. Isn't the interim instream flow supposed to maintain a minimum flow for each stream?</li> <li>c. Will EMI property be clearly identified along the boundaries of State land?</li> <li>d. Please identify "settlements" along Hana Highway.</li> <li>e. Please clarify "diversified agricultural uses as [is] economically feasible." The term is used but not clearly identified or the need for water.</li> <li>f. The three Department of Water Supply treatment facilities water use should be clearly identified. Please identify actual use, not maximum capacity. The reservoir capacities does not clarify actual water use.</li> <li>g. Please clarify abandoned diversion. Is the diversion and other structures to collect water removed and natural stream restored? Mr. Hau noted that historically, structures and associated materials have been abandoned throughout East Maui. He recommends that debris and abandoned structures should be completely removed and/or buried.</li> <li>h. Mr. Hau recommends that concrete walls and control structures that are planned for full and permanent restoration should be completely removed and streams restored to their natural conditions.</li> </ul> <p>4. In addition, Mr. Hau relayed via email that he recommends a five-year lease with constant updates due to the fact that the project description lacks information on the amount of water flowing through the EMI Aqueduct System and the actual amount of water collected at each diversion and/or ditch without the factor of climate change accounted for.</p> <p>5. Participant Kyle Nakanelua's recommendations for this project was simply, "Follow the law! Support the law! File for your permit. There's a policy and there's procedures. Adhere to the policy and follow the procedures. And stop trying to circumvent it [the law] because you smart. You know, just be honest, be transparent."</p> |
| <b>Cultural Community Concerns and Recommendations</b> | Community consultation was conducted from December 2017 through March 2019. Based on information gathered from the community consultation and declarations, participants voiced and framed the following concerns in a cultural context. These concerns were expressed prior to the  |

|  |  |
|--|--|
|  | <p>CWRM D&amp;O.</p> <ol style="list-style-type: none"> <li>1. Mr. Hau states that native gathering rights should be addressed. The gathering of <i>‘ōpae</i>, <i>‘o‘opu</i>, and <i>hīhīwai</i> continue throughout East Maui streams that are being diverted.</li> <li>2. Mr. Hau adds that State lands should be open to the public for hunting and gathering. The general public should have access for recreational activities such as hiking, scenic viewing, and swimming at waterfalls.</li> <li>3. Mr. Robert Hobdy voiced his concerns, which include that the study should: <ol style="list-style-type: none"> <li>a. Provide adequate stream flow to support diversified agriculture in the Hāmākualoa and Ko‘olau region.</li> <li>b. Provide adequate stream flow to support indigenous fish, shrimp, and mollusk species in the Hāmākualoa and Ko‘olau region.</li> </ol> </li> <li>4. Participant Kyle Nakanelua is concerned with the act of diverting water. He explicitly states that “when those places dry up that adversely impacts the way of life, the cultural practice if you will” and it “adversely impacts the people’s way of life that live there.” <ol style="list-style-type: none"> <li>a. To support this claim, Mr. Nakanelua states that <i>‘ōpae</i> was once prevalent in the streams that flowed through their family property named Lakini. He relates that when he began to regularly clean the property his grandmother would still catch <i>‘ōpae</i>. He adds that today there is no <i>‘ōpae</i> but there are prawns. When CSH asked if <i>‘ōpae</i> was being overpicked, he replied “no” because “we were the only one there.” He also does not think the introduction of prawns are to blame but believes “that the flow of water is impactful” and has seen the water decline since 1989.</li> </ol> </li> <li>5. A declaration provided by Mr. Dan Clark from Ke‘anae stated he needs cool, fast running water for optimal <i>kalo</i> production. Due to low stream flow results, there has been an increase in disease to his <i>kalo</i>, which decreases production.</li> <li>6. Jonah Jacintho states in his declaration that due to a lack of stream flow, fish populations have decreased therefore he cannot fish as much. To increase the population of ocean fish, fresh water is integral for spawning and nutrients. He also added that more water in stream beds would also increase <i>‘o‘opu</i>, prawn, and <i>hīhīwai</i> populations.</li> <li>7. In Lezley Jacintho’s declaration, she states that due to lack of stream flows, her <i>kalo</i> production has declined due to root rot and other diseases. She adds that stream flow output is also important in the spawning of different species of fish. The lack of stream flow affects her gathering rights as a Native Hawaiian and her <i>‘ohana</i> (family).</li> </ol> |
|--|--|

|                            |  |
|----------------------------|--|
|                            | <p>Native species such as ‘o‘opu needs fresh water to travel back upstream, which compromises their reproduction. Fish, <i>hīhīwai</i>, ‘ōpae, and ‘o‘opu populations are also scarce and many families cannot gather these resources causing them to move away. Another concern Ms. Jacintho voiced is stagnate water, which causes leptospirosis and other bacteria.</p> <p>8. Kau‘i Kanaka‘ole voices in her declaration the Papaku Makawalu framework, which incorporates traditional Hawaiian knowledge and <i>mo‘olelo</i> (stories) and connects it with <i>wahi</i> (place). Papaku Makawalu consists of three Papa or houses of knowledge (earth, atmospheric, and the living). In this case, Ms. Kanaka‘ole points out that without water, all three Papa could not exist. She shares <i>mo‘olelo</i> on ‘O‘opuola Stream, Makapīpī Stream, Ka‘aiea Stream, and ‘Ōhia Stream. She points out that ‘Ōhia Stream was known for its healing powers and that the people of this area understood that this water was “special, sacred, kapu (taboo) and only to be used in unique circumstances.”</p> <p>9. Pualani Kimokeo states in her declaration that due to a lack of stream flow there is an increase in pocket rot and “guava seed,” which she describes as a growth on the taro. There are also apple snails in her <i>lo‘i kalo</i>, which she states like the warm water. She points out that farmers in Ke‘anae have to compete for water.</p> <p>10. In Mr. Earl Smith, Sr.’s declaration, he states that he recalls gathering ‘ōpae, <i>hīhīwai</i>, and ‘o‘opu from Hanawī, Makapīpī, and One‘o Streams. He can only find these species in Hanawī Stream. Near the coast, he would fish for <i>moi</i> (threadfish; <i>Polydactylus sexfilis</i>), <i>aholehole</i> (Hawaiian flagtail; <i>Kuhlia sandvicensis</i>), <i>manini</i> (reef surgeonfish; <i>Acanthurus triostegus</i>), and <i>enenue</i> (chub; <i>Kyphosus bigibbus</i>) but has noticed a depletion of fish. He attributes this to a lack of stream flow that empties in the ocean.</p> <p>11. In Edward Wendt’s declaration, he states that he gathers and fishes in the streams to provide a protein source for his family, neighbors, and <i>kūpuna</i> (elders) who may be unable to gather for themselves. He also enjoys teaching traditional fishing practices and values to students. However, due to the lack of adequate stream flow, Mr. Wendt is unable to teach students how to <i>mālama</i> (to take care of) streams, fish, and gather. The diminished stream flow has negatively impacted the <i>muliwai</i>, fisheries, and his <i>lo‘i kalo</i>. Invasive species such as the apple snail and African tulip tree have infringed his <i>lo‘i kalo</i>.</p> |
| <b>Ka Pa‘akai Analysis</b> | In <i>Ka Pa‘akai O Ka ‘Āina v. Land Use Commission</i> , 94 Hawai‘i 31, 74, 7 P.3d 1068, 1084 (2000), the Hawai‘i Supreme Court held that State and County agencies, when making decisions that may impact cultural, historical, or natural resources or native Hawaiian traditional and customary   |

|  |  |
|--|--|
|  | <p>practices, must, at a minimum, make specific findings and conclusions on:</p> <ol style="list-style-type: none"> <li>1. The identity and scope of valued cultural, historical, or natural resources in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area;</li> <li>2. The extent to which those resources—including traditional and customary native Hawaiian rights—will be affected or impaired by the proposed action; and</li> <li>3. The feasible action, if any, to be taken by the [agency] to reasonably protect native Hawaiian rights if they are found to exist.</li> </ol> <p>The following analysis is a summarization of Section 7.5 of this report. Please refer to Section 7.5 to view the analysis in its entirety. Based on information gathered from the cultural and historical background, in conjunction with archaeological evidence, oral histories, declarations, and interviews throughout East Maui, significant cultural, historical, and natural resources were identified within the License Area as well as outside the License Area. It should be acknowledged that although some of the valued cultural resources exist outside of the License Area boundaries, actions within the License Area are directly affecting these cultural practices and resources (cultural, historical, and natural resources in addition to customary and traditional Native Hawaiian rights). In general, East Maui, where the License Area is located, should be understood as a locality that maintains a rich subsistence and cultural history. Traditional and customary cultural practices and beliefs were also identified as currently existing within the License Area. At present, there is documentation and testimony indicating traditional and customary Native Hawaiian rights are currently being exercised within the License Area.</p> <p>The following traditional and customary cultural practices associated with natural and cultural resources have been identified:</p> <ol style="list-style-type: none"> <li>1. Foraging, traditional, and generational gathering of freshwater species for personal consumption. These species include but are not limited to <i>‘ōpae</i>, <i>‘o‘opu</i>, <i>pūpūlo‘i</i> (also known as <i>pūpū Pākē</i>, or Chinese snail), crayfish, prawns, and <i>hīhīwai</i> (endemic grainy snail; <i>Neritina graposa</i>).</li> <li>2. Foraging, traditional, and generational gathering of plants that may be in or adjacent to tributaries for personal consumption. These species include but are not limited to <i>pohole</i> (native fiddlehead fern) and watercress.</li> <li>3. Traditional and generational gathering of introduced plants that can be cultivated or foraged. These species include but are not limited to <i>‘ulu</i>, bananas, wild <i>kalo</i>, wild <i>lū‘au</i> (young taro tops), guava, <i>‘uala</i> (sweet potato), <i>‘awapuhi</i> (wild ginger), tī, oranges, <i>hāhā</i>, avocado,</li> </ol> |
|--|--|

|                                    |   |
|------------------------------------|---|
|                                    | <p><i>puakenikeni</i> (ornamental, flowers used for <i>lei</i>), and medicinal plants for <i>lā‘au lapa‘au</i> (curing medicine).</p> <ol style="list-style-type: none"> <li>4. Traditional and generational gathering of plants that can only be foraged. This includes but is not limited to <i>pepeiao</i>, various types of ferns (ornamental), and <i>hau</i> (beach hibiscus; <i>Hibiscus tiliaceus</i>).</li> <li>5. Traditional and generational gathering of rocks that are used for traditional food preparation. These activities include but are not limited to <i>imu</i> (underground oven) and the production of stone tools for traditional food preparation (i.e., <i>pōhaku ku‘i ‘ai</i>).</li> <li>6. Traditional and generational fishing and gathering methods utilized for the shoreline and offshore. Species gathered include but are not limited to <i>limu</i> (seaweed), ‘<i>opihi</i> (limpets), lobster, <i>enenue</i>, <i>kole</i>, <i>ulua</i>, <i>moi</i>, <i>aholehole</i>, ‘<i>anae</i>, <i>kumu</i>, <i>tako</i>, <i>moanakali</i>, ‘<i>ōmilu</i>, ‘<i>ū‘ū/menpachi</i> (soldierfish; Holocentridae), ‘<i>āweoweo</i> (Bulleye; <i>Priacanthus meeki</i>), <i>pāpio</i>, <i>pa‘ananu</i>, ‘<i>ō‘io</i>, <i>uhu</i>, <i>lae</i>, <i>kala</i>, black crab, <i>hā‘uke‘uke</i>, and <i>kūpipi</i>.</li> </ol>  |
| <b>Impacts and Recommendations</b> | <p>Once the valued cultural, archaeological, and historical resources within the License Area are identified, the second and third prongs of the <i>Ka Pa‘akai</i> analysis require the agency to determine how any of the resources may be impacted by the proposed action, and what, if any, feasible measures can be taken to protect the resources.</p> <p><u>Proposed Action</u></p> <p>The Proposed Action constitutes the issuance of a long term (30 years) Water Lease from the BLNR for the continued “right, privilege, and authority to enter and go upon” the License Area for the “purpose of developing, diverting, transporting, and using government owned waters” via the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease will enable the lessee to continue to go on lands owned by the State in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System, and will allow continued operation of the EMI Aqueduct System to deliver water to the County of Maui DWS for domestic and agricultural water needs in Upcountry Maui, including the agricultural users at the Kula Agricultural Park (KAP), as well as for the Nāhiku community. It will also allow the continued provision of water to approximately 30,000 acres of agricultural lands in Central Maui. The proposed action is subject to the terms of the Interim Instream Flow Standard (IIFS) established by the CWRM.</p> <p>Based on information gathered from the cultural and historical background, and the community consultation, CSH identified potential impacts and made the following recommendations:</p> <ol style="list-style-type: none"> <li>1. <u>Impact:</u> Participants expressed interest in getting clarification on stream flow, water diversion, and climate statistics with the</li> </ol> |



|  |  |
|--|--|
|  | <p>following questions:</p> <ul style="list-style-type: none"> <li>○ How much water is being diverted at each location of intakes, ditches, dams, pipes, and flumes?</li> <li>○ How much water is being diverted from East Maui to Central Maui?</li> <li>○ Is climate change accounted for?</li> </ul> <p><u>Recommendation:</u> It is recommended that these questions be addressed by qualified professionals who possess an understanding of stream flow mechanics, water diversion, and climate statistics within the License Area.</p> <p>2. <u>Impact:</u> Several community participants voiced their concern regarding indigenous freshwater species that may be impacted by the act of diverting water. These species include but are not limited to <i>‘ōpae</i>, <i>‘o‘opu</i>, <i>pūpūlo‘i</i> (also known as <i>pūpū Pākē</i>, or Chinese snail), crayfish, prawns, and <i>hīhīwai</i> (endemic grainy snail; <i>Neritina graposa</i>), which are still gathered regularly by residents for personal consumption. Furthermore, community participants shared their concern of water not exiting stream beds and flowing into the ocean. This estuary environment creates an ecosystem where freshwater and saltwater species spawn and travel back upstream (such as <i>‘o‘opu</i>) or continue to grow in the ocean. Specific streams mentioned by community participants where this impact is identified include: Wahinepe‘e, Puohokamoa, Ha‘ipua‘ena, Honopou (Puniawa Tributary), Punala‘u (Kōlea and Ulunui Tributaries), Honomanū, Nua‘ailua, Pi‘ina‘au, Waiokamilo, Wailuānui (Waikani Waterfall), Kopili‘ula, Pa‘akea, Kapā‘ula, Hanawī, Makapīpī, Waiohue, Waikamoi (Alo Tributary), Hanehoi, Palauhulu (Hauoli Wahine and Kano Tributaries), ‘Ōhi‘a (or Waianu), Kualani (or Hāmau), East Wailuāiki, West Wailuāiki, Pua‘aka‘a Tributary, and Waia‘aka. It is understood that these streams were subject to the Interim Instream Flow Standards (IIFS) decision.</p> <p><u>Recommendation:</u> It is recommended that a biologist or similar qualified professional provide an assessment of the impacts of water diversion to indigenous freshwater species (<i>‘ōpae</i>, <i>‘o‘opu</i>, and <i>hīhīwai</i>) within the License Area. The application of the IIFS decision has the potential to reduce or eliminate this cultural impact. Nine of the streams mentioned by community participants where this impact is identified have been fully restored in accordance with the IIFS. These include Honopou (Puniawa Tributary), Pi‘ina‘au, Waiokamilo, Wailuānui (Waikani Waterfall), Makapīpī, Waiohue, Hanehoi, Palauhulu (Hauoli Wahine and Kano Tributaries), and West Wailuāiki Streams.</p> |
|--|--|

|  |  |
|--|--|
|  | <p>3. <u>Impact</u>: A majority of participants who are taro farmers voiced their concern of the lack of water needed to maintain a healthy and productive <i>lo 'i kalo</i> or taro patch. A cold, vigorous flow of water is needed for the production of <i>kalo</i>. Without an ample amount of water continuously flowing, many taro crops have been subject to invasive species such as the apple snail, root rot, and growths. Many taro farmers are unable to continue their traditional and generational cultural practice. Specific streams mentioned by community participants where this impact is identified include: Honopou (Puniawa Tributary), Waikamoi (Alo Tributary), Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u (Kōlea and Ulunui Tributaries), Honomanū, Nua'ailua, Pi'ina'au, Palauhulu (Hauoli Wahine and Kano Tributaries), 'Ōhi'a (or Waianu), Waiokamilo, Kualani (or Hāmau), Wailuānui (Waikani Waterfall), West Wailuāiki, East Wailuāiki, Kopili'ula, Pua'aka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue. It is understood that these streams were subject to the IIFS decision.</p> <p><u>Recommendation</u>: It is recommended that a botanist, ethnobotanist, or similar qualified professional provide an assessment of the ideal conditions of water flow and water temperature needed for <i>kalo</i> growth in comparison to the current water flow and water temperature of impacted areas in order to understand and address the stated impact. The application of the IIFS decision has the potential to reduce or eliminate this cultural impact. Eight of the streams mentioned by community participants where this impact is identified have been fully restored in accordance with the IIFS. Honopou (Puniawa Tributary), Pi'ina'au, Palauhulu (Hauoli Wahine and Kano Tributaries), Waiokamilo, Wailuānui (Waikani Waterfall), West Wailuāiki, Makapīpī, and Waiohue.</p> <p>4. <u>Impact</u>: While no human burials have been identified by previous archaeological studies within or immediately adjacent to the License Area, historical research indicates that Honomanū Valley and other areas throughout East Maui once held a sizable population. LCA documentation indicates that there were settlements along the coast, however, a pedestrian survey was also conducted where there was evidence of habitation in the higher reaches of the valley (E. M. Fredericksen and Fredericksen 1998b).</p> <p><u>Recommendation</u>: It is recommended that any personnel involved in access, maintenance, or any other related activities within the License Area be informed of the possibility of inadvertent cultural finds, including human remains. In the event that any potential</p> |
|--|--|

|  |  |
|--|--|
|  | <p>historic properties are inadvertently discovered within the License Area, these discoveries should be reported immediately to the State Historic Preservation Division (SHPD). In the event that <i>iwi kūpuna</i> and/or cultural finds are encountered, consultation with lineal and cultural descendants of the area is also recommended.</p> <p><u>No Action Alternative</u></p> <p>The No Action alternative is understood as the termination or non-issuance of the subject Water Lease. Under this alternative, A&amp;B would be permitted to 30% of the water from the larger 50,000-acre Collection Area based on previous agreements.</p> <p>The No Action alternative includes permission to divert 30% of the water from the larger 50,000-acre Collection Area and therefore, impacts related to the diversion of water may apply, but to a lesser extent than the Proposed Action. These impacts, as discussed in detail in relation to the Proposed Action, include: interest in getting clarification on stream flow, water diversion, and climate statistics; concern regarding indigenous freshwater species that may be impacted by the act of diverting water; concern of water not exiting stream beds and flowing into the ocean; and concern of the lack of water needed to maintain a healthy and productive <i>lo 'i kalo</i> or taro patch in areas where water may continue to be diverted.</p> <p>Recommended mitigation for the No Action alternative is equal to that of the Proposed Action and would require assessment by qualified professionals who possess an understanding of stream flow mechanics, water diversion, climate statistics, biology, botany, and/or ethnobotany as specified under the recommendation of the Proposed Action. The application of the IIFS decision has the potential to reduce or eliminate cultural impacts of the No Action alternative as many of the streams that are currently in use by community participants where these impacts are identified have been fully restored in accordance with the IIFS.</p> <p><u>Water Sources Alternative</u></p> <p>The Water Sources alternative is understood as the decision to obtain water from new sources other than from the diversion of East Maui streams into the existing EMI Aqueduct System. These sources could include new wells, desalinization facilities, and reservoirs located on Maui Island.</p> <p>The Water Sources alternative has the potential for cultural impacts to the areas where new sources of water are obtained. Potential cultural impacts could be wide-ranging as these new facilities would likely require ground disturbance, land clearing, and/or changes to coastal environments on Maui Island. Impacts related to the diversion of water, as discussed in relation to the Proposed Action would not apply to the Water Sources Alternative, however with the potential of project-related ground disturbance, there is</p> |
|--|--|

|  |   |
|--|---|
|  | <p>the possibility of impacts to <i>iwi kūpuna</i>.</p> <p>Recommended mitigation for the Water Sources alternative would include a cultural impact study for the specific location or region of Maui Island in which this new infrastructure is installed. Additionally, in the event that any potential historic properties are inadvertently discovered within the Water Sources alternative locations, these discoveries should be reported immediately to the State Historic Preservation Division (SHPD). In the event that <i>iwi kūpuna</i> and/or cultural finds are encountered, consultation with lineal and cultural descendants of the area is also recommended</p> <p><u>Water Lease Volume Alternative</u></p> <p>The Water Lease Volume alternative is understood as a modification (reduction) to the volume of water that is diverted from East Maui streams.</p> <p>The Water Lease Volume alternative has the potential for cultural impacts related to the diversion of water that may apply to a lesser extent than the Proposed Action. These impacts, as discussed in detail in relation to the Proposed Action, include: interest in getting clarification on stream flow, water diversion, and climate statistics; concern regarding indigenous freshwater species that may be impacted by the act of diverting water; concern of water not exiting stream beds and flowing into the ocean; and concern of the lack of water needed to maintain a healthy and productive <i>lo 'i kalo</i> or taro patch in areas where water may continue to be diverted.</p> <p>Recommended mitigation for the Water Lease Volume alternative is equal to that of the Proposed Action and would require assessment by qualified professionals who possess an understanding of stream flow mechanics, water diversion, climate statistics, biology, botany, and/or ethnobotany as specified under the recommendation of the Proposed Action. The application of the IIFS decision has the potential to reduce or eliminate this cultural impact as many of the streams that are currently in use by community participants where these impacts are identified have been fully restored in accordance with the IIFS.</p> <p><u>Lease Terms Alternative</u></p> <p>The Lease Terms alternative is understood as a modification to the length of the proposed lease term for the “<i>right, privilege, and authority to enter and go upon</i>” the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas for the “<i>purpose of developing, diverting, transporting, and using government owned waters</i> through the existing EMI Aqueduct System. The Proposed Action constitutes the issuance of one long term (30 years) Water Lease, and this alternative considers either a shorter or longer lease term.</p> <p>The Lease Terms alternative has the potential for cultural impacts related to the diversion of water that may apply to an equal extent as the Proposed Action. These impacts, as discussed in detail in relation to the Proposed</p> |
|--|---|

|  |  |
|--|--|
|  | <p>Action, include: interest in getting clarification on stream flow, water diversion, and climate statistics; concern regarding indigenous freshwater species that may be impacted by the act of diverting water; concern of water not exiting stream beds and flowing into the ocean; and concern of the lack of water needed to maintain a healthy and productive <i>lo ‘i kalo</i> or taro patch in areas where water may continue to be diverted.</p> <p>Recommended mitigation for the Lease Terms alternative is equal to that of the Proposed Action and would require assessment by qualified professionals who possess an understanding of stream flow mechanics, water diversion, climate statistics, biology, botany, and/or ethnobotany as specified under the recommendation of the Proposed Action. The application of the IIFS decision has the potential to reduce or eliminate this cultural impact as many of the streams that are currently in use by community participants where these impacts are identified have been fully restored in accordance with the IIFS.</p> <p><u>Management Alternative</u></p> <p>The Management alternative is understood as a change of the entity that manages the diversion of water from East Maui streams.</p> <p>The Management alternative has the potential for cultural impacts related to the diversion of water that may apply to an equal extent as the Proposed Action. These impacts, as discussed in detail in relation to the Proposed Action, include interest in getting clarification on stream flow, water diversion, and climate statistics; concern regarding indigenous freshwater species that may be impacted by the act of diverting water; concern of water not exiting stream beds and flowing into the ocean; and concern of the lack of water needed to maintain a healthy and productive <i>lo ‘i kalo</i> or taro patch in areas where water may continue to be diverted.</p> <p>Recommended mitigation for the Management alternative is equal to that of the Proposed Action and would require assessment by qualified professionals who possess an understanding of stream flow mechanics, water diversion, climate statistics, biology, botany, and/or ethnobotany as specified under the recommendation of the Proposed Action. The application of the IIFS decision has the potential to reduce or eliminate this cultural impact as many of the streams that are currently in use by community participants where these impacts are identified have been fully restored in accordance with the IIFS.</p> |
|--|--|



# Table of Contents

|   |           |
|---|-----------|
| <b>Management Summary .....</b>   | <b>i</b>  |
| <b>Section 1 Introduction .....</b>   | <b>1</b>  |
| 1.1 Project Background .....  | 1         |
| 1.2 Document Purpose .....  | 1         |
| 1.3 Scope of Work .....   | 8         |
| 1.4 Environmental Setting .....   | 8         |
| 1.4.1 <i>Lepo</i> (Soils) .....   | 8         |
| 1.4.2 Winds and Rains .....   | 22        |
| 1.4.3 <i>Kahawai</i> (Streams) .....  | 23        |
| 1.4.4 Vegetation .....  | 23        |
| <b>Section 2 Methods .....</b>  | <b>26</b> |
| 2.1 Archival Research .....   | 26        |
| 2.2 Community Consultation .....  | 26        |
| 2.2.1 Scoping for Participants .....  | 26        |
| 2.2.2 “Talk Story” Sessions .....   | 26        |
| 2.2.3 Interview Completion .....  | 27        |
| <b>Section 3 <i>Ka‘ao</i> and <i>Mo‘olelo</i> (Legends and Stories) .....</b> | <b>28</b> |
| 3.1 <i>Ka‘ao</i> and <i>Mo‘olelo</i> .....                                    | 28        |
| 3.1.1 Hi‘iaka and Kapokūlani (Kapo) in Wailua Iki .....                       | 28        |
| 3.1.2 Kamapua‘a Visits Kapo .....   | 30        |
| 3.1.3 Hi‘u of Ko‘olau .....   | 30        |
| 3.1.4 Kihapi‘ilani’s Sweet Potato Patch .....                                 | 30        |
| 3.1.5 Springs of Kāne .....   | 31        |
| 3.1.6 ‘Ai‘ai, Son of Ku‘ula the Fish God .....                                | 32        |
| 3.1.7 Eleio and the Ghost of ‘O‘opuola .....                                  | 33        |
| 3.1.8 Pau-walu the Shark-Man .....  | 34        |
| 3.2 <i>Wahi Pana</i> (Legendary Place) .....                                  | 34        |
| 3.2.1 <i>Ahupua‘a</i> Place Names .....                                       | 35        |
| 3.2.2 <i>Heiau</i> of East Maui .....   | 37        |
| 3.2.3 Alaloa Kihapiilani .....  | 37        |
| 3.2.4 ‘O‘opuola .....   | 38        |
| 3.2.5 Pu‘ukoa‘e .....   | 38        |
| 3.2.6 The Bays of Wailua Iki and Wailua Nui .....                             | 39        |
| A.1.1 Honomanū Valley .....   | 39        |
| 3.2.7 Ke‘anae .....   | 40        |
| 3.3 <i>‘Ōlelo No‘eau</i> (Proverbs) .....                                     | 42        |
| 3.3.1 <i>‘Ōlelo No‘eau</i> #357 .....   | 43        |
| 3.3.2 <i>‘Ōlelo No‘eau</i> #505 .....   | 43        |
| 3.3.3 <i>‘Ōlelo No‘eau</i> #697 .....   | 43        |
| 3.3.4 <i>‘Ōlelo No‘eau</i> #982 .....   | 44        |
| 3.3.5 <i>‘Ōlelo No‘eau</i> #1029 .....  | 44        |
| 3.3.6 <i>‘Ōlelo No‘eau</i> #1514 .....  | 44        |
| 3.3.7 <i>‘Ōlelo No‘eau</i> #1481 .....  | 44        |

|   |            |
|---|------------|
| 3.3.8 ‘Ōlelo No ‘eau #1761 .....                                      | 45         |
| 3.3.9 ‘Ōlelo No ‘eau #1850 .....                                      | 45         |
| 3.3.10 ‘Ōlelo No ‘eau #2215 .....                                     | 45         |
| 3.3.11 ‘Ōlelo No ‘eau #2393 .....                                     | 45         |
| 3.4 <i>Oli</i> (Chant).....   | 45         |
| 3.4.1 Hi‘iaka <i>Oli</i> .....  | 46         |
| 3.4.2 Ke-a-ulu-moku of the Māmākua Districts .....                    | 49         |
| 3.4.3 <i>Ka Wai a Kāne</i> (The Water of Kāne).....                   | 50         |
| 3.5 <i>Mele</i> (Songs).....  | 50         |
| 3.5.1 Mele Ka‘i to Kaulilua .....                                     | 51         |
| 3.5.2 Ke‘anae .....   | 51         |
| 3.5.3 Huelo.....  | 52         |
| 3.5.4 <i>Malu I Ke Ao</i> .....                                       | 53         |
| 3.5.5 Wailae Nui .....  | 54         |
| <b>Section 4 Traditional and Historical Accounts.....</b>             | <b>56</b>  |
| 4.1 Pre-Contact to 1800s.....   | 56         |
| 4.1.1 Traditional Background of Hāmākua Loa Moku.....                 | 56         |
| 4.1.2 Traditional Background of Ko‘olau Moku .....                    | 58         |
| 4.2 Historic Background of East Maui .....                            | 89         |
| 4.2.1 Early Historic Period (1778 to Mid-1800s) .....                 | 89         |
| 4.2.2 The Māhele and Kuleana Act .....                                | 96         |
| 4.2.3 Mid- to Late 1800s.....   | 108        |
| 4.3 Twentieth Century to Present .....                                | 129        |
| 4.3.1 1900s.....  | 129        |
| 4.3.2 Modern Land Use .....   | 159        |
| 4.4 Previous Archaeological Research .....                            | 161        |
| 4.4.1 Early Maui Island Surveys.....                                  | 161        |
| 4.4.2 Hāna Highway Archaeological Studies .....                       | 161        |
| 4.4.3 Huelo License Area Archaeological Studies .....                 | 164        |
| 4.4.4 Honomanū License Area Archaeological Studies .....              | 175        |
| 4.4.5 Ke‘anae License Area Archaeological Studies.....                | 175        |
| 4.4.6 Nāhiku License Area Archaeological Studies .....                | 184        |
| <b>Section 5 Community Consultation.....</b>                          | <b>191</b> |
| 5.1 Introduction.....   | 191        |
| 5.2 Challenges in Outreach.....                                       | 191        |
| 5.3 Community Contact Letter .....                                    | 192        |
| 5.4 Community Contact Table.....                                      | 195        |
| 5.5.1 Interview Summary for Kyle Nakanelua .....                      | 229        |
| 5.5.2 Interview Summary for Skippy Hau .....                          | 234        |
| 5.5.3 Interview Summary for Garrett Hew .....                         | 249        |
| 5.6 Commission on Water Resource Management (CWRM) Declarations ..... | 254        |
| 5.6.1 Dan Clark.....  | 254        |
| 5.6.2 Jonah Jacintho.....   | 256        |
| 5.6.3 Lezley Jacintho .....   | 258        |
| 5.6.4 Kauai L. Kanakaole .....  | 261        |
| 5.6.5 Pualani Kimokeo.....  | 270        |

|   |            |
|---|------------|
| 5.6.6 Davianna McGregor, PhD .....                            | 273        |
| 5.6.7 Lurlyn Scott .....                                      | 298        |
| 5.6.8 Earl Smith, Sr.....                                     | 306        |
| 5.6.9 Ty Kāwika Tengan, PhD .....                             | 308        |
| 5.6.10 Edward Wendt .....                                     | 315        |
| 5.6.11 Emily Wendt .....                                      | 318        |
| <b>Section 6 Traditional Cultural Practices.....</b>          | <b>321</b> |
| 6.1 Agriculture and Subsistence .....                         | 376        |
| 6.2 Aquaculture.....  | 377        |
| 6.3 Habitation .....  | 378        |
| 6.4 <i>Mo‘olelo</i> and <i>Wahi Pana</i> .....                | 379        |
| <b>Section 7 Summary and Recommendations .....</b>            | <b>383</b> |
| 7.1 Results of Background Research .....                      | 383        |
| 7.2 Results of Community Consultation.....                    | 386        |
| 7.3 Non-Cultural Community Concerns and Recommendations ..... | 387        |
| 7.4 Cultural Community Concerns and Recommendations.....      | 388        |
| 7.5 <i>Ka Pa‘akai</i> Analysis .....                          | 389        |
| 7.6 Impacts and Recommendations .....                         | 393        |
| <b>Section 8 References Cited .....</b>                       | <b>398</b> |
| <b>Appendix A Kyle Nakanelua Transcription .....</b>          | <b>416</b> |
| <b>Appendix B Skippy Hau Transcription .....</b>              | <b>430</b> |
| <b>Appendix C Garret Hew Transcription.....</b>               | <b>488</b> |
| <b>Appendix D Response from OHA.....</b>                      | <b>523</b> |

## List of Figures

|  |     |
|--|-----|
| Figure 1. Portions of the 1992a Haiku, 1992c Keanae, 1991 Kilohana, 1992d Nahiku, and 1992b Hana USGS 7.5-minute topographic quadrangles showing the location of the License Area (Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas).....  | 2   |
| Figure 2. Tax Map Key (TMK): [2] 2-9-014 showing a portion of the Huelo License Area (Hawai‘i TMK Service 2014) .....  | 3   |
| Figure 3. TMK: [2] 1-1-001 showing a portion of the Huelo and Honomanū License Areas (Hawai‘i TMK Services 2014).....  | 4   |
| Figure 4. TMK: [2] 1-1-002 showing the Ke‘anae License Area (Hawai‘i TMK Service 2014) ...   | 5   |
| Figure 5. TMK: [2] 1-2-004 showing the Nāhiku License Area (Hawai‘i TMK Service 2014).....   | 6   |
| Figure 6. 2009 aerial image showing License Areas (ESRI Web Server 2009).....  | 7   |
| Figure 7. Overlay of <i>Soil Survey of the State of Hawaii</i> (Foote et al. 1972) indicating soil types within and surrounding the Huelo License Area (U.S. Department of Agriculture 2001) ..  | 9   |
| Figure 8. Overlay of <i>Soil Survey of the State of Hawaii</i> (Foote et al. 1972) indicating soil types within and surrounding the Honomanū License Area (U.S. Department of Agriculture 2001) .....  | 13  |
| Figure 9. Overlay of <i>Soil Survey of the State of Hawaii</i> (Foote et al. 1972) indicating soil types within and surrounding the Ke‘anae License Area (U.S. Department of Agriculture 2001)15   |     |
| Figure 10. Overlay of <i>Soil Survey of the State of Hawaii</i> (Foote et al. 1972) indicating soil types within and surrounding the Nāhiku License Area (U.S. Department of Agriculture 2001)20   |     |
| Figure 11. Client provided map that depicts the location of streams within the License Area .....  | 25  |
| Figure 12. Ke‘anae Peninsula from Hāna Highway in 1925 (Hawai‘i Historic Society Collection)41   |     |
| Figure 13. 1908 photograph by Sam Dowdle of a section of the Pi‘ilani Alaloa, the King’s Highway, as it appeared in East Maui .....  | 71  |
| Figure 14. Walker (1931) plan view map of Pi‘ilanihale Heiau, reprint from Sterling (1998:123)77   |     |
| Figure 15. Portions of the 1992a Haiku, 1992c Keanae, 1991 Kilohana, 1992d Nahiku, and 1992b Hana U.S. Geological Survey 7.5-minute topographic quadrangle series showing Walker <i>heiau</i> sites 64 through 102 with overlay of project License Areas .....                     | 78  |
| Figure 16. Portion of the 1992 Keanae U.S. Geological Survey 7.5-minute topographic quadrangle series showing the approximate location of Pu‘u o Koholā heiau (Walker Site 89), roughly corresponding to the location of Ashdown’s unnamed heiau near Kaumahina Wayside Park ..... | 88  |
| Figure 17. LCAs within and in proximity to the Huelo License Area (U.S. Geological Survey 1992a, c).....   | 99  |
| Figure 18. LCAs within and in proximity to the Honomanū License Area (U.S. Geological Survey 1991, 1992a, c, d) .....  | 100 |
| Figure 19. LCAs in proximity to the Ke‘anae License Area (U.S. Geological Survey 1992c, d)101  |     |
| Figure 20. LCAs in proximity to the Nāhiku License Area (U.S. Geological Survey 1992b, c, d)102  |     |
| Figure 21. Announcement of port closure published in a Honolulu paper resulting from a cholera outbreak (Evening Bulletin 1892:2 .....   | 111 |
| Figure 22. Table of epidemic mortality rates within the Hawaiian Archipelago demonstrating insufficiencies in detailed documentation prior to the late 1800s, from Schmitt (1977:58)114  |     |
| Figure 23. Advertisement from <i>The Polynesian</i> (1851a:1) for L. L. Torbert’s sale of commissioned potato cargo from Honua‘ula.....  | 115 |

|   |     |
|---|-----|
| Figure 24. Surface water collection along the walls of Honomanū Valley (Wilcox 1996).....   | 123 |
| Figure 25. Photo of Banana Intake in Honomanū Valley (CSH 2018) .....   | 123 |
| Figure 26. Koolau Ditch water diversion at Pi‘ina‘au stream (Courtesy of EMI).....  | 124 |
| Figure 27. Wailoa forebay, a section of Wailoa Canal that drops into a low-head hydro-electric<br>power plant (Wilcox 1996:118).....  | 126 |
| Figure 28. Collection of water at Hanawī Dam near Ke‘anae (Courtesy of EMI) .....   | 127 |
| Figure 29. Nāhiku hillsides planted with rubber tree saplings; plantation manager’s house visible<br>on the ridge (Pacifc Commercial Advertiser 1910).....  | 137 |
| Figure 30. Seedlings being planted at the Nahiku Rubber Company (Pacifc Commercial<br>Advertiser 1910) .....  | 138 |
| Figure 31. Nahiku Rubber Company Manager C. H. Anderson riding among his rubber tree<br>saplings (The Honolulu Advertiser 1908).....  | 139 |
| Figure 32. Historic Rice Mill (SIHP # 50-50-07-1510) in the Ke‘anae Historic District (The<br>Honolulu Advertiser 1910) .....   | 143 |
| Figure 33. Undated photograph of the irrigated fields of Ke‘anae (CSH Archives) .....   | 144 |
| Figure 34. Portraits of Ke‘anae homesteaders and their residences (The Honolulu Advertiser<br>1910:13) .....  | 144 |
| Figure 35. A group of Maui County Supervisors pose with Governor Farrington in Ke‘anae; left<br>to right: R.A. Drummond, W.F. Kaae, County Engineer P. Low, Sheriff C. Crowell,<br>Governor W. Farrington, Chairman S. Kalama, and D.T. Fleming (The Maui News 1926)..... | 146 |
| Figure 36. 1958 photo of Ke‘anae Protestant Church (CSH Archives).....  | 148 |
| Figure 37. Mrs. Apolonia Day teaching her students at Ke‘anae School in 1978 (Honolulu<br>Advertiser 1978) .....  | 150 |
| Figure 38. Ke‘anae School students playing football (Honolulu Star Bulletin 1969) .....   | 150 |
| Figure 39. 2013 Photograph of Ke‘anae School (Wikimedia 2016) .....   | 151 |
| Figure 40. Portion of the 1992 Haiku, 1991 Kilohana, 1992 Keanae (U.S. Geological Survey<br>1991, 1992a, c).....  | 154 |
| Figure 41. Hāhālawe Bridge, a characteristic masonry arch style bridge (Wilson Okamoto &<br>Associates 2001) .....  | 157 |
| Figure 42. Papahawahawa Stream Bridge, a concrete beam and slab style bridge (Wilson<br>Okamoto & Associates 2001) .....  | 157 |
| Figure 43. Hāna Belt Road near Waiele Bridge, illustrating the narrow roadway tightly<br>encroached upon by bedrock ridges and jungle vegetation (Wilson Okamoto &<br>Associates 2001) .....  | 158 |
| Figure 44. Previous Archaeological Studies within or near the Huelo License Area (U.S.<br>Geological Survey 1991, 1992a, c, d).....   | 165 |
| Figure 45. Previous archaeological studies within or near the Honomanū License Area (U.S.<br>Geological Survey 1991, 1992a, c, d).....  | 177 |
| Figure 46. Previous archaeological studies within or near the Ke‘anae License Area (U.S.<br>Geological Survey 1991, 1992a, c, d).....   | 178 |
| Figure 47. Previous archaeological studies within or near the Nāhiku License Area (U.S.<br>Geological Survey 1991, 1992a, c, d).....  | 185 |
| Figure 48. Page 1 of the community contact letter .....   | 193 |
| Figure 49. Page 2 of the community contact letter .....   | 194 |



|  |     |
|--|-----|
| Figure 50. ‘ <i>Ōpae kala ‘ole; opae kuahiwi (Atyoida bisulcata)</i> in bucket (CSH 2018) .....        | 239 |
| Figure 51. ‘ <i>Ōpae oe ha ‘a (Macrobrachium grandimanus)</i> ; native prawn (CSH 2018).....           | 239 |
| Figure 52. ‘ <i>O‘opu nopili (Sicyopterus stimpsoni)</i> (CSH 2018) .....                              | 240 |
| Figure 53. <i>Hīhīwai (Neritina granosa)</i> from Honomanū Stream (CSH 2018).....                      | 240 |
| Figure 54. Honopou Stream diversion by Ha‘ikū Ditch (CSH 2018).....                                    | 241 |
| Figure 55. Control gate (Ha‘ikū Ditch by Honopou Stream) (CSH 2018).....                               | 241 |
| Figure 56. Skippy Hau at lower Honomanū Stream, <i>pohole</i> ferns line the left bank (CSH 2018)..... | 242 |
| Figure 57. Estuary photo of ‘ <i>ōhua (manini) (Acanthurus triostegus)</i> (Skippy Hau 2018).....      | 242 |
| Figure 58. Abandoned, dilapidated structure (Skippy Hau 2018) .....                                    | 243 |
| Figure 59. Abandoned equipment (Skippy Hau 2018) .....   | 243 |
| Figure 60. West Wailua Iki Stream, Skippy Hau with ‘ <i>ōpae</i> net (CSH 2018) .....                  | 244 |
| Figure 61. Dam across West Wailua Iki Stream (CSH 2018) .....  | 244 |
| Figure 62. View of West Wailua Iki Stream waterfall from access road (CSH 2018).....                   | 245 |
| Figure 63. Control gate to release diverted water on West Wailua Iki Stream (CSH 2018) .....           | 245 |
| Figure 64. Irrigation ditch, Waiohue Stream (CSH 2018).....  | 246 |
| Figure 65. Flume above Waiohue Stream (CSH 2018) .....   | 246 |
| Figure 66. Waiohue control gate removed; intake blocked on other side (CSH 2018) .....                 | 247 |
| Figure 67. Lower Honomanū Stream ( <i>makai</i> of Hāna Highway) (CSH 2018) .....                      | 248 |
| Figure 68. View of Maui from Mr. Hew’s house .....   | 252 |
| Figure 69. Picture of banana and tangerine trees on Mr. Hew’s property .....                           | 252 |
| Figure 70. Picture of <i>kalo</i> .....  | 253 |
| Figure 71. Mr. Garret Hew and his <i>kalo</i> .....  | 253 |

## List of Tables

|   |     |
|---|-----|
| Table 1. <i>Ahupua‘a</i> and <i>Moku</i> Place Names within the License Area (from Pukui et. al 1976 unless otherwise noted)..... | 36  |
| Table 2. Place Names within Ko‘olau Moku [from Pukui et al. (1974) unless otherwise noted] .                                      | 62  |
| Table 3. Walker Heiau Sites Located Near the License Area, as Documented in Sterling (1998)                                       | 79  |
| Table 4. LCAs within and in proximity to the Huelo License Area (Waihona ‘Aina 2002).....   | 103 |
| Table 5. LCAs within and in proximity to the Honomanū License Area (Waihona ‘Aina 2002)   | 105 |
| Table 6. LCAs in proximity to the Ke‘anae License Area (Waihona ‘Aina 2002) .....   | 105 |
| Table 7. LCAs in proximity to the Nāhiku License Area (Waihona ‘Aina 2002).....   | 107 |
| Table 8. Previous Archaeological Studies with Hāna Highway Historic District .....  | 162 |
| Table 9. Previous Archaeological Studies within the Huelo License Area .....  | 166 |
| Table 10. Previous archaeological studies within the Ke‘anae License Area .....   | 179 |
| Table 11. Previous Archaeological Studies in the Vicinity of the Nāhiku License Area .....  | 186 |
| Table 12. Community Contact Table.....  | 196 |
| Table 13. Tabulation of Cultural Practices Via Approved Interviews and Declarations.....  | 322 |
| Table 14. Tabulation of Cultural Practices Via Declarations (Anonymous Tally).....  | 346 |

## Section 1 Introduction

---

### 1.1 Project Background

At the request of Wilson Okamoto Corporation (WOC), Cultural Surveys Hawai‘i, Inc. (CSH) is conducting a Cultural Impact Assessment (CIA) for the proposed Water Lease for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas, TMKs: [2] 1-1-001:044, 50, 1-1-002:002, 1-2-004:005, 007 (por.), 2-9-014:001, 005, 011, 012, 017. The project includes the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas (License Area) that are located within State of Hawai‘i Forest Reserve on the northern slope of Haleakalā. The License Area includes portions of the modern judicial districts of Makawao and Hāna, the traditional *moku* of Hāmākua Loa and Ko‘olau, and the following *ahupua‘a* (traditional land division spanning from the mountain to the sea): Honopou, Huelo, Mokupapa, Waipioiki, Waipionui, Hanehoi, West Hanawana, East Hanawana, Pu‘uomaile, Pāpa‘a‘ea, West Makaīwa, East Makaīwa, Honomanū, Ke‘anae, Wailua Nui, Wailua Iki, Pa‘akea, Nāhiku, and Ko‘olau. The License Area encompasses approximately 33,000 acres (13,355 hectares) of land owned by the State of Hawai‘i, and approximately 13,000 acres of privately owned land. The License Area is depicted on portions of the 1992a Haiku, 1992c Keanae, 1991 Kilohana, 1992d Nāhiku, and 1992b Hana U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles (Figure 1), tax map plats (Figure 2 through Figure 5), and aerial photographs (Figure 6).

The Proposed Action constitutes the issuance of one long-term (30 years) Water Lease from the Board of Land and Natural Resources (BLNR) for the continued “*right, privilege, and authority to enter and go upon*” the License Area for the “*purpose of developing, diverting, transporting, and using government owned waters*” through the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease will enable the lessee to continue to go on lands owned by the State in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. It will allow continued operation of the EMI Aqueduct System to deliver water to the County of Maui Department of Water Supply (DWS) for domestic and agricultural water needs in Upcountry Maui, including agricultural users at the Kula Agricultural Park (KAP) and the 262-acre expansion of KAP, as well as the Nāhiku community. It also will allow for the continued provision of water to approximately 30,000 acres of agricultural lands (formerly in sugarcane) in Central Maui proposed for diversified agriculture.

### 1.2 Document Purpose

The purpose of this CIA is to comply with the State of Hawai‘i’s environmental review process under Hawai‘i Revised Statutes (HRS) Chapter 343, which requires consideration of the project’s potential effect on cultural beliefs, practices, and resources. Through document research and cultural consultation efforts, this report provides information compiled to date pertinent to the assessment of the proposed project’s potential impacts on cultural beliefs, practices, and resources (pursuant to the Environmental Council’s *Guidelines for Assessing Cultural Impacts*), which may include Traditional Cultural Properties (TCPs).



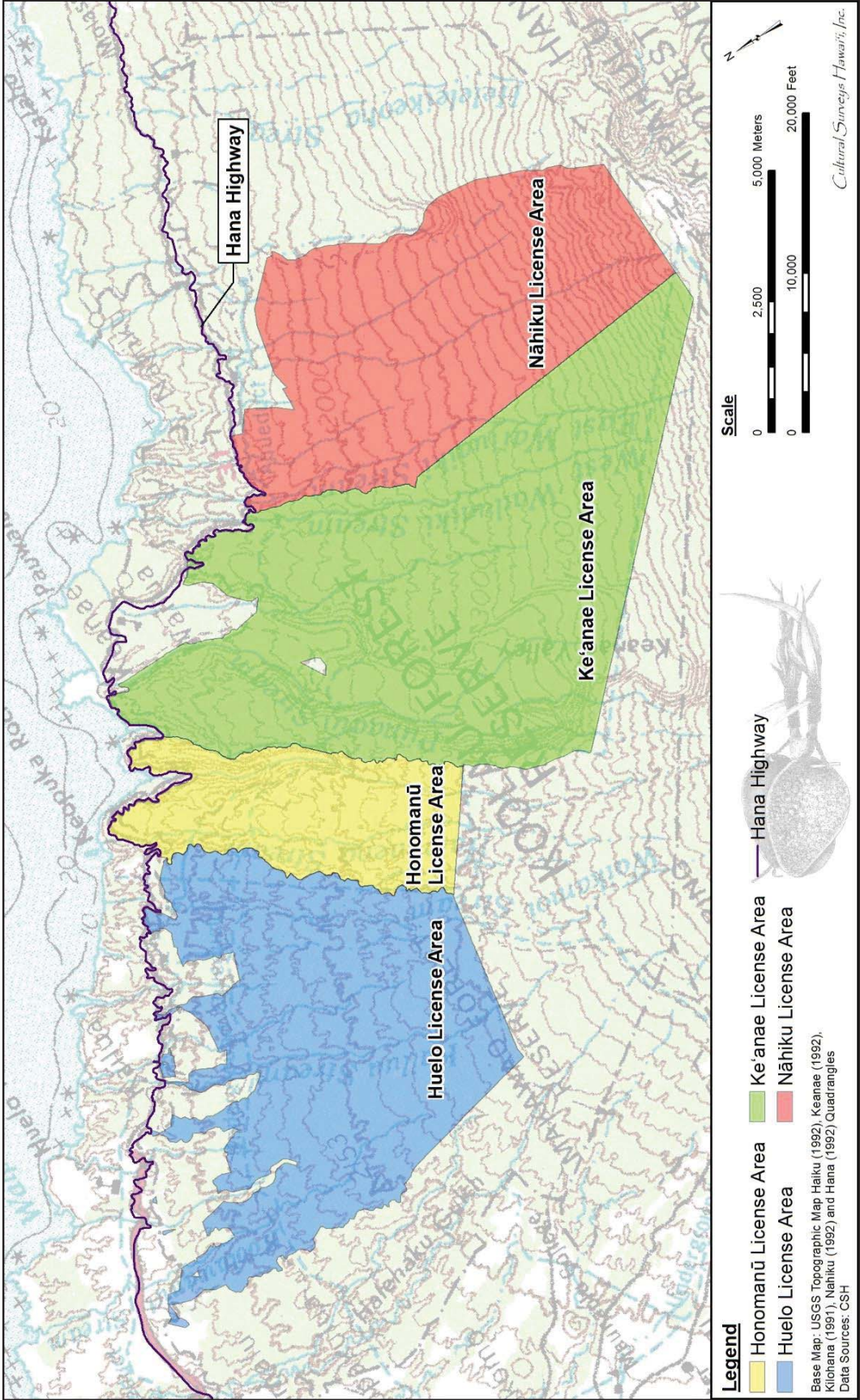


Figure 1. Portions of the 1992a Haiku, 1992c Keanae, 1991 Kilohana, 1992d Nahiku, and 1992b Hana USGS 7.5-minute topographic quadrangles showing the location of the License Area (Nāhiku, Ke'anae, Honomanū, and Huelo License Areas)

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various



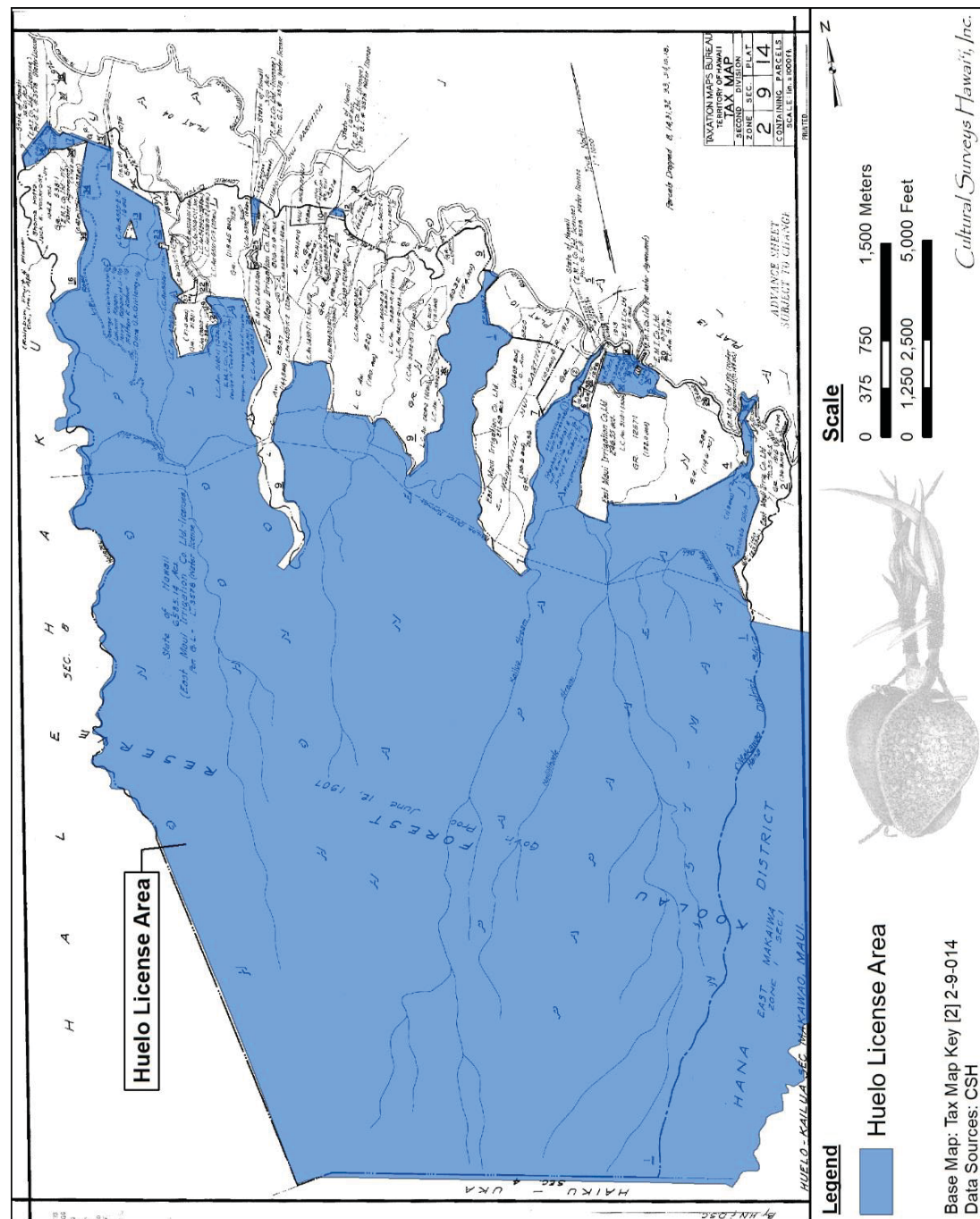


Figure 2. Tax Map Key (TMK): [2] 2-9-014 showing a portion of the Huelo License Area (Hawai'i TMK Service 2014)

CIA for the Proposed Water Lease for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua‘a, Makawao and Hāna, Maui

TMKs: Various



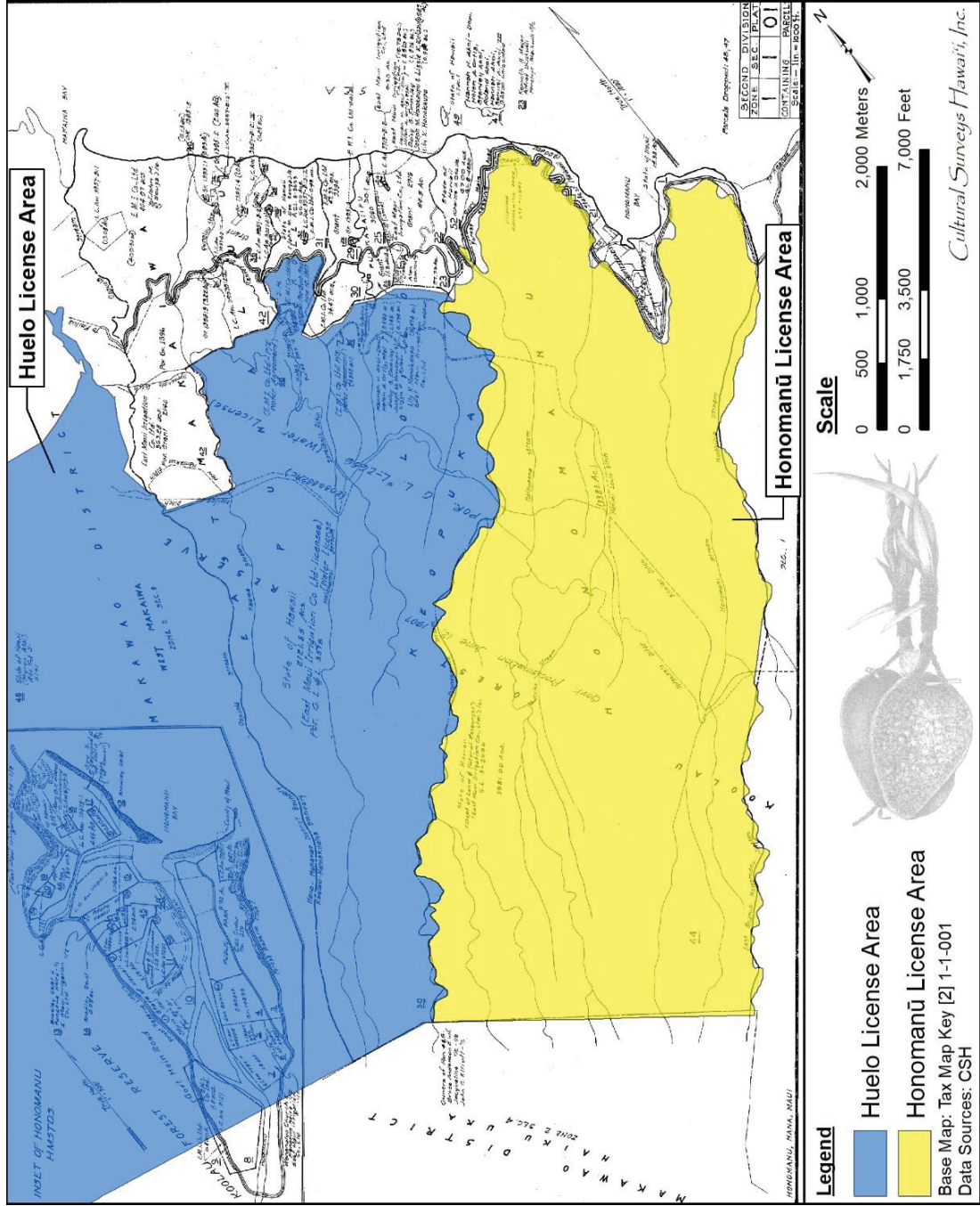


Figure 3. TMK: [2] 1-1-001 showing a portion of the Huelo and Honomanu License Areas (Hawai'i TMK Services 2014)

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanu, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

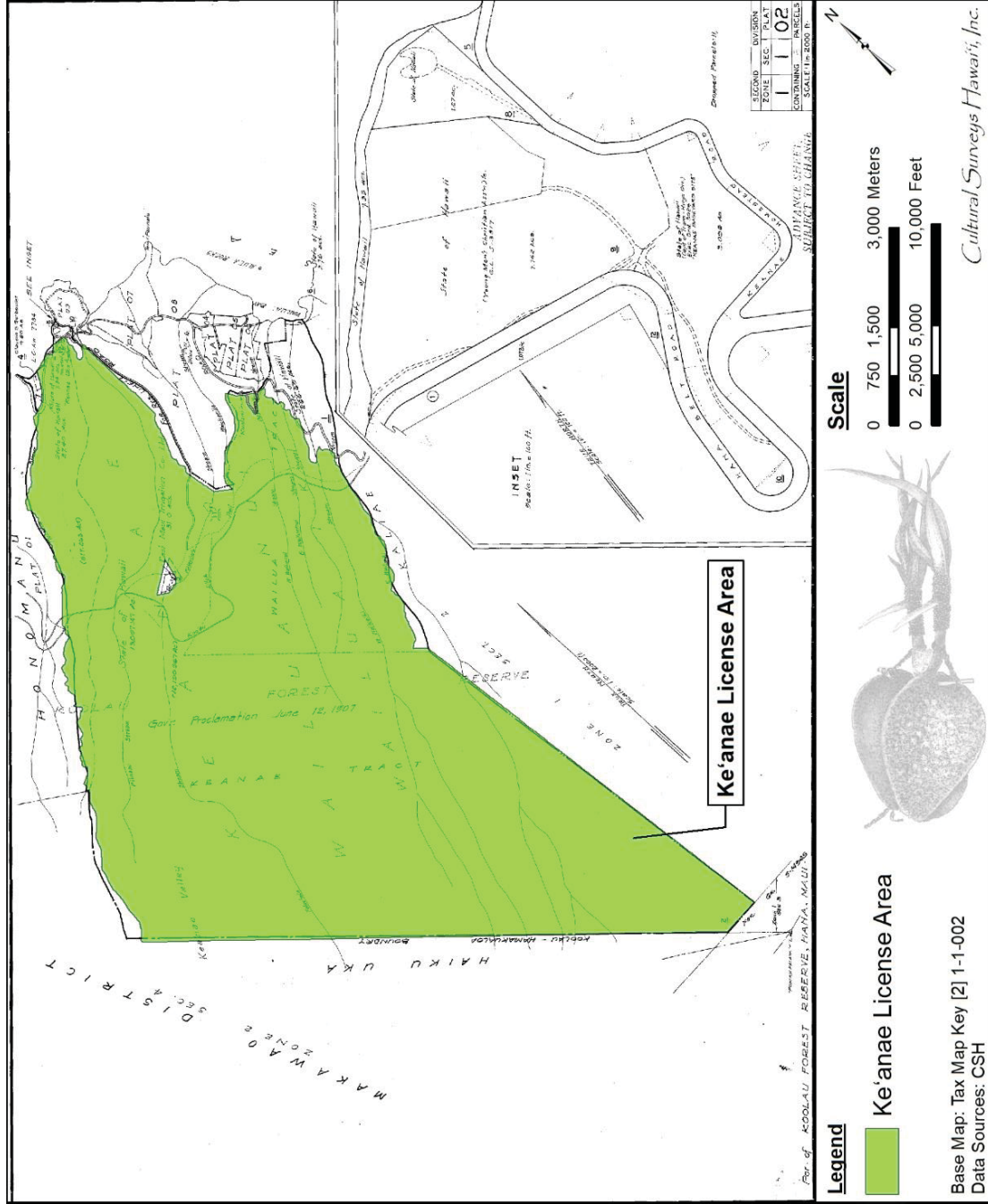


Figure 4. TMK: [2] 1-1-002 showing the Ke'anae License Area (Hawai'i TMK Service 2014)

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

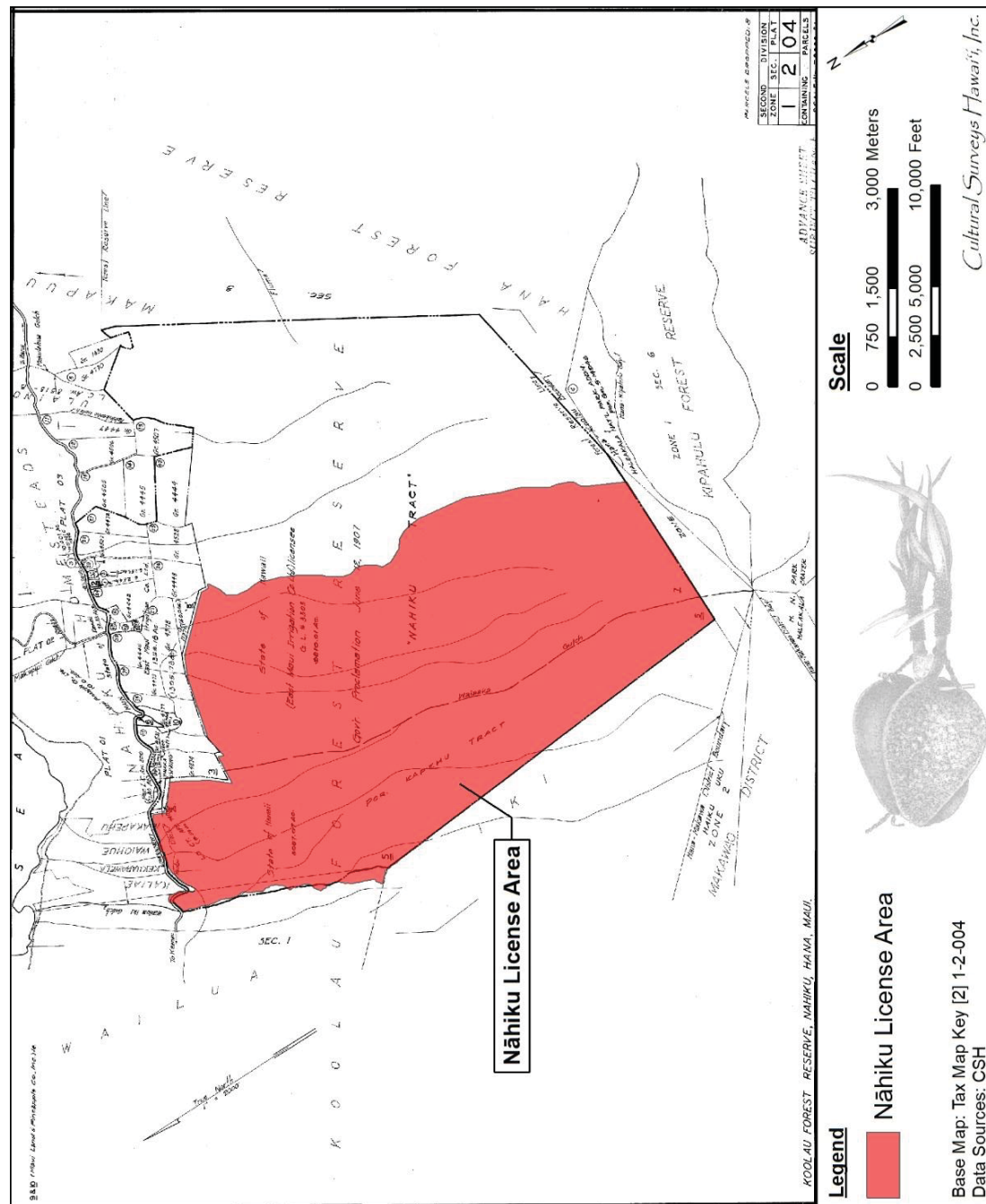


Figure 5. TMK: [2] 1-2-004 showing the Nāhiku License Area (Hawai‘i TMK Service 2014)

CIA for the Proposed Water Lease for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua‘a, Makawao and Hāna, Maui

TMKs: Various



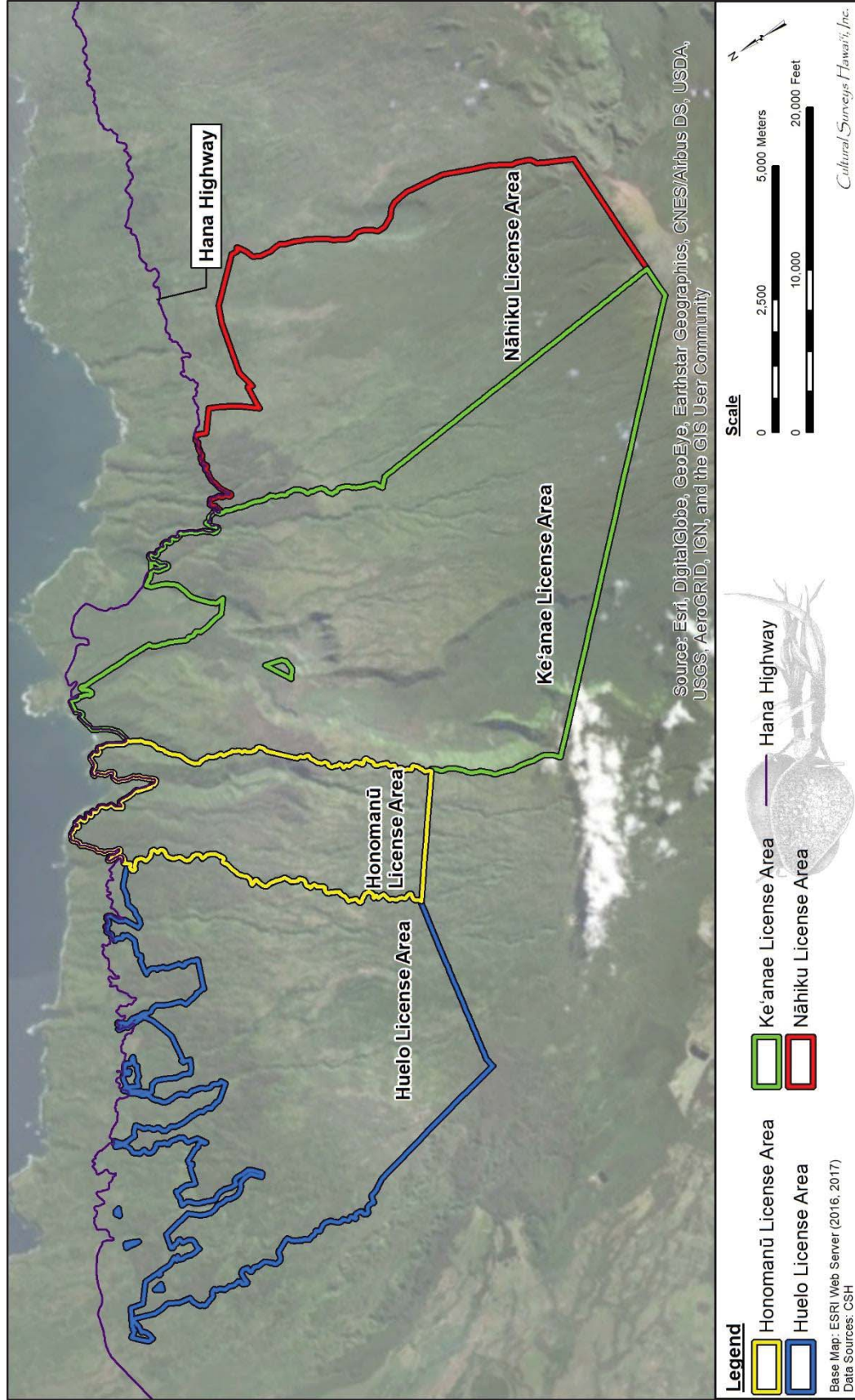


Figure 6. 2009 aerial image showing License Areas (ESRI Web Server 2009)

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

It should be noted, however, that TCP is a term used for federal designation of historic properties and that while SHPD may consider federally designated TCPs, there is no formal application to designate them under the state process.

TCPs may be significant historic properties under State of Hawai‘i significance Criterion e, pursuant to Hawai‘i Administrative Rules (HAR) §13-275-6 and §13-284-6. Significance Criterion e refers to historic properties that “have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity” (HAR §13-275-6 and §13-284-6). The document will likely also support the project’s historic preservation review under HRS Chapter 6E and HAR Title 13, Chapters 275 and 284.

### 1.3 Scope of Work

The scope of work for this CIA includes the following:

1. Examination of cultural and historical resources, including Land Commission documents, historic maps, and previous research reports with specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal, and other resources, accessing religious sites, or agricultural pursuits as may be indicated in the historic record.
2. Review of previous archaeological work at and near the License Area that may be relevant to reconstructions of traditional land use activities; and to the identification and description of cultural resources, practices, and beliefs associated with the parcel.
3. Consultation and interviews with knowledgeable parties regarding cultural and natural resources and practices at or near the License Area; present and past uses of the License Area; and/or other practices, uses, or traditions associated with the License Area and environs.

Preparation of a report that summarizes the results of these research activities and provides recommendations based on findings.

### 1.4 Environmental Setting

#### 1.4.1 *Lepo* (Soils)

##### Huelo License Area

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), the License Area’s soils in the Huelo License Area consist of Kailua silty clay (3 to 25 percent slopes) (KBID), Pauwela clay (15 to 25 percent slopes) (PfD), Rough broken land (rRR), Honomanu-Amalu association (rHR), Rough mountainous land (rRT), Amalu peaty silty clay (3 to 20 percent slopes) (rAMD), and water > 40 acres (W) (Figure 7).

Kailua silty clay (3 to 25 percent slopes) (KBID) soils are described as follows:

This soil is on low uplands. Included in mapping were areas of Honomanu and Makawao soils. Also included were small, steep areas near cinder cones.



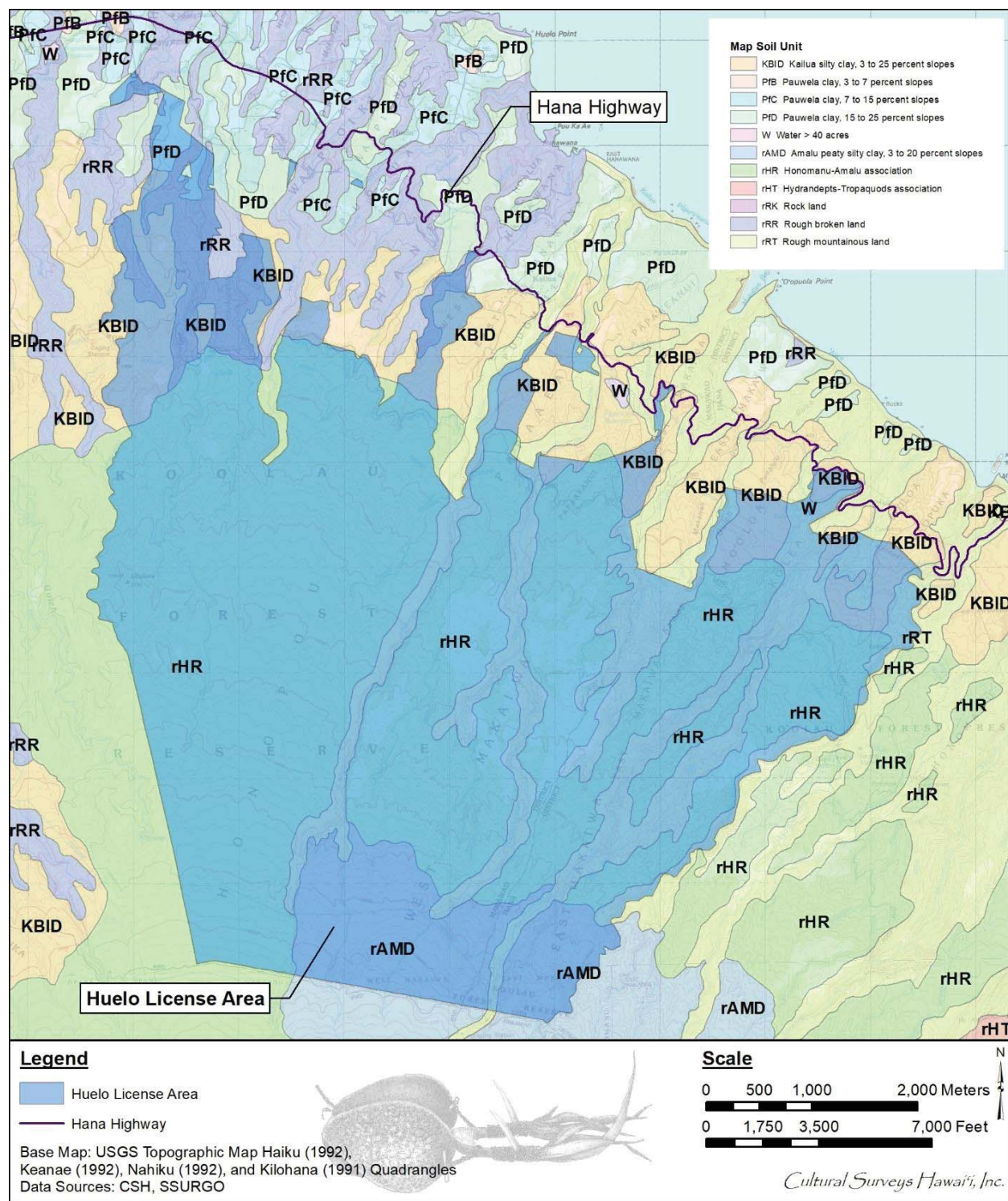


Figure 7. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972) indicating soil types within and surrounding the Huelo License Area (U.S. Department of Agriculture 2001)

In a representative profile the surface layer is dark brown silty clay about 9 inches thick. The upper part of the subsoil, about 18 inches thick, is dark-brown and dark reddish-brown silty clay that has subangular blocky structure. The lower part of the subsoil is very dark gray silty clay loam. The substratum is soft, weathered basic igneous rock. The soil is very strongly acid in the surface layer and strongly acid or medium acid in the subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. In places roots penetrate to a depth of 4 feet or more. . . .

This soil is used for pasture, woodland, and wildlife habitat. (Capability classification IVe, nonirrigated; pasture group 11; woodland group 8). [Foote et al. 1972:53]

Pauwela clay (15 to 25 percent slopes) (Pfd) soils are described as follows:

On this soil runoff is medium and the erosion hazard is moderate. Included in mapping were areas that are steep and moderately eroded. This soil is used for pasture and woodland. (Capability classification IVe, nonirrigated; pineapple group 8; pasture group 8; woodland group 7). [Foote et al. 1972:112]

Rough broken land (rRR) is described as follows:

Rough broken land (rRR) consists of very steep land broken by numerous intermittent drainage channels. In most places, it is not stony. It occurs in gulches and on mountainsides on all the Islands except Oahu. The slope is 40 to 70 percent. Elevations range from nearly sea level to about 8,000 feet. The local relief is generally between 25 and 500 feet. Runoff is rapid, and geologic erosion is active. The annual rainfall amounts to 25 to more than 200 inches. These soils are variable. They are 20 to more than 60 inches deep over soft, weathered rock. In most places some weathered rock fragments are mixed with the soil material. Small areas of rock outcrop, stones, and soil slips are common. Included in mapping were areas of colluvium and alluvium along gulch bottoms.

This land type is used primarily for watershed and wildlife habitat. In places, it is used also for pasture and woodland. The dominant natural vegetation in the drier areas consists of guava, lantana, Natal redbud, bermudagrass, koa haole, and molasses grass. Ohia, kukui, koa, and ferns are dominant in the wetter areas. Puakeawe, aalii, and sweet vernal grass are common at the higher elevations. (Capability classification Vile, nonirrigated). [Foote et al. 1972:119]

Honomanu-Amalu association (rHR) soils are described as follows:

The soils in this association have the profiles described as typical of their respective series. The areas are almost inaccessible by vehicle or on foot. They are on gently sloping to moderately steep, intermediate uplands on East Maui. The Honomanu soils occupy the more sloping, better drained side slopes. The Amalu soils occur on the less sloping tops of ridges and interfluvies. The Honomanu soils are well drained; the Amalu soils are poorly drained. Runoff is slow to very slow, and the erosion hazard is slight.

Honomanu soils make up about 60 percent of the association, and Amalu soils about 40 percent. Included in mapping were small areas of Kailua soils and many small, very steep gulches. This association is used for water supply and wildlife habitat. It is covered with dense min forest vegetation. (Honomanu part is in capability classification IVe, nonirrigated; woodland group 8. Amalu part is in capability classification VIIw, nonirrigated). [Foote et al. 1972:43]

Rough mountainous land (rRT) is described as follows:

Rough mountainous land (rRT) occurs in mountainous areas on all islands in the survey area. It consists of very steep land broken by numerous intermittent drainage channels. In most places it is not stony. Elevations range from nearly sea level to more than 6,000 feet. The annual rainfall amounts to 70 to more than 400 inches. Over much of the area, the soil mantle is very thin. It ranges from 1 inch to 10 inches in thickness over saprolite. In most places the saprolite is relatively soft and permeable to roots and water.

The land surface is dominated by deep, V-shaped valleys that have extremely steep side slopes and narrow ridges between the valleys. In most places, the local relief exceeds 500 feet. The soil material on the narrow ridgetops is similar to that of the Amalu and Olokui series. Rock land, rock outcrop, soil slips, and eroded spots make up 20 to 40 percent of the acreage.

This land type is used for water supply, wildlife habitat, and recreation. The natural vegetation consists of ohia, false staghorn fern, tree fern, yellow foxtail, lantana, kukui, and puakeawe. (Capability classification VIIe, nonirrigated) [Foote et al. 1972:119]

Amalu peaty silty clay (3 to 20 percent slopes) (rAMD) soils are described as follows:

This soil is on high ridges and mountaintops. Included in mapping were small areas of Honomanu and Olokui soils and of steep gulches. In a representative profile an organic layer of black peat, about 8 inches thick, overlies a layer of gray massive clay about 8 inches thick. The substratum is soft, weathered basic igneous rock capped by a horizontal ironstone sheet 1/2 to 1 inch thick. The soil is extremely acid above the ironstone layer.

Permeability is restricted by the ironstone sheet, which is impermeable except for cracks. Runoff is very slow, and the erosion hazard is no more than slight. Roots penetrate to a depth of 8 to 15 inches in places. ...

This soil is used for water supply and wildlife habitat. (Capability classification VIIw, nonirrigated; woodland group 16). [Foote et al. 1972:28]

### Honomanū License Area

According to the USDA SSURGO (2001) and soil survey data gathered by Foote et al. (1972), the License Area's soils in the Honomanū License Area consist of Kailua silty clay (3 to 25 percent slopes) (KBID), Stony alluvial land (rSM), Honomanu-Amalu association (rHR),



Rough mountainous land (rRT), and Amalu peaty silty clay (3 to 20 percent slopes) (rAMD) (Figure 8).

Kailua silty clay (3 to 25 percent slopes) (KBID) soils are described as follows:

This soil is on low uplands. Included in mapping were areas of Honomanu and Makawao soils. Also included were small, steep areas near cinder cones.

In a representative profile the surface layer is dark brown silty clay about 9 inches thick. The upper part of the subsoil, about 18 inches thick, is dark-brown and dark reddish-brown silty clay that has subangular blocky structure. The lower part of the subsoil is very dark gray silty clay loam. The substratum is soft, weathered basic igneous rock. The soil is very strongly acid in the surface layer and strongly acid or medium acid in the subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. In places roots penetrate to a depth of 4 feet or more. ...

This soil is used for pasture, woodland, and wildlife habitat. (Capability classification IVe, nonirrigated; pasture group 11; woodland group 8). [Foote et al. 1972:53]

Stony alluvial land (rSM) is described as follows:

Stony alluvial land (rSM) consists of stones, boulders, and soil deposited by streams along the bottoms of gulches and on alluvial fans. In most places, the slope is 3 to 15 percent. Elevations range from nearly sea level to 1,000 feet. The annual rainfall amounts to 15 to 200 inches.

This land type is suited to pasture in the dry areas and to pasture and woodland in the wet areas. The natural vegetation consists of kiawe, klu, ilima, piligrass, and lantana in the dry areas and guava, kukui, hilograss, and Christmas berry in the wet areas. Improvement of this land is difficult because of the stones and boulders. (Capability classification VII, nonirrigated). [Foote et al. 1972:120]

Honomanu-Amalu association (rHR) soils are described as follows:

The soils in this association have the profiles described as typical of their respective series. The areas are almost inaccessible by vehicle or on foot. They are on gently sloping to moderately steep, intermediate uplands on East Maui. The Honomanu soils occupy the more sloping, better drained side slopes. The Amalu soils occur on the less sloping tops of ridges and interfluvies. The Honomanu soils are well drained; the Amalu soils are poorly drained. Runoff is slow to very slow, and the erosion hazard is slight.

Honomanu soils make up about 60 percent of the association, and Amalu soils about 40 percent. Included in mapping were small areas of Kailua soils and many small, very steep gulches. This association is used for water supply and wildlife habitat. It is covered with dense min forest vegetation. (Honomanu part is in

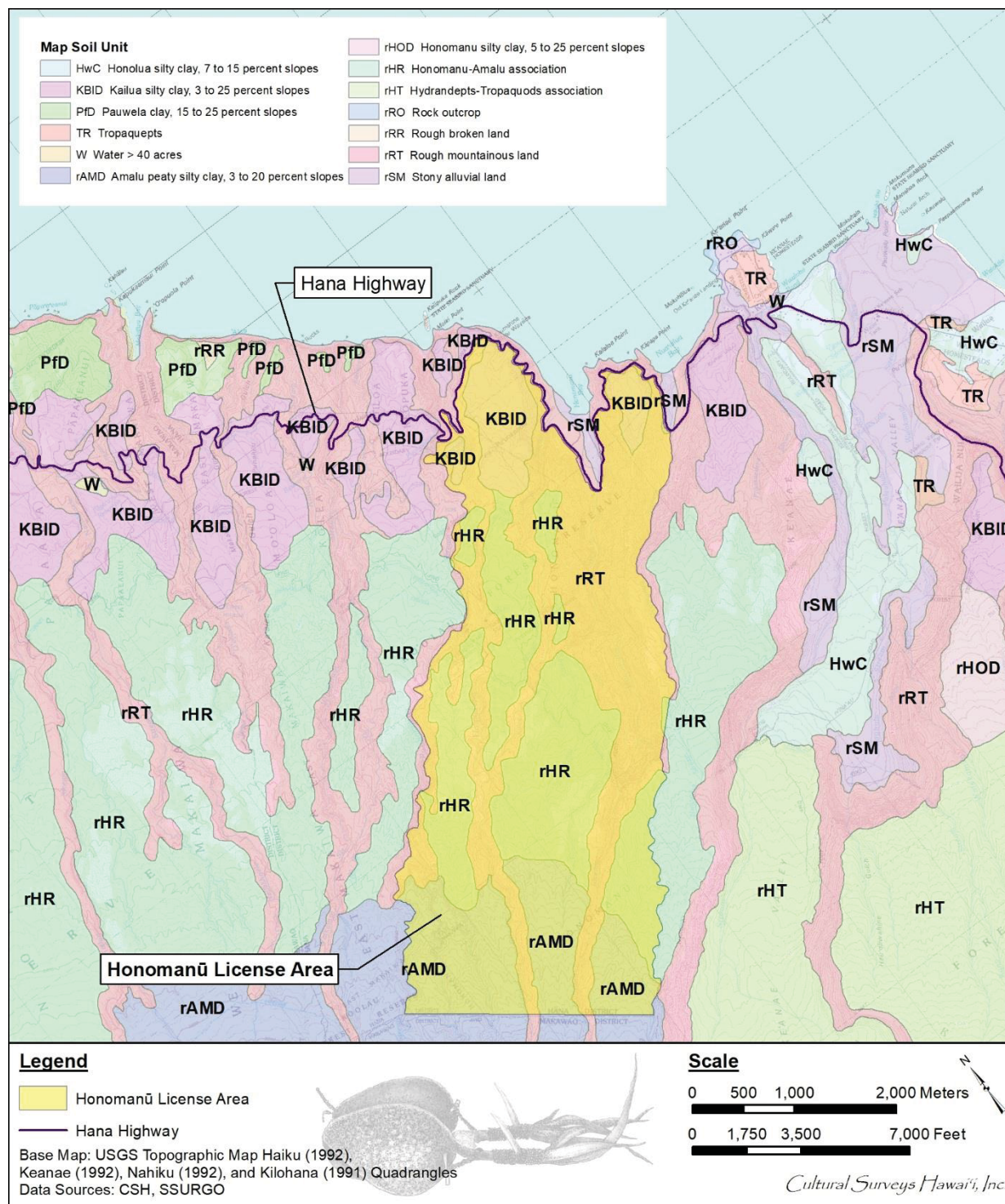


Figure 8. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972) indicating soil types within and surrounding the Honomanu License Area (U.S. Department of Agriculture 2001)



capability classification IVe, nonirrigated; woodland group 8. Amalu part is in capability classification VIIw, nonirrigated). [Foote et al. 1972:43]

Rough mountainous land (rRT) is described as follows:

Rough mountainous land (rRT) occurs in mountainous areas on all islands in the survey area. It consists of very steep land broken by numerous intermittent drainage channels. In most places it is not stony. Elevations range from nearly sea level to more than 6,000 feet. The annual rainfall amounts to 70 to more than 400 inches. Over much of the area, the soil mantle is very thin. It ranges from 1 inch to 10 inches in thickness over saprolite. In most places the saprolite is relatively soft and permeable to roots and water.

The land surface is dominated by deep, V-shaped valleys that have extremely steep side slopes and narrow ridges between the valleys. In most places, the local relief exceeds 500 feet. The soil material on the narrow ridgetops is similar to that of the Amalu and Olokui series. Rock land, rock outcrop, soil slips, and eroded spots make up 20 to 40 percent of the acreage.

This land type is used for water supply, wildlife habitat, and recreation. The natural vegetation consists of ohia, false staghorn fern, tree fern, yellow foxtail, lantana, kukui, and puakeawe. (Capability classification VIIe, nonirrigated). [Foote et al. 1972:119]

Amalu peaty silty clay (3 to 20 percent slopes) (rAMD) soils are described as follows:

This soil is on high ridges and mountaintops. Included in mapping were small areas of Honomanu and Olokui soils and of steep gulches. In a representative profile an organic layer of black peat, about 8 inches thick, overlies a layer of gray massive clay about 8 inches thick. The substratum is soft, weathered basic igneous rock capped by a horizontal ironstone sheet 1/2 to 1 inch thick. The soil is extremely acid above the ironstone layer.

Permeability is restricted by the ironstone sheet, which is impermeable except for cracks. Runoff is very slow, and the erosion hazard is no more than slight. Roots penetrate to a depth of 8 to 15 inches in places. ...

This soil is used for water supply and wildlife habitat. (Capability classification VIIw, nonirrigated; woodland group 16). [Foote et al. 1972:28]

### Ke'anae License Area

According to the USDA SSURGO database (2001) and soil survey data gathered by Foote et al. (1972), the License Area's soils in the Ke'anae License Area consist of Kailua silty clay (3 to 25 percent slopes) (KBID), Stony alluvial land (rSM), Honolua silty clay (7 to 15 percent slopes) (HwC), Honomanu-Amalu association (rHR), Rough mountainous land (rRT), Honomanu silty clay (5 to 25 percent slopes) (rHOD), and Hydrandepts-Tropaquods association (rHT) (Figure 9).

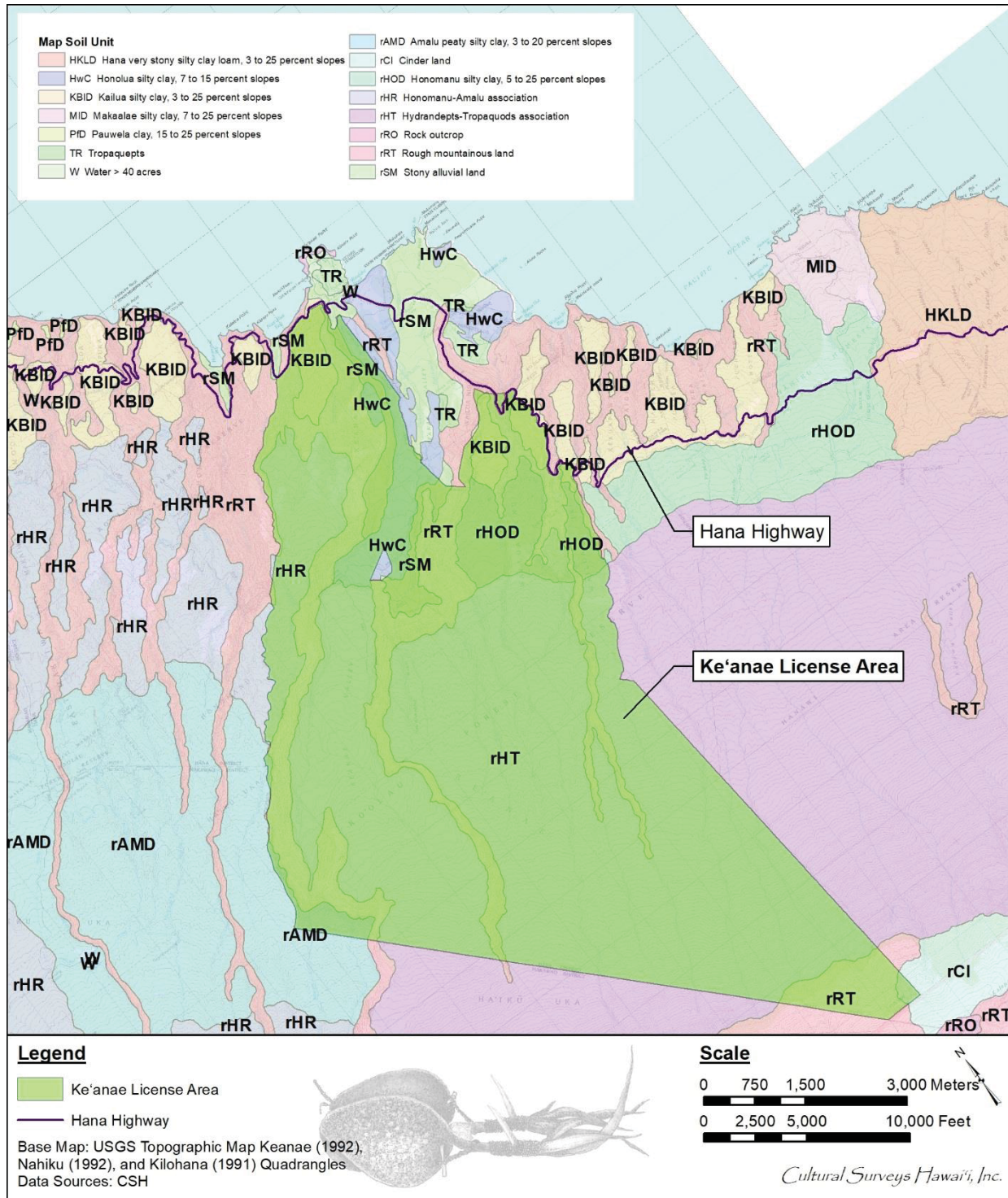


Figure 9. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972) indicating soil types within and surrounding the Ke'anae License Area (U.S. Department of Agriculture 2001)

Kailua silty clay (3 to 25 percent slopes) (KBID) soils are described as follows:

This soil is on low uplands. Included in mapping were areas of Honomanu and Makawao soils. Also included were small, steep areas near cinder cones.

In a representative profile the surface layer is dark brown silty clay about 9 inches thick. The upper part of the subsoil, about 18 inches thick, is dark-brown and dark reddish-brown silty clay that has subangular blocky structure. The lower part of the subsoil is very dark gray silty clay loam. The substratum is soft, weathered basic igneous rock. The soil is very strongly acid in the surface layer and strongly acid or medium acid in the subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. In places roots penetrate to a depth of 4 feet or more. ...

This soil is used for pasture, woodland, and wildlife habitat. (Capability classification IVe, nonirrigated; pasture group 11; woodland group 8). [Foote et al. 1972:53]

Stony alluvial land (rSM) is described as follows:

Stony alluvial land (rSM) consists of stones, boulders, and soil deposited by streams along the bottoms of gulches and on alluvial fans. In most places, the slope is 3 to 15 percent. Elevations range from nearly sea level to 1,000 feet. The annual rainfall amounts to 15 to 200 inches.

This land type is suited to pasture in the dry areas and to pasture and woodland in the wet areas. The natural vegetation consists of kiawe, klu, ilima, piligrass, and lantana in the dry areas and guava, kukui, hilograss, and Christmas berry in the wet areas. Improvement of this land is difficult because of the stones and boulders. (Capability classification VII, nonirrigated). [Foote et al. 1972:120]

Honolua silty clay (7 to 15 percent slopes) (HwC) are described as follows:

This soil is on smooth interfluvies on uplands. Included in mapping were small areas of Alaeloa and Olelo soils. Also included were small, gently sloping areas and small, eroded spots.

In a representative profile, the surface layer is dark-brown silty clay about 12 inches thick. The subsoil, about 58 inches thick, is dark reddish-brown and reddish-brown silty clay that has subangular blocky structure. The substratum is soft, weathered basic igneous rock. The soil is strongly acid in the surface layer and subsoil.

Permeability is moderately rapid. Runoff is slow to medium, and the erosion hazard is slight to moderate. The available water capacity is about 1.2 inches per foot in the surface layer and about 1.4 inches per foot in the subsoil. In places roots penetrate to a depth of 5 feet or more.

[...]



This soil is used for pineapple, pasture, and woodland. (Capability classification IIIe, nonirrigated; pineapple group 3; pasture group 8; woodland group 7). [Foote et al. 1972:42]

Honomanu-Amalu (rHR) association soils are described as follows:

The soils in this association have the profiles described as typical of their respective series. The areas are almost inaccessible by vehicle or on foot. They are on gently sloping to moderately steep, intermediate uplands on East Maui. The Honomanu soils occupy the more sloping, better drained side slopes. The Amalu soils occur on the less sloping tops of ridges and interfluvies. The Honomanu soils are well drained; the Amalu soils are poorly drained. Runoff is slow to very slow, and the erosion hazard is slight.

Honomanu soils make up about 60 percent of the association, and Amalu soils about 40 percent. Included in mapping were small areas of Kailua soils and many small, very steep gulches. This association is used for water supply and wildlife habitat. It is covered with dense min forest vegetation. (Honomanu part is in capability classification IVe, nonirrigated; woodland group 8. Amalu part is in capability classification VIIw, nonirrigated). [Foote et al. 1972:43]

Rough mountainous land (rRT) is described as follows:

Rough mountainous land (rRT) occurs in mountainous areas on all islands in the survey area. It consists of very steep land broken by numerous intermittent drainage channels. In most places it is not stony. Elevations range from nearly sea level to more than 6,000 feet. The annual rainfall amounts to 70 to more than 400 inches. Over much of the area, the soil mantle is very thin. It ranges from 1 inch to 10 inches in thickness over saprolite. In most places the saprolite is relatively soft and permeable to roots and water.

The land surface is dominated by deep, V-shaped valleys that have extremely steep side slopes and narrow ridges between the valleys. In most places, the local relief exceeds 500 feet. The soil material on the narrow ridgetops is similar to that of the Amalu and Olokui series. Rock land, rock outcrop, soil slips, and eroded spots make up 20 to 40 percent of the acreage.

This land type is used for water supply, wildlife habitat, and recreation. The natural vegetation consists of ohia, false staghorn fern, tree fern, yellow foxtail, lantana, kukui, and puakeawe. (Capability classification VIIe, nonirrigated). [Foote et al. 1972:119]

Honomanu silty clay (5 to 25 percent slopes) (rHOD) soils are described as follows:

This soil is on the wettest parts of the northeastern slopes of Haleakala. Included in mapping were small areas of Amalu and Kailua soils and rock outcrops.

In a representative profile the surface layer is very dark brown silt loam and dark yellowish-brown silty clay about 11 inches thick, capped with an organic layer about 3 inches thick. The subsoil, about 26 inches thick, is dark yellowish-

brown and brown silty clay that has subangular blocky structure. The substratum is dark yellowish-brown loam and fragmental basic igneous rock. The soil is extremely acid in the surface layer and subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. In places roots penetrate to a depth of 4 feet or more.

[...]

This soil is used for water supply and wildlife habitat. (Capability classification IVe, nonirrigated; pasture group 11; woodland group 8). [Foote et al. 1972:43]

Hydrandepts-Tropaquods (rHT) association soils are described as follows:

Areas mapped as Hydrandepts-Tropaquods association (rHT) consist of well-drained to poorly drained soils on uplands. These soils are on the northern slopes of West Maui and the northern and eastern slopes of East Maui. They developed in volcanic ash and in material weathered from cinders and basic igneous rock. They are moderately sloping to steep. Elevations range from 1,000 to 6,000 feet: The annual rainfall amounts to 100 to 350 inches. The mean annual soil temperature is 60° F. This association is geographically associated with soils of the Amalu, Honomanu, and Olelo series.

Hydrandepts make up about 60 percent of the association, and Tropaquods 40 percent. Included in mapping were small areas of Rough mountainous land. Also included were small peat bogs.

Hydrandepts are the steeper areas of the association. These are well drained to moderately well drained soils that are similar to those of the Honomanu series. The surface layer is high in organic-matter content. The subsoil is dark-brown or dark yellowish-brown, smeary silty clay loam or silty clay. The substratum consists of volcanic ash and cinders or weathered basic igneous rock. These soils dehydrate irreversibly into fine pebble size aggregates.

Tropaquods are poorly drained soils that are similar to those of the Amalu and Olokni series. They have a peaty or mucky surface layer that overlies a dark gray to very dark gray, mottled layer. The mottled layer rests on an ironstone sheet ¼ to 1 inch thick. The ironstone is at a depth of 10 to 20 inches. It normally caps highly weathered basic igneous rock.

The soils in this association have low bearing capacity and low shear strength. They are slippery and difficult to traverse. Because of their ability to absorb water and to transmit it rapidly, these soils are important for maintenance of ground water for domestic use and irrigation.

This association is used for water supply and wildlife habitat. The natural vegetation consists of ohia, puakeawe, sedges, false staghorn fern, tree fern, and other rain forest vegetation. (Hydrandepts soils are in capability classification VIIe, nonirrigated. Tropaquods soils are in capability classification VIIw, nonirrigated). [Foote et al. 1972:46]



## Nāhiku License Area

According to the USDA SSURGO database (2001) and soil survey data gathered by Foote et al. (1972), the License Area's soils in the Nāhiku License Area consist of Kailua silty clay (3 to 25 percent slopes) (KBID), Honomanu silty clay (5 to 25 percent slopes) (rHOD), Hana very stony silty clay loam (3 to 25 percent slopes) (HKLD), Rough mountainous land (rRT), Hydrandepts-Tropaquods association (rHT), and Cinder land (rCl) (Figure 10).

Kailua silty clay (3 to 25 percent slopes) (KBID) soils are described as follows:

This soil is on low uplands. Included in mapping were areas of Honomanu and Makawao soils. Also included were small, steep areas near cinder cones.

In a representative profile the surface layer is dark brown silty clay about 9 inches thick. The upper part of the subsoil, about 18 inches thick, is dark-brown and dark reddish-brown silty clay that has subangular blocky structure. The lower part of the subsoil is very dark gray silty clay loam. The substratum is soft, weathered basic igneous rock. The soil is very strongly acid in the surface layer and strongly acid or medium acid in the subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. In places roots penetrate to a depth of 4 feet or more. ...

This soil is used for pasture, woodland, and wildlife habitat. (Capability classification IVe, nonirrigated; pasture group 11; woodland group 8). [Foote et al. 1972:53]

Honomanu silty clay (5 to 25 percent slopes) (rHOD) soils are described as follows:

This soil is on the wettest parts of the northeastern slopes of Haleakala. Included in mapping were small areas of Amalu and Kailua soils and rock outcrops.

In a representative profile the surface layer is very dark brown silt loam and dark yellowish-brown silty clay about 11 inches thick, capped with an organic layer about 3 inches thick. The subsoil, about 26 inches thick, is dark yellowish-brown and brown silty clay that has subangular blocky structure. The substratum is dark yellowish-brown loam and fragmental basic igneous rock. The soil is extremely acid in the surface layer and subsoil.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. In places roots penetrate to a depth of 4 feet or more. ...

This soil is used for water supply and wildlife habitat. (Capability classification IVe, nonirrigated; pasture group 11; woodland group 8). [Foote et al. 1972:43]

Hana very stony silty clay loam (3 to 25 percent slopes) (HKLD) soils are described as follows:

This soil is on smooth, low mountain slopes. Included in mapping were small areas of Honomanu soils. Also included were small, steep areas near cinder cones.

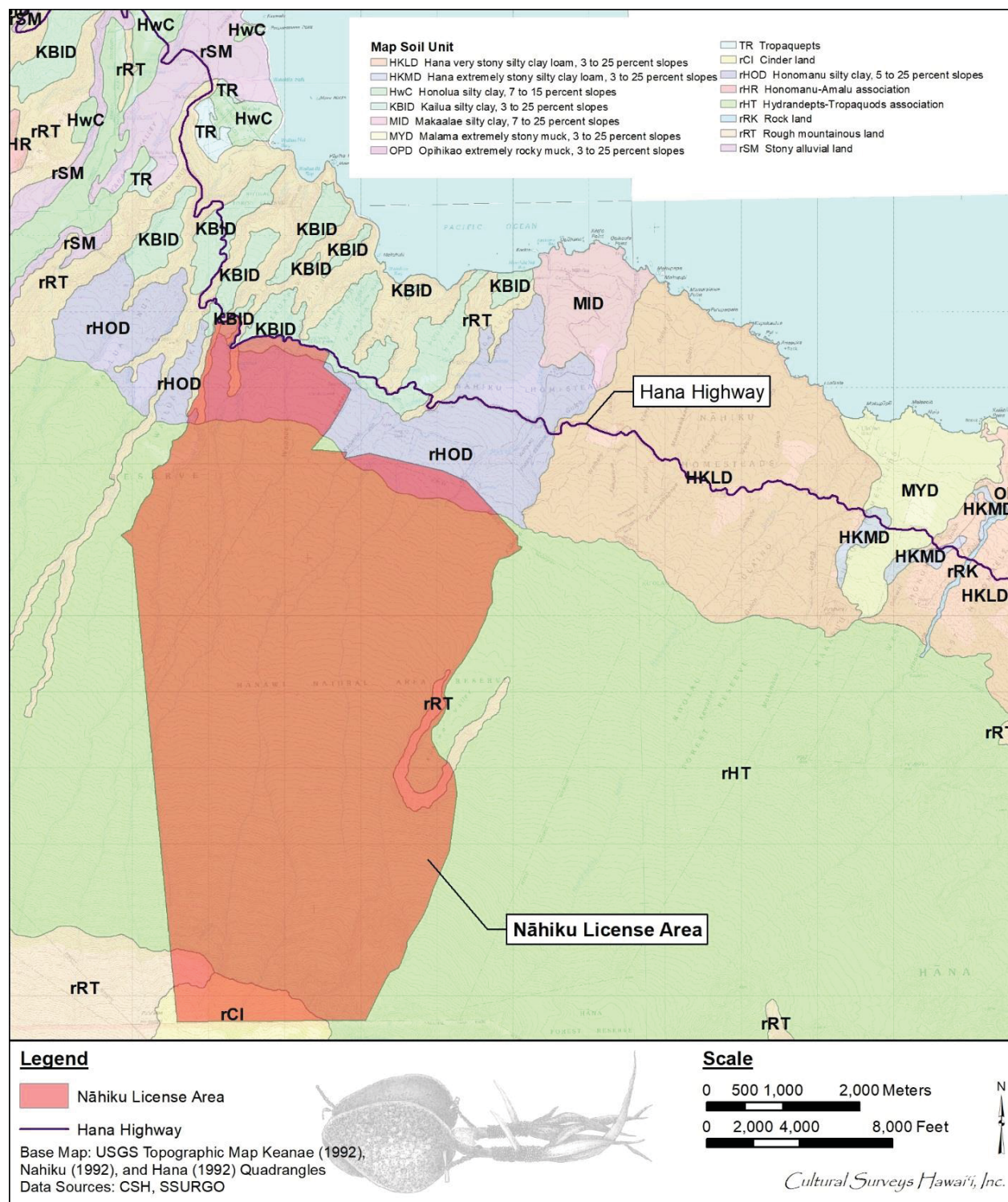


Figure 10. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972) indicating soil types within and surrounding the Nāhiku License Area (U.S. Department of Agriculture 2001)

In a representative profile, the surface layer is very dark-brown and very dark grayish-brown silty clay loam about 12 inches thick. The subsoil, about 22 inches thick, is dark-brown silty clay loam that has subangular blocky structure. The substratum is moderately weathered, pebble-size cinders overlying 4-a lava. The soil is strongly acid to medium acid in the surface layer and slightly acid in the subsoil.

Permeability is moderately rapid. Runoff is slow to medium, and the erosion hazard is slight to moderate. In places roots penetrate to a depth of 3 to 4 feet. The available water capacity is about 1.2 inches per foot in the surface layer and 1.4 inches per foot in the subsoil. ...

This soil is used for pasture. (Capability classification VIs, nonirrigated; pasture group 11; woodland group 8). [Foote et al. 1972:37]

Rough mountainous land (rRT) is described as follows:

Rough mountainous land (rRT) occurs in mountainous areas on all islands in the survey area. It consists of very steep land broken by numerous intermittent drainage channels. In most places it is not stony. Elevations range from nearly sea level to more than 6,000 feet. The annual rainfall amounts to 70 to more than 400 inches. Over much of the area, the soil mantle is very thin. It ranges from 1 inch to 10 inches in thickness over saprolite. In most places the saprolite is relatively soft and permeable to roots and water.

The land surface is dominated by deep, V-shaped valleys that have extremely steep side slopes and narrow ridges between the valleys. In most places, the local relief exceeds 500 feet. The soil material on the narrow ridgetops is similar to that of the Amalu and Olokui series. Rock land, rock outcrop, soil slips, and eroded spots make up 20 to 40 percent of the acreage.

This land type is used for water supply, wildlife habitat, and recreation. The natural vegetation consists of ohia, false staghorn fern, tree fern, yellow foxtail, lantana, kukui, and puakeawe. (Capability classification VIIe, nonirrigated). [Foote et al. 1972:119]

Hydrandepts-Tropaquods association (rHT) soils are described as follows:

Areas mapped as Hydrandepts-Tropaquods association (rHT) consist of well-drained to poorly drained soils on uplands. These soils are on the northern slopes of West Maui and the northern and eastern slopes of East Maui. They developed in volcanic ash and in material weathered from cinders and basic igneous rock. They are moderately sloping to steep. Elevations range from 1,000 to 6,000 feet. The annual rainfall amounts to 100 to 350 inches. The mean annual soil temperature is 60° F. This association is geographically associated with soils of the Amalu, Honomanu, and Olelo series.

Hydrandepts make up about 60 percent of the association, and Tropaquods 40 percent. Included in mapping were small areas of Rough mountainous land. Also included were small peat bogs.



Hydrandepts are the steeper areas of the association. These are well drained to moderately well drained soils that are similar to those of the Honomanu series. The surface layer is high in organic-matter content. The subsoil is dark-brown or dark yellowish-brown, smeary silty clay loam or silty clay. The substratum consists of volcanic ash and cinders or weathered basic igneous rock. These soils dehydrate irreversibly into fine pebble size aggregates.

Tropaquods are poorly drained soils that are similar to those of the Amalu and Olokni series. They have a peaty or mucky surface layer that overlies a dark gray to very dark gray, mottled layer. The mottled layer rests on an ironstone sheet  $\frac{1}{4}$  to 1 inch thick. The ironstone is at a depth of 10 to 20 inches. It normally caps highly weathered basic igneous rock.

The soils in this association have low bearing capacity and low shear strength. They are slippery and difficult to traverse. Because of their ability to absorb water and to transmit it rapidly, these soils are important for maintenance of ground water for domestic use and irrigation.

This association is used for water supply and wildlife habitat. The natural vegetation consists of ohia, puakeawe, sedges, false staghorn fern, tree fern, and other rain forest vegetation. (Hydrandepts soils are in capability classification VIIe, nonirrigated. Tropaquods soils are in capability classification VIIw, nonirrigated). [Foote et al. 1972:46]

Cinder land (rCl) is described as follows:

Cinder land (rCl) consists of areas of bedded magmatic ejecta associated with cinder cones. It is a mixture of cinders, pumice, and ash. These materials are black, red, yellow, brown, or variegated in color. They have jagged edges and a glassy appearance and show little or no evidence of soil development.

Cinder land occurs on the islands of Maui and Oahu. On Maui, it is mainly at elevations between 8,000 and 10,000 feet in the Haleakala National Park. On Oahu, it is mainly at elevations between 200 and 2,000 feet, near Mount Tantalus. The annual rainfall amounts to 20 to 30 inches on Maui and 60 to 100 inches on Oahu.

Although Cinder land commonly supports some vegetation, it has no value for grazing, because of its loose nature and poor trafficability; It is used for wildlife habitat and recreational areas. (Capability classification VIIIs, nonirrigated). [Foote et al. 1972:29]

### 1.4.2 Winds and Rains

*Makani* is the Hawaiian word for wind and each geographic area throughout the Hawaiian Islands had a name for its own wind, rain, and seas. The wind associated with Hāmākualoa and Huelo is the Pe‘epūhala (“to hide under *hala* trees”), also known as Pe‘ehala, Pe‘epe‘epūhala, and Pe‘epūhalalahīnano (Akana and Gonzalez 2015:230). According to the story, *The Wind Gourd of La‘amaomao*, when a gourd was opened, a specific wind could be called to fill the sails of a canoe and take the person in the desired direction. Below is an excerpt from the story:

Koholā-pehu is of Kīpahulu,  
 Koholā-lele as well,  
 ‘Ai-loli is of Kaupō,  
 Moa‘e is of Kahikinui [Nakuina et al. 1992:63]

According to the University of Hawai‘i 2011 *Online Rainfall Atlas of Hawaii*, between 1978 and 2007, the annual rainfall along the length of the License Area ranged from approximately 3199.6 mm to 6731.8 mm (approximately 125.97 in to 265.03 in) (Giambelluca et al. 2013). In 2014, the annual average air temperature within the License Area ranged from approximately 15.962 °C to 21.556 °C (approximately 60.73 °F to 70.81 °F) (Giambelluca et al. 2014). The elevation within the License Area ranges from approximately 30.48 m to 2286 m (100 ft to 7500 ft) above mean sea level.

### 1.4.3 Kahawai (Streams)

Numerous streams flowed from the backside of Haleakalā to the ocean providing not only an abundant supply of water but an ecosystem for aquatic life, which was an important food source to Native Hawaiians (McGregor 2007:109). The following streams within the License Area are listed below and depicted in Figure 11:

- Huelo License Area: Puohokamoa, Wahinepe‘e, Waikamoi (Alo Tributary), Kōlea, Punalu‘u, Ka‘aiea, ‘O‘opuola (Makanali Tributary), Puehu, Nā‘ili‘ilihaele, Kailua, Hanahana (Ohanui Tributary or Hanawana or Hanauna), Hoalua, Hanehoi, Huelo (Puolua Tributary), Waipi‘o, Mokupapa, Ho‘olawa (Ho‘olawa ili and Ho‘olawa nui Tributaries), and Honopou (Puniawa Tributary)
- Honomanū License Area: Nua‘ailua, Honomanū, Punala‘u (Kōlea and Ulunui Tributaries), Ha‘ipua‘ena
- Ke‘anae License Area: Waia‘aka, Pa‘akea, Puakea, Waiohue, Kopili‘ula, Pua‘aka‘a Tributary, East Wailuāiku, West Wailuāiki, Wailuānui (Waikani Waterfall), Kualani (or Hāmau), Waiokamilo, ‘Ōhi‘a (or Waianu), Palauhulu (Hauoli Wahine and Kano Tributaries), Pi‘ina‘au
- Nāhiku License Area: Makapipi, Hanawī, and Kapā‘ula

### 1.4.4 Vegetation

According to the Terrestrial Flora and Fauna Technical Report for the Proposed East Maui Water Lease (SWCA Environmental Consultants 2019) 19 different vegetation cover types exist within the License Area. Vegetation cover types include Open “uluhe” ‘Ōhi‘a Forest (10,934 ac., 33% Lic. Area), Closed ‘Ōhi‘a Forest (8,575 ac., 26% Lic. Area), Alien Forest (7,658 ac., 23% Lic. Area), Closed “uluhe” ‘Ōhi‘a Forest (1,527 ac., 5% Lic. Area), Uncharacterized Open-Sparse Vegetation (1,430 ac., 4% Lic. Area), Uluhe Shrubland (658 ac., 2% Lic. Area), Closed “uluhe” Koa-‘Ōhi‘a Forest (611 ac., 2% Lic. Area), Uncharacterized Shrubland (579 ac., 2% Lic. Area), Alien Grassland (209 ac., 1% Lic. Area), Uncharacterized Forest (172 ac., 1% Lic. Area), Native Wet Cliff Vegetation (145 ac., < 1% Lic. Area), Closed “native shrub” Koa-‘Ōhi‘a Forest (139 ac., < 1% Lic. Area), Native Shrubland/Sparse “native shrub” ‘Ōhi‘a (82 ac., < 1% Lic. Area), Deschamsia Grassland (22 ac., < 1% Lic. Area), Native “alien grasses” Shrubland (22 ac.,



< 1% Lic. Area), Open “native shrub” ‘Ōhi‘a Forest (10 ac., < 1% Lic. Area), Very Sparse Vegetation to Unvegetated (8 ac., < 1% Lic. Area), Kikuyu Grass Grassland/Pasture (2 ac., < 1% Lic. Area), and Low Intensity Development (1 ac., <1% Lic. Area). These vegetation cover types span a diverse variety of ecosystems and each have their own representative species within each cover type. Generally, each vegetation zone contains a mix of indigenous and introduced species of flora. There are also 21 endangered or threatened species present within and near the License Areas (SWCA Environmental Consultants 2019:10-11, A-11 through D-12).

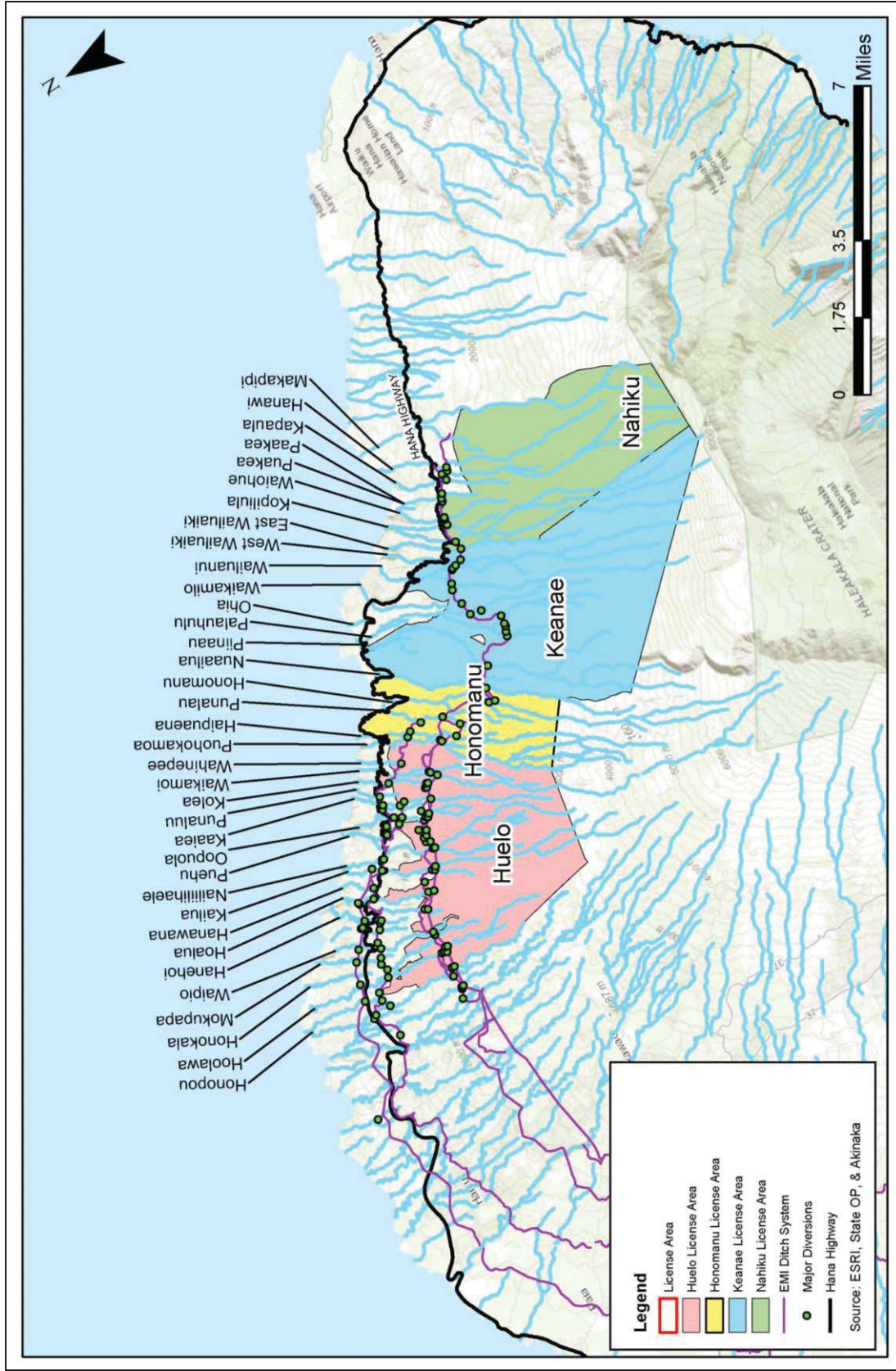


Figure 11. Client provided map that depicts the location of streams within the License Area

CIA for the Proposed Water Lease for the Nāhiku, Ke‘ānae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua‘a, Makawao and Hāna, Maui

TMKs: Various

## Section 2 Methods

---

### 2.1 Archival Research

Research centers on Hawaiian activities including *ka‘ao* (legends), *wahi pana* (storied places), *‘ōlelo no‘eau* (proverbs), *oli* (chants), *mele* (songs), traditional *mo‘olelo* (stories), traditional subsistence and gathering methods, ritual and ceremonial practices, and more. Background research focuses on land transformation, development, and population changes beginning with the early post-Contact era to the present day.

Cultural documents, primary and secondary cultural and historical sources, previous archaeological reports, historic maps, and photographs were reviewed for information pertaining to the study area. Research was primarily conducted at the CSH library. Other archives and libraries including the Hawai‘i State Archives, the Bishop Museum archives, the University of Hawai‘i at Mānoa’s Hamilton Library, Ulukau, The Hawaiian Electronic Library (Ulukau.org 2004), the State Historic Preservation Division (SHPD) library, the State of Hawai‘i Land Survey Division, the Hawaiian Historical Society, and the Hawaiian Mission Houses Historic Site and Archives are also repositories where CSH cultural researchers gather information. Information on Land Commission Awards (LCAs) were accessed via the Waihona ‘Aina (2000) Māhele database, the Office of Hawaiian Affairs (OHA) (2015) Papakilo Database, and the Ava Konohiki (2015) Ancestral Visions of ‘Āina website.

### 2.2 Community Consultation

#### 2.2.1 Scoping for Participants

We begin our consultation efforts by utilizing our previous contact list to facilitate the interview process. We then review an in-house database of *kūpuna* (elders), *kama‘āina* (native born), cultural practitioners, lineal and cultural descendants, Native Hawaiian Organizations (NHOs; includes Hawaiian Civic Clubs and those listed on the Department of Interior’s NHO list), and community groups. We also contact agencies such as SHPD, OHA, and the appropriate Island Burial Council where the proposed project is located for their response on the project and to identify lineal and cultural descendants, individuals and/or NHO with cultural expertise and/or knowledge of the study area. CSH is also remains open to referrals and new contacts throughout the process.

#### 2.2.2 “Talk Story” Sessions

Prior to the interview, CSH cultural researchers explain the role of a CIA, how the consent process works, the project purpose, the intent of the study, and how their *‘ike* (knowledge) and *mana‘o* (thought, opinion) will be used in the report. The interviewee is given an Authorization and Release Form to read and sign.

“Talk Story” sessions range from the formal (e.g., sit down and *kūkā* [consultation, discussion] in the participant’s place of choice over set interview questions) to the informal (e.g., hiking to cultural sites near the study area and asking questions based on findings during the field outing). In some cases, interviews are recorded and transcribed later.

CSH also conducts group interviews, which range in size. Group interviews usually begin with set, formal questions. As the group interview progresses, questions are based on interviewees’ answers. Group interviews are always transcribed and notes are taken. Recorded interviews assist the cultural researcher in 1) conveying accurate information for interview summaries, 2) reducing misinterpretation, and 3) adding missing details to *mo‘olelo*.

CSH seeks *kōkua* (assistance) and guidance in identifying past and current traditional cultural practices of the study area. Those aspects include general history of the *ahupua‘a* (traditional land division extending from the mountain to the sea); past and present land use of the study area; knowledge of cultural sites (for example, *wahi pana*, archaeological sites, and burials); knowledge of traditional gathering practices (past and present) within the study area; cultural associations (*ka‘ao* and *mo‘olelo*); referrals; and any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the study area.

### 2.2.3 Interview Completion

After an interview, CSH cultural researchers transcribe and create an interview summary based on information provided by the interviewee. Cultural researchers give a copy of the transcription and interview summary to the interviewee for review and ask that they make any necessary edits. Once the interviewee has made those edits, we incorporate their *‘ike* and *mana‘o* into the report. When the draft report is submitted to the client, cultural researchers then prepare a finalized packet of the participant’s transcription, interview summary, and any photos that were taken during the interview. We also include a thank you card and honoraria. This is for the interviewee’s records.

It is important that CSH cultural researchers cultivate and maintain community relationships. The CIA report may be completed, but CSH researchers continuously keep in touch with the community and interviewees throughout the year—such as checking in to say hello via email or by phone, volunteering with past interviewees on community service projects, and sending holiday cards to them and their *‘ohana* (family). CSH researchers feel this is an important component to building relationships and being part of an *‘ohana* and community.

“*I ulu no ka lālā i ke kumu*—the branches grow because of the trunk,” is an *‘ōlelo no‘eau* (#1261) shared by Mary Kawena Pukui with the simple explanation: “Without our ancestors we would not be here” (Pukui 1983:137). As cultural researchers, we often lose our *kūpuna* but we do not lose their wisdom and words. We routinely check obituaries and gather information from other informants if we have lost our *kūpuna*. CSH makes it a point to reach out to the *‘ohana* of our fallen *kūpuna* and pay our respects including sending all past transcriptions, interview summaries, and photos for families to have on file for genealogical and historical reference.



## Section 3 *Ka‘ao and Mo‘olelo (Legends and Stories)*

Hawaiian storytellers of old were greatly honored; they were a major source of entertainment and their stories contained teachings while interweaving elements of Hawaiian lifestyles, genealogy, history, relationships, arts, and the natural environment (Pukui and Green 1995:IX). According to Pukui and Green (1995), storytelling is better heard rather than read for much becomes lost in the transfer from the spoken to the written word and *ka‘ao* are often full of *kaona* or double meanings.

*Ka‘ao* are defined by Pukui and Elbert as a “legend, tale ..., romance, [and/or], fiction” (1986:108). *Ka‘ao* may be thought of as oral literature or legends, often fictional or mythic in origin, and have been “consciously composed to tickle the fancy rather than to inform the mind as to supposed events” (Beckwith 1970:1). Conversely, Pukui and Elbert define *mo‘olelo* as a “story, tale, myth, history, [and/or] tradition” (1986:254). The *mo‘olelo* are generally traditional stories about the gods, historic figures or stories which cover historic events and locate the events with known places. *Mo‘olelo* are often intimately connected to a tangible place or space.

In differentiating *ka‘ao* and *mo‘olelo*, it may be useful to think of *ka‘ao* as expressly delving into the *wao akua* (realm of the gods), discussing the exploits of *akua* (gods) in a primordial time. *Mo‘olelo* on the otherhand, reference a host of characters from *ali‘i* (royalty) to *akua* (gods) and *kupua* (supernatural beings), to finally *maka‘āinana* (commoners) and discuss their varied and complex interactions within the *wao kānaka* (realm of man). Beckwith (1970:1) elaborates, “In reality, the distinction between *ka‘ao* as fiction and *mo‘olelo* as fact cannot be pressed too closely. It is rather in the intention than in the fact.” Thus, a so-called *mo‘olelo*, which may be enlivened by fantastic adventures of *kupua*, “nevertheless corresponds with the Hawaiian view of the relation between nature and man” (Beckwith 1970:1).

Both *ka‘ao* and *mo‘olelo* provide important insight into a specific geographical area, adding to a rich fabric of traditional knowledge. The preservation and passing on of these stories through oration remains a highly valued tradition. Additionally, oral traditions associated with the study area communicate the intrinsic value and meaning of a place, specifically its meaning to both *kama‘āina* (native born) as well as others who also value that place.

The following section presents traditional accounts of ancient Hawaiians living in the vicinity of the License Area. Many relate to an age of mythical characters whose epic adventures inadvertently lead to the Hawaiian race of *ali‘i* and *maka‘āinana*. The *ka‘ao* in and around the License Area shared below are some of the oldest Hawaiian stories that have survived; they still speak to the characteristics and environment of the area and its people.

### 3.1 *Ka‘ao and Mo‘olelo*

#### 3.1.1 Hi‘iaka and Kapokūlani (Kapo) in Wailua Iki

In “The Epic Tale of Hi‘iakaikapoloiopele” retold by Ho‘oulumāhie (2008a; 2008b), Hi‘iaka and her *aikāne* (friend) Wahine‘ōma‘o, sail to Maui and travel on the windward side of the island stopping in Wailua Iki Ahupua‘a.



They trekked on, passing Kahikinui, arriving in Kaupō, and going through into the next district. Thus they continued on until reaching Wailua Iki, where the people were celebrating the hula. A hall for the dance there was filled with men, women, and children. [Ho‘oulumāhie 2008:119]

It is here that Hi‘iaka and Wahine‘ōma‘o speak of hunger and Hi‘iaka encounters her cousin Kapokūlani (Kapo) at the *hālau* (meeting hall) of Wailua Iki. From the doorway of the *hālau*, Hi‘iaka calls out to her cousin hoping that they will be invited in to rest and eat.

As they stood there, the people inside were dancing. The kind of dance being performed was a hula ‘ōlapa, a standing hula. They continued until that particular dance was finished, at which point Hi‘iaka offered up a chant, for she had seen her cousin, Kapokūlani, sitting amid the greenery. Kapo recognized this royal little sister of the family, and her tears spilled down.

|   |   |
|---|---|
| <i>Kanikanihia Hikapōloa ē</i>          | Hikapōloa resounds                          |
| <i>‘O ka la‘i o Wailua Iki</i>          | In the calm of Wailua Iki                   |
| <i>La‘i malino a Kapo i noho ai</i>     | The calm in which Kapo dwells               |
| <i>I noho nanea nō i ka la‘i o Kona</i> | Dwelling peacefully in the calm of Kona     |
| 5. Aloha                                | 5. Greetings                                |
| <i>‘O kānaenae aloha ihola nō ia lā</i> | This is a loving chant of affection, indeed |
| <i>‘O ka leo</i>                        | A voice                                     |
| <i>‘O ka leo ka mea aloha ē</i>         | The voice is what is cherished              |
| <i>Noho ana Kapo i ka uluwehiwehi</i>   | Kapo dwells in verdant greenery             |
| 10. <i>Kū ana i luna o Maohelaia</i>    | 10. Standing atop Mo‘ohelāia                |
| <i>Ka ‘ōhai kū i Maunaloa</i>           | The ‘ōhai stands on Maunaloa                |
| <i>Aloha mai Kaulana‘ula</i>            | Kaulana‘ula offers affection                |
| <i>Eia mai ka ‘ūlāleo lā</i>            | Here is the chanted appeal, the ‘ūlāleo     |
| <i>He waimaka</i>                       | Offered up with tears                       |
| 15. <i>He mōhai aloha na‘u iā ‘oe,</i>  | 15. My offering of affection to you,        |
| <i>e Kapo</i>                           | Kapo  |
| <i>‘O Kapokūlani, ‘o Moehāunaiki</i>    | Kapokūlani, Moehāunaiki                     |
| <i>E hea au iā ‘oe</i>                  | I call out to you                           |
| <i>Ō mai ho‘i.</i>                      | Oh do, indeed, respond.                     |

Hi‘iaka’s chanting was exceedingly beautiful. No chant more lovely had ever been witnessed at Wailua. [Ho‘oulumāhie 2008a:127; Ho‘oulumāhie 2008b:119-120]

The deity Kapo is sometimes mentioned as a sister of Pele and Hi‘iaka, while other times she is listed as a cousin. Kapo is said to have been “born of Papa (or Haumea)... with Wakea her husband. Some say that she was born from the eyes of Papa. She is of high rank and able to assume many shapes at will” (Beckwith 1970:186). Kapo is known by a number of names that relate to certain *mo‘olelo*. It is held that she once lived in Wailua Iki Ahupua‘a in East Maui and is mentioned in connection with this place in numerous accounts. Beckwith (1970:187) describes that, “As goddess of sorcery Kapo is worshiped principally on Maui where she acts as an akua

noho or god who possesses the deified dead and gives commands or foretells events through their worshippers.”

### 3.1.2 Kamapua‘a Visits Kapo

Kamapua‘a, translated as “Hog-Child,” was born to Hina but was disowned by Hina’s husband Olopana — who believed Kamapua‘a was not his son but the result of an affair between Hina and his younger brother Kahiki-ula. After becoming a scorned lover of Pele, the broken-hearted Kamapua‘a took the form of a fish and roamed the Hawaiian Islands. One legend of Kamapua‘a in East Maui is at the home of Kapokūlani (Kapo) in the *ahupua‘a* of Wailua Iki:

...when Kapo is living at Wailua-iki with her husband Kuo‘u, Kamapua‘a comes to that island in his fish form and sees a rainbow resting over Kapo’s house. Her husband is out fishing and she is beating tapa when the handsome stranger enters. Two men on the cliff signal to her husband and he comes running and gives Kamapua‘a a whack with his paddle. The kupua sends the husband flying over the cliff, called today Kuo‘u, and he falls in the shape of a huge stone pointed out today by the roadside. The gap between Wailua and Wai-lua-iki through which today runs a steep trail, still traveled by the mailman to the valley, was torn out at the time of this struggle. Kapo’s house may also be seen and the mark of her vagina against the cliff. [Beckwith 1970:213]

### 3.1.3 Hi‘u of Ko‘olau

A tale based in Ke‘anae tells of a shark famous in the ancient Ko‘olau District of Maui called Hi‘u – meaning “the tail of a fish” (Sterling 1998; Lueras 1983):

According to this story, two families in the area used to exchange food, a common practice, the couple living seaside at Ke‘anae giving fish and the couple living upland giving garden produce.

One day the woman from the shore gave her sister-in-law on the hillside nothing but a fishtail in exchange for bananas and sweet potatoes. The woman took the fishtail home in her calabash, saying nothing about the scanty trade.

That night both she and her husband dreamed of a shark, and when they woke up in the morning they found a live shark swimming around in the calabash, where only a tail had been the night before.

The excited couple freed the shark in an upland pool and made offerings to it. During a heavy rain, the shark was washed down to the ocean, where...it lives to this day in an underground cave near Ke‘anae wharf. [Lueras 1983:92]

### 3.1.4 Kihapi‘ilani’s Sweet Potato Patch

The historic Hāmākualoa District of Maui is located on the north side of East Maui in the area now designated as Makawao District. One legend with a direct link to the Hāmākualoa District is the legend of Kihapi‘ilani and his sweet potato patch. Kihapi‘ilani, son of the ruling chief of Maui Pi‘i-lani, came to rule Maui by killing his older brother Lono-a-Pi‘i-lani (Pi‘ilani), who was the first born successor. Kihapi‘ilani is often remembered on Maui for his stupendous leap from great heights into a pool of water (the sport known as *lelekawa*), and for building a stone

paved road around the island of Maui (Beckwith, 1970). Legend says that Kihapi'ilani, fleeing the ill treatment of his brother Pi'ilani, runs to Makawao where he takes up residence with a woman and her family, all the while keeping his identity secret. He lives peacefully for a time in a place called Kalaniwai. When the woman's family began to complain of his laziness, Kihapi'ilani travels to the lowlands of Kalua'ama at Ha'ikū to obtain sweet potato stalks. During his travels to the lowlands of Ha'ikū, he learns how he can take revenge on his older brother. He takes the sweet potato stalks back to Kalaniwai and plants his famous sweet potato patch, after which he continues to Wailuku to pursue his brother (Fornander 1917:236-242).

In Kamakau (1992), Kiha-a-Pi'ilani (Kihapi'ilani) is represented as more of a supernatural figure with legendary strength who runs to a place on the boundary of Kula and Makawao. It is here where he plants his great patch of sweet potatoes:

There was a famine in Kula and Makawao, and the people subsisted on *laulele*, *pua'alele*, *popolo*, and other weeds. One night Kiha-a-Pi'i-lani went to clear a patch of ferns to plant sweet potatoes, and on the same night he made a large one that would naturally require the labor of eighty men to clear. When morning came, the huge patch was noticed, an immense one indeed. The people said skeptically of this great undertaking, 'Where will he find enough sweet-potato slips to cover the patch?' Next day Kiha-a-Pi'i-lani went to Hamakuapoko and Hali'imaile to ask for potato slips. The natives gave him whole patches of them wherever he went; [they said]. He went to clean a number of morning-glory vines and returned. The owners who gave him the contents of their patches had gone home. He pulled up the vines and whatever potatoes adhered to them, and allowed them to wilt in the sun. After they had wilted he laid vines on them, and tied them. He went on doing this until he had enough loads for ten men to carry. Then he made a carrier ('awe 'awe) of morning-glory vines, placed the bundles of slips in it, and lifted it with great strength onto his back. The sunshine beat down on his back, the 'uki'ukiu breeze blew in front of him, the 'Ulalena rain added its share, and intense heat reflected from the 'ulei vines. [Kamakau 1992:22-33]

Fornander's account places the patch in between Makawao and Ha'ikū, on the border of the two Hāmākualoa districts of Maui. The Makawao area was noted for its sweet potato lands and has retained that reputation throughout the historic period (Sterling 1998:99).

### 3.1.5 Springs of Kāne

In the legend of Kāne and Kanaloa and their search for water to accompany their appetite for 'awa (kava; *Piper methysticum*), one of the first places they are known to have traveled on Maui is to the mountains of Ke'anae in the ancient district of Ko'olau. Kāne thrusts his *kauila* (*Alphitonia ponderosa*) wood staff and a spring appears. The location of this spring is marked according to Beckwith:

Two holes are pointed out just below the road across Ohia gulch beyond Keanae on Maui where Kane dug his spear first into one hole and then into the other with the words, "This is for you, that for me." The water gushing from these apertures is called "the water of Kane and Kanaloa." [Beckwith 1970:65]

From here, they travel east forming springs and fishponds in Luala‘ilua, Kaupo, Kipahulu, Waihe‘e, and Kahakuloa. In January 1865, the Hawaiian Newspaper *Kuokoa* printed an article by J. Waiamau concerning the springs of Kāne in Hāmākualoa, Maui.

Kaneloa said to Kane, “We have circled Hawaii let us go to Maui”. They sailed to and landed on Maui. They toured Maui until they reached Hamakua. They drank awa but because there was no water they caused fresh water to flow and drank all of the awa. They continued on and the water which they had caused to flow was called the water of Kaneloa. This water flows unto this day. [Sterling 1998:101]

It is uncertain whether the water of Kaneloa in this anecdote refers to a specific place in Hāmākua or whether it refers to all the springs in the Hāmākua Districts. It is not surprising that Kāne and Kanaloa would have left their mark in East Maui as they did on the rest of Hawaiian Islands.

### 3.1.6 ‘Ai‘ai, Son of Ku‘ula the Fish God

Ku‘ula, the god of fishers, is said to originate from the Hāna area of Maui. There he lived with his wife Hinapukui‘a, his brother Ku‘ulauka (god of cultivators), and Ku‘ulauka’s (goddess of forest growth, sister of Hinapukui‘a, and wife of Ku‘ulauka). Ku‘ula lived during the reign of Kamohoali‘i under which he served as head fisherman. At the time of his death, Ku‘ula prepares for the future by instructing his son ‘Ai‘ai on the powers of attracting fish and on establishing fishing stations in the islands. Ku‘ula gives ‘Ai‘ai his magic objects including: “a decoy stick called Pahiakukahuoi (kahuai), a cowry called Leho-ula, a hook called Manai-a-ka-Iani, and a stone called Ku ‘ula which, if dropped into a pool, had the power to draw the fish thither” (Beckwith 1970:19). ‘Ai‘ai traveled around Maui returning fish to the *ko‘a* (fishing ground or station) of the island by erecting *kū‘ula* (stone god used to attract fish) and by teaching the local people the best fishing techniques. In the following *mo‘olelo*, a number of place names within the *ahupua‘a* of the License Area are mentioned.

Arriving at Waiohue Bay in Ko‘olau, ‘Ai‘ai began to restore the *ko‘a* of these waters by creating a *kū‘ula*.

He next went over to Waiohue, Koolau, where he placed a stone on a sharp rocky islet, called Paka, whereon a few puhala grow. It is claimed that during the season of the kala, they come in from the ocean, attracted to this locality by the power of this stone. They continue on to Mokumana, a cape between Keanae and Wailuanui. They come in gradually for two days, and on the third day of their reaching the coast, at the pali of Ohea, is the time and place to surround them with nets. In olden times while the fishermen were hauling in their nets full of kala into the canoes, the akule and oio also came in numbers at the same time, making it impossible to catch all in one day; and as there were so many gathered in the net it took them a day and a night before they could care for their draught, which yielded so many more than could be made use of that they were fed to the pigs and dogs. The kala of Ohea is noted for its fatness and fine flavor. Few people are now living there, and the people who knew all about this are dead; but the stone that Aiiai placed on that little island at Waiohue is still there. [Thrum 1907:233]

When 'Ai'ai became satisfied with his work and believed that his friends had grown proficient in the art of fishing he bestowed on them a challenge. He instructed his friends to go into the deep waters off of Wailua Nui and kill the giant *he'e* (general term for octopus).

When the canoes were made ready and drawn to the beach and the people came prepared to start, Aiai brought the *hokeo* (fishing gourd), where the *leho* (kauri shell) that Ku-ula his father gave him was kept, and gave it to his friend. . .

Then the canoes and people sailed away till they got out along the palis near Kopiliula, where they rested. . . Aiai's friend called on Ku-ula and Hina for the assistance of their wonderful powers. When he was through, he took off the covering of the gourd and took out the *leho*, which had rich beautiful colors like the rainbow, and attaching it to the line, he lowered it into the sea, where it sent out rays of a fiery light. The *he'e* was so attracted by its radiance that it came out of its hole and with its great arms, which were as long and large as a full-grown cocoanut tree, came up to the surface of the water and stood there like a cocoanut grove. The men were frightened, for it approached and went right into the canoes with the intention of destroying them and the men and capturing the *leho*; but it failed, because Aiai's friend, with his skill and power, had provided himself with a stone, which, at the proper time, he shoved into the head of the squid; and the weight of the stone drew it down to the bottom of the sea and kept it there, and being powerless to remove the stone, it died. The men seized and cut off one of the arms, which was so big that it loaded the canoes down so that they returned to Hana. When the squid died, it turned to stone. It is pointed out to-day just outside of Wailuanui, where a stone formation resembles the body of a squid and the arms, with one missing. . .

When Aiai saw that his friend and others of Hana were skilled in all the art of fishing, he decided to leave his birthplace and journey elsewhere. [Thrum 1907:234-235]

### 3.1.7 Eleio and the Ghost of 'O'opuola

Eleio was the messenger of the king of Maui, called Kakaalaneo. Eleio was known for his speed and was sent each morning to Hāna to bring *'awa* back to the king who lived in Lahaina. According to *mo'olelo*, "As soon as the order was given, Eleio would run off with great speed, all the way from Lahaina to Hana. The distance between these two places is about forty miles. It is said in the legend that Eleio could beat the wind in speed" (Fornander 1919:434).

One day during Eleio's journey from Lahaina to Hāna, he was stopped by the ghost Kaahualii who lived in the wilderness of 'O'opuola in East Makaīwa Ahupua'a.

In one of his trips to Hana, he met Kaahualii, a ghost, who lived in the wilderness of Oopuola. When the ghost met him, he asked that he be given some of the *awa*, but Eleio insulted him by telling him to take the hairs of his body and use it for his *awa*.

When Kaahualii heard this, he gave chase, believing that he could catch Eleio; but he was unable to catch him who ran much faster.



When Eleio came to Kakaalaneo, he saw that the meal, the awa for which he was sent, was being served. On his return from Hana Eleio while running was preparing the awa at the same time, so when he entered the house, he placed the awa in the cup, strained it and placed the cup to the mouth of Kakaalaneo. Kakaalaneo was thus enabled to drink his awa before he began on his meal.

Because of this Eleio was noted for his great speed and the people of the present generation think the story to be true. [Fornander 1919:434]

### 3.1.8 Pau-walu the Shark-Man

Wailua-iki Bay is associated with the dramatic story of a shark-man named Pau-walu, translated to mean “eight dead” (Beckwith 1970:141) or “many destroyed” (Nakuina 1994:27). The following *mo‘olelo* tells of Pua-walu’s defeat by a young Maui fighter.

Pau-walu (“Many destroyed”) lived at Wailua, Maui. He warned men as they went to the sea that many would be killed before they returned and a shark always killed many of them as predicted. He was therefore suspected as a shark-man. Akeake (“Quick and ready”) was born beside the stream of Hau-ola and while yet a little boy went about Maui fighting champions. After overcoming Lohelohe, he, with his companion Pakolea, spent the night at the house of a friend named Ohia and learned about Pauwalu. The shark-man scoffed at so little an antagonist, but Akeake easily bound him, exposed the shark’s mouth on his back, and killed him a fire. (From Beckwith’s *Hawaiian Mythology*, 141; the anecdote is condensed from a manuscript by Mary Kawena Pukui. On March 14, 1993, a 12-14-foot shark bit the leg of surfer Roddy P. Lewis at Wailua-iki Bay on Maui. The shark let go after the surfer punched it on the side of the head. About a week after the shark attack, two local residents caught a ten-foot tiger shark in the area.) [Nakuina 1994:27]

## 3.2 *Wahi Pana* (Legendary Place)

*Wahi pana* are legendary or storied places of an area. These legendary or storied places may include a variety of natural or human-made structures. Oftentimes dating to the pre-Contact period, most *wahi pana* are in some way connected to a particular *mo‘olelo*, however, a *wahi pana* may exist without a connection to any particular story. Davianna McGregor outlines the types of natural and human-made structures that may constitute *wahi pana*:

Natural places have mana, and are sacred because of the presence of the gods, the akua, and the ancestral guardian spirits, the ‘aumakua. Human-made structures for the Hawaiian religion and family religious practices are also sacred. These structures and places include temples, and shrines, or heiau, for war, peace, agriculture, fishing, healing, and the like; pu‘uhonua, places of refuge and sanctuaries for healing and rebirth; agricultural sites and sites of food production such as the lo‘i pond fields and terraces slopes, ‘auwai irrigation ditches, and the fishponds; and special function sites such as trails, salt pans, holua slides, quarries, petroglyphs, gaming sites, and canoe landings. [McGregor 1996:22]

As McGregor makes clear, *wahi pana* can refer to natural geographic locations such as streams, peaks, rock formations, ridges, offshore islands, and reefs, or they can refer to Hawaiian land divisions such as *ahupua‘a* or *‘ili* (land division smaller than an *ahupua‘a*), and man-made structures such as fishponds. In this way, the *wahi pana* of East Maui tangibly link the *kama‘āina* of this region to their past. It is common for places and landscape features to have multiple names, some of which may only be known to certain *‘ohana* or even certain individuals within an *‘ohana*, and many have been lost, forgotten or kept secret through time. Place names also convey *kaona* (hidden meanings) and *huna* (secret) information that may even have political or subversive undertones. Before the introduction of writing to the Hawaiian Islands, cultural information was exclusively preserved and perpetuated orally. Hawaiians gave names to literally everything in their environment, including individual garden plots and *‘auwai* (water courses), house sites, intangible phenomena such as meteorological and atmospheric effects, *pōhaku* (rock, stone), *pūnāwai* (freshwater springs), and many others. According to Landgraf (1994), Hawaiian *wahi pana* “physically and poetically describes an area while revealing its historical or legendary significance” (Landgraf 1994:v).

### 3.2.1 *Ahupua‘a* Place Names

Handy et al. (1991:23-24,42) summarizes the relationship that traditional Hawaiians have had with the natural environment best in the following passage:

The sky, sea, and earth, and all in and on them are alive with meaning indelibly impressed upon every fiber of the unconscious as well as the conscious psyche. Hawaiian poetry and folklore reveal this intimate rapport with the elements, [Handy et al. 1991:23-24]

(T)he relationship which existed from very early times between the Hawaiian people . . . is abundantly exemplified in traditional mele (songs), in pule (prayer chants), and in genealogical records which associate the ancestors, primordial and more recent, with their individual homelands, celebrating always the outstanding qualities and features of those lands. [Handy et al. 1991:42]

These subtle observations of the interconnectedness of people, places, and deeds figure largely in the naming of places of note, also called *wahi pana*. The regional place names below, along with the environmental data, indicate that the lands within East Maui were widely used for many purposes relevant to traditional Hawaiian subsistence, habitation, and history. Sometimes these place names are references to the actions of historic individuals, and at other times to the deeds of legendary or mythological figures, but often are rich with the symbolic associations to the point of encompassing a comprehensive history of a place that can combine all these elements. Literal translations of the *moku* (districts) and *ahupua‘a* place names within the License Area are listed in Table 1. These translations may provide some insight into what the *moku* and *ahupua‘a* of the License Area were like prior to Western contact. Unless otherwise noted, translations are taken from Pukui, Elbert, and Mookini (1976) *Place Names of Hawaii*.

Table 1. *Ahupua'a* and *Moku* Place Names within the License Area (from Pukui et. al 1976 unless otherwise noted)

| Name        | Translation/Association   |
|-------------|---|
| Hāmākua Loa | One of twelve ancient districts ( <i>moku</i> ) of Maui Island; <i>lit.</i> , “long hāmākua” where <i>hāmākua</i> means corner (p. 39)  |
| Hanawana    | <i>Ahupua'a</i> (West Hanawana and East Hanawana), point, and stream; <i>lit.</i> , “sea urchin bay” (p. 41)  |
| Hanehoi     | <i>Ahupua'a</i> , Lexicology unknown.   |
| Honomanū    | <i>Ahupua'a</i> , Land division and bay. Lexicology unknown.  |
| Honopou     | <i>Ahupua'a</i> , point, and stream; <i>lit.</i> , “post harbor” (p. 50)  |
| Huelo       | <i>Ahupua'a</i> , village, stream, and point; a game, originated by Papio, was played here; <i>loulou</i> palm leaves were woven into hammocks upon which players were laid and then tossed into the sea (p. 53)  |
| Ke'anae     | <i>Ahupua'a</i> , village, elementary school, park, lookout, homesteads, point, landing, stream, valley, peninsula, East Maui. Here, the god Ka ne, accompanied by Kanaloa, thrust his <i>kauila</i> staff into solid rock, and water gushed forth. <i>Lit.</i> , “the mullet” (p. 103) |
| Ko'olau     | <i>Ahupua'a</i> , One of twelve ancient districts on Maui, reduced to four in 1859. The new Hana district includes the former Koolau, Hana, Kipahulu, Kaupo, and Kahikinui districts. <i>lit.</i> , “windward” (Ulukau 2010)  |
| Makaīwa     | <i>Ahupua'a</i> (West Makaīwa and East Makaīw) and bay; <i>lit.</i> , “mother-of-pearl eyes” (p. 140)   |
| Makawao     | <i>Moku</i> and <i>ahupua'a</i> ; <i>Lit.</i> , “forest beginning” (p. 142)   |
| Mokupapa    | <i>Ahupua'a</i> , gulch, and stream; <i>lit.</i> , “flat island” (p. 156)   |
| Nāhiku      | <i>Ahupua'a</i> , <i>lit.</i> , “the seven (districts of the area)” (Clark 1989:20)   |
| Pa'akea     | <i>Ahupua'a</i> , stream, and gulch; <i>lit.</i> , “coral bed, limestone” (Ulukau 2006)   |
| Pāpa'a'ea   | <i>Ahupua'a</i> and reservoir; <i>lit.</i> , “turtle shell piece”; Kiha-a-Pi'ilani made a long paved road beginning here (p. 179)   |
| Pu'uomaile  | <i>Ahupua'a</i> , <i>lit.</i> , “Hill of Mālei (a <i>kupua</i> goddess)” (p. 204)   |
| Wailua      | <i>Ahupua'a</i> (Wailua Nui and Wailua Iki), stream, village, homestead, and cove; <i>lit.</i> , “two waters” (Ulukau 2006)   |
| Waipi'o     | <i>Ahupua'a</i> (Waipioiki and Waipionui), land section. gulch, and school, <i>lit.</i> , “curved water” (p. 227)   |

### 3.2.2 Heiau of East Maui

*Heiau* are pre-Christian places of worship. Construction of some *heiau* were elaborate and large communal structures, while others were simple earth terraces or shrines (McAllister 1933:8). *Heiau* are most commonly known to be where important ceremony took place and are large structures with platforms or altars comprised of one or more terraces (McAllister 1933:8). The following descriptions chronicle a number of *heiau* within or near the License Area.

Puu O Kalepa Heiau of Huelo Ahupua'a is located approximately 500 feet east of Huelo Protestant Church on a knoll overlooking Honopou Gulch (Thrum 1917). The name Puu O Kalepa is recorded as derived from *pu'u o ka lepa*, meaning "hill of the flag" (Ulukau 2010). This large, open *heiau* is thought to have been of the sacrificial class and was constructed from beach stones, pebbles, and basalt (Sterling 1998:105).

Pohakuokane Heiau is located east of Kailua gulch atop a ridge in Pāpa'a'ea Ahupua'a. Pohakuokane, made from smooth basalt rocks, is a small notch-shaped *heiau* set in a dense thicket of *hau* (beach hibiscus; *Hibiscus tiliaceus*) (Sterling 1998:107). Pohakuokane is translated from *pōhaku-o-Kāne* to mean "stone of Kāne" (Ulukau 2010).

In Honopou Ahupua'a, Poohoolewa Heiau is cited to have been located at Apiapi on a high bluff overlooking Honopou Gulch. This *heiau* is described as a large walled structure that is thought to have been used for sacrifices (Thrum 1917; Ulukau 2010).

In Pu'uomaile Ahupua'a is Kauhiale Heiau which is translated from *kauhi-hale* meaning "house of Kauhi" (Ulukau 2010). This *heiau* is described as a L-shaped, walled enclosure with two or three terraces located at Moii. The construction of this *heiau* was done with rough basalt stones (Sterling 1998). Pu'uomaile Ahupua'a is also home to Kupaikaa Heiau, said to have been a large *heiau* from which the sound of drums were heard (Ulukau 2010).

Ohia Heiau, located in Wailua Nui Ahupua'a about three quarters of a mile from the sea in a valley, was disassembled to build a pig pen in the late-nineteenth or early twentieth century. This *heiau* is believed to have been built by chief Kaimuki for agricultural purposes (Sterling 1998).

### 3.2.3 Alaloa Kihapiilani

The Alaloa (Long Road) of Kihapiilani, or Kihapiilani Highway, was constructed in the sixteenth century during the reign of King Kihapi'ilani of Maui. Kihapi'ilani is credited with completing the paved road from Hāna to Wailuku, which was initiated by his father, Pi'ilani (Fleming, 1933). The road, paved with smoothed basalt stones, unified the island and provided a means of trade, commerce, and war time protection. In describing the building of Kihapi'ilani's road, Beckwith states:

The name Kiha-pi'ilani is preserved locally about the island of Maui in connection with... the famous paved road about the island with the building of which he oppressed the people. Men are said to have stood in line and passed stones from seashore to upland. Parts of the road are still in place and may be followed where the trail cuts in a straight line up and down the deep gorges which break the windward slope of the island. [Beckwith 1970:387]

Once the road was paved however, residents of East Maui most likely benefitted from having access to the road and as did the people traveling through the windward districts, particularly given its location between Wailuku and Hāna, two prominent political centers during the last two centuries of pre-contact Hawaiian history. The Alaloa Kihapiilani traverses many East Maui locations and is a *wahi pana* mentioned in various accounts of East Maui.

### 3.2.4 'O'opuola

'O'opuola is the name of a wilderness area, gulch, stream, and point – all broadly located on the northwestern boundary of the ancient *moku* of Ko'olau and within the *ahupua'a* of East Makaiwa and West Makaiwa. Andrews (1922:663) translates 'o'opuola to mean, “long oopu fish.”

The wilderness area of 'O'opuola, which is along the Kihapiilani Road, was known as a place that attracted robbers. Two accounts mention the 'O'opuola wilderness of East Makaiwa Ahupua'a in reference to robbers.

Robbery and theft also were frequent crimes committed in out-of-the-way places. Certain people, called Ku'ielua, took up robbery as a profession, were known as “wild men” (*hihiu*), and waylaid travelers at such remote places on the highway as 'O'opuola, 'Akiala, Kuanu'uanu, Hana'ie'ie, 'A'alaloloa, the cliffs of Molokai, Kahakuloa [on Maui], and so also on Hawaii, Oahu and Kauai. [Kamakua 1992:236]

Once the development of the paved Kihapiilani Road came to 'O'opuola, the passage through the wilderness area became less treacherous according to the following account.

When the chief and men had finished the work there [on Kihapiilani Road], the paving was begun in the forest of Oopuloa in Koolau, from Kawahinepee at Kaloa to Papaaea to Kaohekanu at Hamakualoa. This was a place made famous by robbers in the olden days. This road was treacherous and difficult for the stranger, but when it was paved by Kihapiilani this road became a fine thing. [Sterling 1998:101]

### 3.2.5 Pu'ukoa'e

Pu'ukoa'e (Puukaae on latter maps) of West Hanawana, is a pinnacle which juts out into Hoalua Bay, appears in the historic struggles of Hawai'i chiefs to gain control over Maui. During Kamehameha's Maui campaign around 1790, Kamehameha's troops traveled up the windward coast to Hāmākualoa District, after having invaded Hāna. Kalanikupule, the ruling chief of Maui at the time, sent his warrior Kapakahili to resist the invasion.

The battle met at a small hill called “Bosun-bird Hill” (Pu'ukoa'e) situated on the makai side of Pu'umaile at Hanawana in Hoalua, and Kapakahili was defeated. In the evening Kamehameha beached at Halehaku, went ashore, and built temporary shelters just where he stepped foot. The feather god Kuka'ilimoku encouraged him to fight, for its feathers bristled and stood upright in the direction of Hinawaikoli'i; Kamehameha therefore lost his fear of a fight with slingshot. The next morning he saw through the koa and hala trees the red gleam of feather



caples. It is said that he narrowly escaped defeat by Kapakahili’s company. But reinforcements came up, Kamehameha put the enemy to flight, and pursued them along the main road or they would have rejoined their fellow warriors at Kokomo. At the ascent of ‘Opaepilau, Kapakahili was exhausted and was overtaken. “Slain by Pipili,” Kamehameha boasted over him. [Kamakau 1961:148]

An additional account by Fornander mentions Pu‘ukoa‘e as a strategic position taken in battle by Kamehameha.

Of the campaign in Hamakualoa some momentos are still pointed out. The fortified position at Puukoa on Hanawana, which was attacked and taken by *Kamehameha*, who had brought his fleet round from Hana. The hill is known as “Kapuai-o- Kamehameha,” to the west of the Halehaku stream, where he encamped for the night after taking Puukoa. . . the Maui forces were routed and fled as far as Kokomo, where a final stand was made. Fighting desperately, and with hardly a hope of retrieving the fortune of the day, *Kapakahili* encountered *Kamehameha* on the field, and one of those single combats ensued in which the fate of an empire depends on the personal prowess of one or the other of the combatants. *Kapakahili* was killed, the Maui men fled and dispersed, and the road to Wailuku lay open to *Kamehameha*. [Fornander 1969:236]

### 3.2.6 The Bays of Wailua Iki and Wailua Nui

Samuel M. Kamakau provides a passing reference in the context of the fleet of the Big Island chief ‘Umi-a-Līloa coming to the aid of the Maui chief Kiha-a-Pi‘ilani in his fighting against Lono- a-Pi‘ilani and the Hāna chief Ho‘olaemakua. The Hāna chief initially repelled the landings of the Hawai‘i-Island canoes and ‘Umi-a-Līloa asks how best to get his men ashore:

Kiha-a-Pi‘ilani answered, “There is a small harbor at Ko‘olau called Wailua-iki, and if all the canoes can not land there, there is another landing at Wailua-nui.” The blocked canoes turned about and sailed for Wailua-iki at Ko‘olau.

When the canoes reached Wailua-iki, they were dismantled and set upright, and in that way the innumerable war canoes from Hawai‘i could be beached. After all the canoes were beached the men began to go overland to the site of the battle [at Ulaino well to the southeast] [Kamakau 1961:29-30]

#### A.1.1 Honomanū Valley

The broad Honomanū valley and stream was once an area that supported a large Hawaiian community. This population utilized the bay of Honomanū for canoe fishing and the evaluated flatlands for agricultural terracing and house sites (Handy and Handy 1978). A more contemporary account of Honomanū described the evolution of the area:

Only one family still raises taro in the old patches near the sea, but abandoned terraces extend up into the valley as far as the level land goes, a little less than a mile. Above Honomanu on elevated flatlands there used to be some terraces and houses. [Sterling 1998:110]

An additional account found in Sterlings (1998) *Sites of Maui* reveals Honomanū as a *wahi pana*.

I have heard from various sources that there are a lot of burials in the upper part of this Valley and there still seems to be a certain amount of superstition attached to the place; I am told that quite a number of people do not like to be in the Valley after dark, and that the Ali'i are said to walk there at such times. . . [Sterling 1998:109]

### 3.2.7 Ke'anae

#### Ke'anae Peninsula

Ke'anae Peninsula, a lava plain that extends a mile into the sea from Ke'anae Valley, is an area known for *lo'i* (irrigated terrace) cultivation (Figure 12). Handy (1940) elaborates on the origin of cultivation on Ke'anae Peninsula saying:

The story of the founding of the Keanae *lo'i* area is highly interesting. Anciently, according to Henry Ikoa, the peninsula was barren lava. But a chief, whose name is not remembered, was constantly at war with the people of Wailua and determined that he must have more good land under cultivation, more food, and more people. So he set all his people to work (they were then living within the valley and going down to the peninsula only for fishing), carrying soil in baskets from the valley down to the lava point. The soil and the banks enclosing the patches were thus, in the course of many years, all transplanted and packed into place. Thus did the watered flats of Keanae originate. A small *lo'i* near the western side of the land formerly belonged to the chief of Keanae and has the name Ke-anae (the big mullet); it is said that the entire locality took its name from this small sacred *lo'i*. Here, as at Kahakuloa, the taro that grew in the sacred patch of the alii was reputed to be of great size. [Handy 1940:110]

#### Heiau of Ke'anae

The Ke'anae area is home to a number of *heiau* that now lie in ruin or have been destroyed. The names of these *heiau* have been preserved along with stories that lend to the sites significance as *wahi pana*. Lalaola Heiau, located on Ke'anae Peninsula, was an agricultural temple whose name is translated from *lālā-ola* meaning “living branch” (James 2001; Ulukau 2010). The dismantled Kukui o Lono Heiau is translated to mean “light of Lono”. Located on the shoreline of Ke'anae Peninsula, this *heiau* was strategically used as a beacon where signal fires were lit for faring fishermen and ocean voyagers (James 2001). The *heiau* known as Kaluanui Heiau is translated to mean “big pit” and is believed to have been “a double section temple of sacrifice from which *kapu* drums at one time were heard” (James 2001:118). Two more *heiau* of Ke'anae are described by James, “Kualani Heiau on the west ridge of Waiokāne Falls; and 'Ohi'a Heiau, attributed to chief Kaimukī and later broken up and used as a pigpen” (James 2001:118).

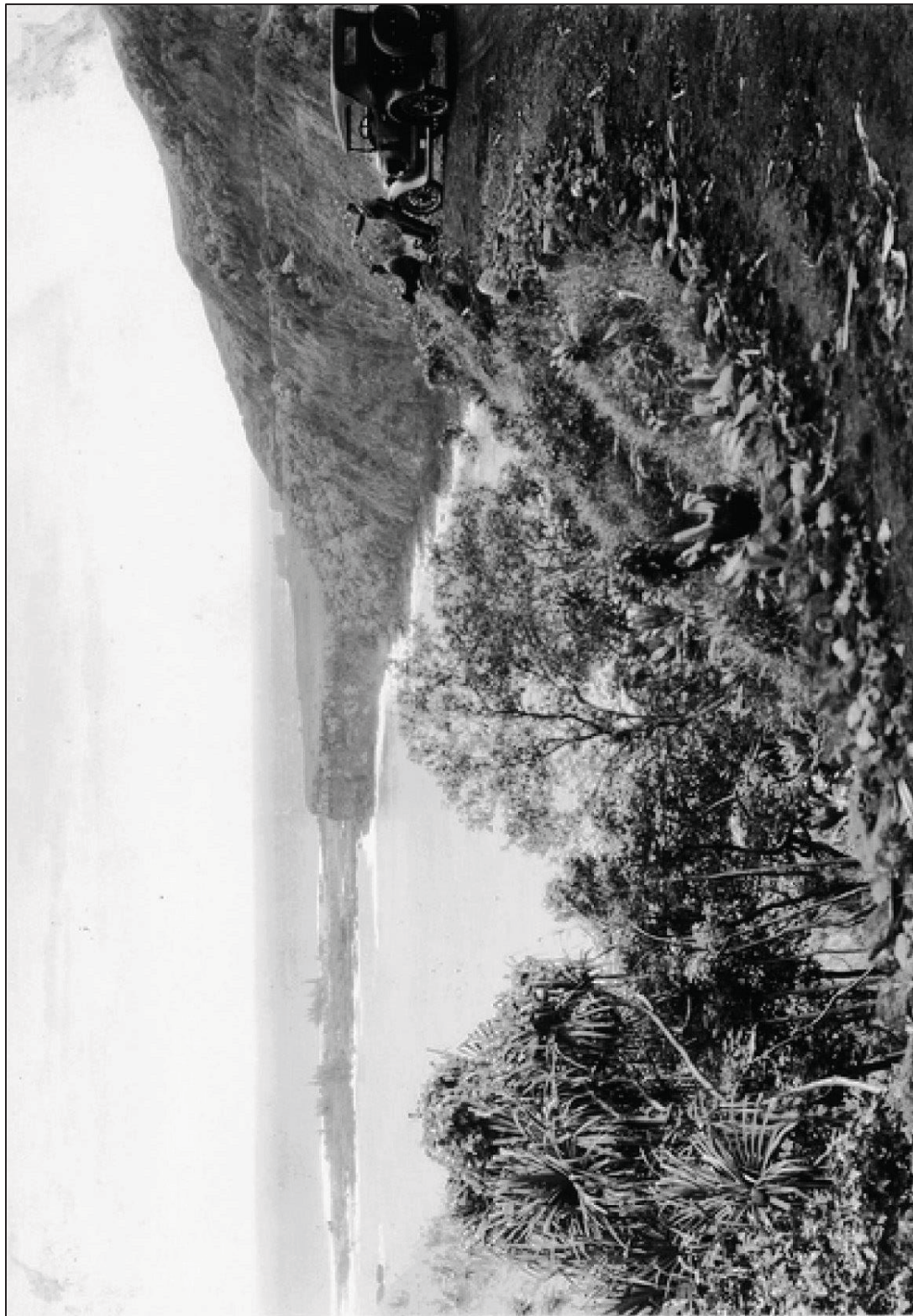


Figure 12. Ke'anae Peninsula from Hāna Highway in 1925 (Hawai'i Historic Society Collection)

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various



Pakanaloha Heiau was a war *heiau* dedicated to Kanehekili (god of thunder) who is an *'aumakua* (personal god) of Maui Island. This *heiau* was described as a platform structure in the hills of Ke'anae and whose name is said to be derived from *pā-kanaloha* meaning "enclosure [of] Kanaloha" (James 2001; Ulukau 2010). It is said of Pakanaloha Heiau that Kanehekili was the *kahu* (guardian; honored attendant) of Pakanaloha and later died within the walls of this *heiau*. Upon his death Thrum (1908) writes that,

. . . when his brother-in-law realized the fact [that Kanehekili had died] he cut off the head [of Kanehekili] and took it to Lanai. The people of Hamakualoha, wondering at his disappearance, searched till they found his body in the temple at Keanae, and when it was made known that the guardian of the god was dead, the people came and cut his body into small pieces and distributed it. As each place all over Maui received a portion of his body it became their duty to worship the thunder. [Thrum 1908:48-49]

### Kaulana-Pueo Church

In Huelo Ahupua'a is Kaulana-Pueo church. The place where this church was built was once a *hala* grove where the *peueo* (owl) returned to at night. When the *hala* grove died the people of this area decided to build a church in the old grove. An informant to Pukui said of the building of Kaulana-Pueo church that, "the people stood in line, there were not trucks at that time, and no car, to bring the stones, and all kinds of things from the beach. Stand in line. It was said that there were 200 members of that place at that time" (Sterling 1998:106). The church was thus named Kaulana-Pueo or "The Owl's Haven", memorializing the *peueo* that once lived at this site (Sterling 1998).

### 3.3 'Ōlelo No'eau (Proverbs)

Hawaiian knowledge was shared by way of oral histories. Indeed, one's *leo* (voice) is oftentimes presented as *ho'okupu* ("to cause growth," a gift given to convey appreciation, to strengthen bonds); the high valuation of the spoken word underscores the importance of the oral tradition (in this case, Hawaiian sayings or expressions) and its ability to impart traditional Hawaiian "aesthetic, historic, and education values" (Pukui 1983:vii). Thus, in many ways these expressions may be understood as inspiring growth within reader or between speaker and listener:

They reveal with each new reading ever deeper layers of meaning, giving understanding not only of Hawai'i and its people but of all humanity. Since the sayings carry the immediacy of the spoken word, considered to be the everyday thoughts and lives of the Hawaiians who created them. Taken together, the sayings offer a basis for an understanding of the essence and origins of traditional Hawaiian values. The sayings may be categorized, in Western terms, as proverbs, aphorisms, didactic adages, jokes, riddles, epithets, lines from chants, etc., and they present a variety of literary techniques such as metaphor, analogy, allegory, personification, irony, pun, and repetition. It is worth noting, however, that the sayings were spoke, and that their meanings and purposes should not be assessed by the Western concepts of literary types and techniques. [Pukui 1983:vii]

Simply, *‘ōlelo no‘eau* may be understood as proverbs. The Webster dictionary notes it as “a phrase which is often repeated; especially, a sentence which briefly and forcibly expresses some practical truth, or the result of experience and observation.” It is a pithy of short form of folk wisdom. Pukui equates proverbs as a treasury of Hawaiian expressions (Pukui and Green 1995:xii). Oftentimes within these Hawaiian expressions or proverbs are references to places. This section draws from the collection of author and historian Mary Kawena Pukui and her knowledge of Hawaiian proverbs describing *‘āina* (land), chiefs, plants, and places. The following proverbs are from Pukui’s *‘Ōlelo No‘eau* (1983).

### 3.3.1 *‘Ōlelo No‘eau* #357

The following proverb is said to have been spoken by Kahekili, *ali‘i nui* (high chief) of Maui, in regards to receiving a message from Kamehameha I:

**E nānā mai a uhi kapa ‘ele‘ele ia Maui, a kau ka pua‘a i ka nuku, ki‘i mai i ka ‘āina a lawe aku.**

*Watch until the black tapa cloth covers Maui and the sacrificial hog is offered, then come and take the land.*

Said by Kahekili, ruler of Maui, to a messenger sent by Kamehameha I with a question whether to have war or peace. Kahekili sent back this answer—“Wait until I am dead and all the rites performed, then invade and take the island of Maui.” [Pukui 1983:43]

### 3.3.2 *‘Ōlelo No‘eau* #505

Below is an *‘ōlelo no‘eau* that concerns a thief named Po‘okea who lived during the reign of Kahekili:

**Hāwele kīlau i ka lemu, ‘āha‘i ka pua‘a i ka waha; ke hele nei o Po‘okea.**

*Draw the fine loincloth under the buttocks; the pork finds its way into the mouth; Po‘okea now departs.*

Po‘okea was a very clever thief during the reign of Kahekili of Maui. Whenever he eluded his pursuers, this was his favorite boast. Any reference to one as being a descendant or relative of Po‘okea implies that he is a thief who steals and runs. [Pukui 1983:60]

### 3.3.3 *‘Ōlelo No‘eau* #697

The following saying is about the area known as ‘O‘opulua in the Ko‘olau region of Maui. The area was once feared due to thieves.

**He koa ka mea hele ho‘okāhi i ‘O‘opulua.**

*Only a warrior dares to go alone to ‘O‘opulua.*

Said of a venture fit only for the brave. The way to ‘O‘opulua, Maui, was feared because of robbers. [Pukui 1983:77]



### 3.3.4 ‘Ōlelo No‘eau #982

This proverb discusses a certain species of the *weke* (goatfish; *Mullidae*) whose brain contains toxins that can disturb sleep, nightmares, and in some cases hallucinations (Waikiki Aquarium 2017):

**He weke, he i‘a pahulu.**

*It is a weke, the fish that produces nightmares.*

The head of the *weke* fish is said to contain something that produces nightmares. The nearer to Lāna‘i the fish is caught, the worse the effects of the nightmares. Pahulu was the chief of evil beings (*akua*) who peopled the island of Lāna‘i. When Kaulula‘au, son of Kaka‘alaneo, ruler of Maui, was a boy, he was banished to Lāna‘i because of his mischief. By trickery, he rid the island of evil beings, and the spirit of Pahulu fled to the sea and entered a *weke* fish. From that time on, nightmares have been called *pahulu*, and a person who has had a nightmare is said to have been under the influence of Pahulu. [Pukui 1983:105]

### 3.3.5 ‘Ōlelo No‘eau #1029

Below is a proverb expressed of a person who goes *mauka* (towards the mountain) for water:

**Ho‘i hou ka wai i ka uka o Ao.**

*The water returns again to the upland of Ao.*

A Maui expression referring to a person who goes upland for water. This saying came from the battle of Ka‘uwa‘upali, when Kamehameha defeated the warriors of Maui in ‘Īao. The stream was dammed with bodies, and the water ran red with blood. The people had to travel far inland to find uncontaminated water. [Pukui 1983:110]

### 3.3.6 ‘Ōlelo No‘eau #1514

The Kama‘oma‘o Plain is located from the Pu‘unēnē to Nu‘a‘ailua Stream in Honomanū, Ko‘olau and is place associated with ghosts according to the following three proverbs.

**Ka ‘ōlohe puka awakea o Kama‘oma‘o.**

*The bare one of Kama‘oma‘o that appears at noonday.*

The plain of Kama‘oma‘o, Maui is said to be the haunt of ghosts (‘ōlohe) who appear at night or at noon. Also a play on ‘ōlohe (nude), applied to one who appears unclothed. [Pukui 1983:164]

### 3.3.7 ‘Ōlelo No‘eau #1481

**Kama‘oma‘o, ka ‘āina huli hana.**

*At Kama‘oma‘o, land of activities.*

Ghosts who do not go to the *pō* of their ancestors often wander about in certain areas. Kama‘oma‘o, Maui, is such a place. The activities of such ghosts usually annoy the living. [Pukui 1983:160]

### 3.3.8 ‘Ōlelo No‘eau #1761

**Ke kula o Kama‘oma‘o ka ‘āina huli hana.**

*The plain of Kama‘oma‘o — that is the place where plenty of work is to be found.*

A taunt to one who talks of looking for work but does not do it. The plain of Kama‘oma‘o, Maui, was said to be the haunt of ghosts whose activities were often terrifying. [Pukui 1983:189]

### 3.3.9 ‘Ōlelo No‘eau #1850

The below proverb concerns the people of the Moku of Ko‘olau.

**Ko‘olau hauwala‘au.**

*Ko‘olau of the loud voices.*

The inhabitants of Ko‘olau, Maui, were said to be loud of voice. [Pukui 1983:199]

### 3.3.10 ‘Ōlelo No‘eau #2215

Similar to the above ‘ōlelo no‘eau, this proverb also refers to the people of the Nāhiku as speaking loudly.

**Nāhiku hauwala‘au.**

*Much loud-talk Nāhiku.*

Said of loud-voiced people. Refers to Nāhiku, Maui. [Pukui 1983:242]

### 3.3.11 ‘Ōlelo No‘eau #2393

The resilience and independence of the people of East Maui has been well noted.

**‘Oi‘oi o Maui Hikina.**

*East Maui forges ahead.*

Those of East Maui are said to be very active and able to withstand anything. [Pukui 1983:261]

## 3.4 Oli (Chant)

*Oli*, according to Mary Kawena Pukui (Pukui 1995:xvi–xvii), are often grouped according to content. Chants often were imbued with *mana* (spiritual power); such *mana* was made manifest through the use of themes and *kaona*. According to Pukui, chants for the gods (prayers) came first, and chants for the *ali‘i*, “the descendants of the gods,” came second in significance. Chants “concerning the activities of the earth peopled by common humans,” were last in this hierarchy (Pukui 1995:xvi–xvii). Emerson conversely states,

In its most familiar form the Hawaiians—many of whom [were lyrical masters]—used the *oli* not only for the songful expression of joy and affection, but as the vehicle of humorous or sarcastic narrative in the entertainment of their comrades. The dividing line, then, between the *oli* and those other weightier forms of the *mele*, the *inoā*, the *kanikau* (threnody), the *pule*, and that unnamed variety of *mele*

in which the poet dealt with historic or mythologic subjects, is to be found almost wholly in the mood of the singer. [Emerson 1965:254]

While *oli* may vary thematically, subject to the perspective of the *ho‘opa‘a* (chanter), it was undoubtedly a valued art form used to preserve oral histories, genealogies, and traditions, to recall special places and events, and to offer prayers to *akua* and *‘aumākua* alike. Perhaps most importantly, as Alameida (1993:26) writes, “chants... created a mystic beauty... confirming the special feeling for the environment among Hawaiians: their *one hānau* (birthplace), their *kula iwi* (land of their ancestors).”

### 3.4.1 Hi‘iaka Oli

During Hi‘iaka’s travels throughout Hawai‘i, a number of chants, which reference place names within or near the License Area, are recited. The following chants are taken from accounts of Hi‘iaka’s epic journey.

#### Hi‘iaka in Wailua Iki Ahupua‘a

While Hi‘iaka and her friend Wahine‘ōma‘o traveled through East Maui, they stopped at a *hālau* in Wailua Iki Ahupua‘a to rest and eat. While in Wailua Iki, Hi‘iaka offered a number of *oli* to her cousin Kapokūlani (Kapo) and to people of the *hālau*. The following *oli*, which references Ka‘ena, was chanted by Hi‘iaka to her cousin Kapo:

|   |   |
|---|---|
| <i>‘O Kapokūlani ‘oe, ‘o Moehāunaiki ē</i>              | It is you, Kapokūlani, Moehāunaiki                            |
| <i>E hea au, e ō ‘oe</i>                                | I call out, oh do respond                                     |
| <i>‘O nā lehua wale i Ka‘ena</i>                        | The lehua of Ka‘ena   |
| <i>Ke kuia maila a lawa</i>                             | Are strung together generously                                |
| <i>5. I lei no ka wahine</i>                            | 5. To make a lei for the woman                                |
| <i>Kapokūlani, ki‘eki‘e, ha‘aha‘a</i>                   | Kapokūlani, of lofty station, of humble station               |
| <i>Ha‘aha‘a ka lā o ka ‘ike</i>                         | Humble is the day of visitation                               |
| <i>He ‘ike kumu, he ‘ike lono kēia iā ‘oe</i>           | This is foundational knowledge, received knowledge for you    |
| <i>E Kapokūlani, Kapo ali‘i o ia moku</i>               | O Kapokūlani, royal Kapo of the island                        |
| <i>10. Kā ‘ia e ke akua ke kahu ‘ike ‘ole a ka maka</i> | 10. Established by the gods is the guardian unseen by the eye |
| <i>‘O ka ‘okia ‘ula i ka lā</i>                         | Cut off and reddened by the sun                               |
| <i>I ‘ula nō i ka wai ālialia</i>                       | Red indeed in the collected waters                            |
| <i>He wai ālialia, he waili‘ulā</i>                     | Collected waters, water of the mirage                         |
| <i>E wele ka wāwae ke</i>                               | The foot clears a pathway,                                    |
| <i>hele ma kahakai o Ki‘ia</i>                          | moving along the shore of Ki‘ia                               |

|  |  |
|--|--|
| <i>15. E ki‘i ‘oe a i kō kahu</i>      | 15. You fetch, get your guardian       |
| <i>‘O kāu ‘elele nō ia e mana‘o ai</i> | That is the messenger you shall choose |
| <i>Eia mai ka pua‘i lā</i>             | Here is the upwelling,                 |
| <i>No Kinolauwahine.</i>               | For Kinolauwahine.                     |

[Ho‘oulumāhiehie 2008a:130-131; Ho‘oulumāhiehie 2008b:123]

Kapo then responds and recites the following *oli* to her cousin Hi‘iaka, which mentions the Ko‘olau district of East Maui:

|  |   |
|--|---|
| <i>‘O ‘oe ia, e Wahinepō‘aimoku</i>              | It is you, Wahinepō‘aimoku, Island-<br>encircling woman |
| <i>Wahine i ka poli o Kinolauwahine</i>          | Woman in the bosom of Kinolauwahine                     |
| <i>E Hi‘i i ka u‘i o luna</i>                    | O Hi‘i of the beauty above                              |
| <i>E ke aka kilohi, ho‘ohihi a ke<br/>kanaka</i> | O image to gaze upon, entrancing to the<br>people       |
| <i>5. Akāka wale ka luna o Haleakalā</i>         | 5. Clear indeed are the heights of Haleakalā            |
| <i>I ka uē a ke kini a‘o Ko‘olau</i>             | At the cry of the multitudes of the Ko‘olau<br>district |
| <i>Ke laulau a‘e nei au i ke aloha</i>           | I enfold my affection into a bundle                     |
| <i>I pū‘olo wai hīnalo na‘u nei ē</i>            | A fragrant bundle made by my hand                       |
| <i>E ō mai ‘oe i kō inoa</i>                     | Give response to your name                              |
| <i>10. E Hi‘i ē!</i>                             | 10. O Hi‘i, oh  |
| <i>Aloha mai!</i>                                | Welcome!  |

[Ho‘oulumāhiehie 2008a:96; Ho‘oulumāhiehie 2008b:123-124]

### Hi‘iaka and the Spirit of Mana-mana-ia-kalu

While traveling the coast of Maui in canoe, Hi‘iaka and her *aikāne* Wahine‘ōma‘o, encountered the spirit of the deity Manamanaiakalua, who had taken form in the body of a woman with no hands. The woman possessed by the spirit of Manamanaiakalua was fishing when she was spotted by Hi‘iaka and company. It was when the spirit of Manamanaiakalua lost the fish she had been pursuing that she recited the following *oli* which mentions Honomanū:

Sitting down on a convenient rock, she mourned aloud:

|   |  |
|---|--|
| <i>Aloha wale ka pali o Pi-na-na‘i,</i>       | How dear the cliff of Pi-na-na‘i,            |
| <i>Ka lae iliili ma-kai o Hono-manū, e!</i>   | And the pebbly cape at Hono-manū!            |
| <i>He u ko‘u, he minamina, e-e,</i>           | How I mourn for the loss of my fish!         |
| <i>I ka lilo ka i‘a i ka poho o ka lima —</i> | They were swept from the reach of<br>my hand |

*A lilo, e-e!*

They are gone, forever gone!

[Emerson 1915:72]

### Hi‘iaka, Kapo, and the *Lehua* Blossom Lei

While stringing a *lehua* (flower of the ‘ōhi‘a tree; *Metrosideros macropus*) blossom lei at a spring called Hoakalei at Kualakai Oahu, Hi‘iaka is visited by her sister Kapo. Announcing her presence Kapo offers a chant to Hi‘iaka. Hi‘iaka responds with a chants that mentions Kapo’s home at Wailua Iki, Maui. At this moment Ho‘oulumāhiehie writes that:

Hi‘iaka heard this chant, and when she turned and looked in the direction of the voice, she saw her elder sister looking at her, Kapo, who had come to O‘ahu from Maui quite some time earlier in her duties with the hula.

And when Hi‘iaka saw her, she wept with love for her elder sister.

Then she chanted this chant.

*‘O ‘oe ia, e Waialua Iki\**

*E ka lāuli, pali o Uli*

*Ua hele wale ‘ia e Li‘awahine*

*E ka wahine kūhea pali*

*5. Kui pua lei o Hoakalei ē*

*E lei au*

*E lei ho‘i au i nā hala pala ‘īloli*

*o Hanakahi*

*Ua maka ‘ele‘ele wale i ke anu*

*Ua ‘āha‘i ‘ia e ke kina‘u i ‘a*

*o Mahamoku i Wai‘oli*

*10. ‘O ku‘u makani Lawalawakua*

*Kūpani kapa o Waialua Iki*

*Honi pua ‘ala Kaiāulu*

*‘Ae, ke lei nei au i nā lehua maka noe*

*I nā lehua lihi wai o Hoakalei*

*15. Ku‘u lehua i Hilo One*

*I nā kaha o Ko‘olina me Kaupe‘a*

*E lei au ē.*

It is you, Waialua Iki\* (\*Wailua Iki is used throughout most of the story)

O shaded darkness, cliffs of Uli



Easily traversed by Li'awahine  
 By the woman who beckons from the cliffs  
 5. String garlands of flowers from Hoakalei  
 I am adorned  
 I wear the lei of speckled, ripe hala of Hanakahi  
 With tips gone dark from the cold  
 Carried along by the kīna'u eel of Mahamoku at Wai'oli  
 10. My gusting wind, the Lawalawakua  
 Kapa-buffeting wind of Waialua Iki  
 The Kaiāulu wind bears the scent offragrant flowers  
 Yes, I wear the lei of tiny, misty-eyed lehua  
 The lehua from the water's edge of Hoakalei  
 15. My precious lehua of Hilo One  
 From the strands of Ko'olina and Kaupe'a  
 I shall be adorned with lei.  
 [Ho'oulumāhie 2008a:292; Ho'oulumāhie 2008b:272-273]

### 3.4.2 Ke-a-ulu-moku of the Māmākua Districts

Ke-a-ulu-moku was a poet-prophet chief from the Māmākua Districts of Maui, born in the early eighteenth century. Ke-a-ulu-moku, having moved from his home on Maui to Hawai'i Island, was homesick for the windward side of Maui and composed an *oli* to express his love for his home (Kamakau 1961). The following *oli* mentions the places of Haneoho'i of Honopou, Huelo, Mokupapa, Hoalua of Hanehoi, Pu'ukoa'e (Puukaae on latter maps) of West Hanawana, and Kailua of Pu'uomaile:

|  |   |
|--|---|
| <i>...Aloha wale o'u makua</i>             | ...Affection for my parents                 |
| <i>Mai na 'aina Hamakua,</i>               | Who belong to Hamakua,                      |
| <i>He mau 'aina Hamakua elua,</i>          | The two districts of Hamakua,               |
| <i>No'u mua kaikua'ana i noho ai.</i>      | Where my elder brothers live.               |
| <i>He ala pali na'u he mau ali'i ia...</i> | My hillside trails are theirs to rule...    |
| <i>Ua ua lehua, he lehua hala,</i>         | The lehua trees blossom, the yellow lehua,  |
| <i>Ua i ka lehua o Kailua.</i>             | When the rain comes to the lehua of Kailua. |
| <i>Lehua maka konunu i ka wai,</i>         | The lehua petals are heavy with raindrops,  |
| <i>Konunu konunu, oha'ha'.</i>             | Heavy, heavy and full-blown.                |
| <i>Halana makapehu wale no kie ia,</i>     | They know not the pangs of thirst           |

|   |   |
|---|---|
| <i>Pehu, ua mae ka maka mua o ka</i>    | That wilt the first-blown pandanus      |
| <i>hinalo ho ‘i.</i>                    | bloom.                                  |
| <i>Ho ‘i ka ua ma Haneho ‘i,</i>        | The rain returns by way of Haneho ‘i,   |
| <i>Ma ka lae o Pu ‘umaile i Hoalua,</i> | Along the brow of Pu ‘umaile to Hoalua, |
| <i>Ma kahakua o Pu ‘ukoa ‘e</i>         | Over the ridge of Pu ‘ukoa ‘e,          |
| <i>Ma ke alo pali o Huelo.</i>          | Before the face of the cliff of Huelo.  |

[Kamakau 1961:112-113]

### 3.4.3 *Ka Wai a Kāne* (The Water of Kāne)

This *oli* recounts the story of Kāne’s life giving waters and speaks of the locations of these waters. This *oli* makes an indirect reference to the springs of Kāne, said to have been created in the mountains of Ke‘anae when Kāne thrusts his *kauila* wood staff into the earth (See section 3.1.5). Emerson (1909) explains that the line “*Wai Kau a Kane me Kanaloa*” relates to, “when Kane and Kanaloa were journeying together Kanaloa complained of thirst. Kane thrust his staff into the pali near at hand, and out flowed a stream of pure water that has continued to the present day. The place is at Keanae, Maui” (Emerson 1909:258):

...*E ū-i aku ana au ia oe,*  
*Aia i-hea ka Wai a Kane?*  
*Aia i-lalo, i ka honua, i ka Wai hu,*  
*I ka wai kau a Kane me Kaualoa—*  
*He wai-puna, he wai e inu,*  
*He wai e mana, he wai e ola.*  
*E ola no, e-a!*

...One question I ask of you:  
 Where flows the water of Kane?  
 Deep in the ground, in the gushing spring,  
 In the ducts of Kane and Loa,  
 A well-spring of water, to quaff,  
 A water of magic power—  
 The water of life!  
 Life! O give us this life!  
 [Emerson 1909:258-259]

## 3.5 *Mele* (Songs)

A number of late nineteenth and twentieth century *mele* concern or mention place names of the *ahupua‘a* located within the License Area. These particular *mele* may also be classified as *mele wahi pana* (songs for legendary or historic places). *Mele wahi pana* such as those presented here may or may not be accompanied by *hula* (dance) or *hula wahi pana* (dance for legendary or historic places).

### 3.5.1 Mele Ka‘i to Kaulilua

This *mele ka‘i*, a prayer chant accompanied by dance, is dedicated to the goddess Kapo who once resided in Wailua Iki.

1. *O ‘oe ‘ia e Wailua‘iki*
  2. *I ka lā uli pali o Wai‘oli*
  3. *Ua hele ‘ia e Li‘awahine*
  4. *Mai mele ka leo pali [E ka wahine kāhea pali]*
  5. *Ku‘i lei pua o Hoakalei---e*
  6. *E lei a---u*
  7. *E lei ho‘i au I nā hala i pala i loli i ke kai e*
  8. *Kū maka ‘ele‘ele wale i ke anu*
  9. *lā hina ‘ia e ke Kīna‘u*
  10. *E o[la] Mahamoku ma Wai‘oli*
  11. *Makani lawalawa kū puni*
  12. *Kāhea ka luna o Kama‘e*
  13. *He malihini ka puka [ko] ka hale la*
  14. *E ho‘i mai*
1. It is you (whom I seek) o Wailua‘iki (another name for Kapo)
  2. On the dark. sun-touched hill of Wai‘oli
  3. Li‘awahine came here
  4. Her voice chanting on the *pali* [The woman calling on the *pali* (cliff)]
  5. Stringing the flower wreaths of Hoakalei
  6. A wreath for me
  7. A wreath of *hala* (pandanus keys) that has ripened (speckled) by the sea
  8. That was darkened (speckled black) by the cold
  9. And shaken down by the Kīna‘u (breeze)
  10. Mahamoku (the blustering wind) renews life at Wai‘oli
  11. The wind that blows in and about the forests
  12. When it calls (to you) from the top of Kama‘e
  13. For visitors have come to the door of our house
  14. O return. [Hawaiian Drum Dance Chants :n.p.]

### 3.5.2 Ke‘anae

Recorded by Eleanor McClland Heavey in the mid-twentieth century, the following *mele* speaks to the character of Ke‘anae:

Ke‘anae, on the shores of Maui isle  
 There's a place called Ke‘anae  
 Where I stayed for awhile  
 In the old Hawaiian style  
 In the quietness, the peacefulness of Ke‘anae  
  
 From the mountain to the sea  
 Blooms a lovely awapuhi

Pampered by the falling rain  
 You can hear the sweet refrain  
 In the quietness, the peacefulness of Ke‘anae

This is the land where taro grows  
 Like the days of long ago  
 All the kupa ‘āina know  
 Like the riches of our sea  
 In the quietness, the peacefulness of Ke‘anae

So before my mele ends  
 Let me add another line  
 To the folks in Ke‘anae  
 Keep up your sweet Hawaiian style  
 In the quietness, the peacefulness of Ke‘anae [Huapala 2018 *Ke‘anae*]

### 3.5.3 Huelo

Two lovers, a boy from Huelo and a girl from Ke‘anae, debate who is from the more beautiful hometown on Maui. The following *mele* is the boy’s ode to his beloved hometown of Huelo:

*E ho‘i ana i ka uka (hiu)*  
*I ka uka ‘iu‘iu o Huelo (lawe)*  
*I laila nō e pili ai (sure)*  
*Me ka ‘ō‘ō hulu laha ‘ole*

*Kāhiko nō e ka nani*  
*Uluwehi ke ‘ike aku*  
*Ho‘ohihi kahi mana‘o*  
*I ka wai hu‘i wai o ka ona*

*Ke noe mai a ka ua*  
*Kilihune mai la i uka*  
*E ho‘opulu ana i ka lihi*  
*Lau lipo o ka ‘awapuhi*

*Ha‘aheo nō e ka ua*  
*Kilihune lā i ka nahele*  
*Ho‘opulu i ka lihlihi*  
*Lau lipo o ka ‘awapuhi*

*‘O ka hone mai a ka ‘iwi*  
*I ka ō mahina la‘ila‘i*  
*I mahie luna li‘a loko*  
*I hoapili mau ‘oe no‘u*

Let us wander to the highlands  
 To the high hills of Huelo  
 There we can come together  
 Like the feathers of the ‘O‘o bird

Beautiful from days of old  
 See the lushness  
 My mind is enraptured  
 By the cold, intoxicating water  
  
 When mist and rain commences  
 It sprinkles the mountains  
 Drenching the edges of  
 The leaves of the yellow ginger  
  
 Cherished is the rain  
 The gentle rain of the forest  
 Drenched are the petals  
 And leaves of the ginger growing in profusion  
  
 The sweet sound of the ‘iwi  
 In the peaceful moonlit night  
 Enhances my delight and desire  
 For you, my close companion [Huapala 2018 *Huelo*]

### 3.5.4 *Malu I Ke Ao*

This *mele* from the Shelter of Light Church mentions the broader areas of Makawao, Hāna, and Ko‘olau:

*‘Ohi e ka ‘i‘o o ka lā‘au,*  
*No Makawao no ia,*  
*Me ka ua ‘Ukiuki*  
*Anuanu ‘ino (‘ohu‘ohu no),*  
*E aho no e komo mai*  
*I ka Malu o Ke Ao*

*Hui:*  
*Malu i ke ao*  
*Ke ahi o Wailuku,*  
*Kepaniwai a‘o ‘Iao*

*Nani Moloka ‘i Nui A Hina,*  
*Hape hape nu ia,*  
*Hui ‘oli‘oli no*  
*I ka Malu o Ke Ao,*  
*E aho no e komo mai*  
*I ka Malu o Ke Ao*

*Hana ua lani ha‘aha‘a*  
*Na pali o Ko‘olau*  
*Na pohaku o auahi*  
*Wela i ka lā*  
*E aho no e komo a‘e*  
*I ka Malu o Ke Ao*



Picked is the tree mushroom  
 It is indeed from Makawao  
 With the ‘Ukiukiu rain  
 Cold indeed (adorning indeed)  
 One had better come in  
 Under the Shelter of Light

Chorus:  
 Shelter of Light  
 The fires of Wailuku,  
 The dammed waters of ‘Iao

Beautiful is Moloka‘i Nui A Hina,  
 Happy, happy New Year,  
 Come together in joyful rejoicing,  
 Under the Shelter of Light  
 One had better come in  
 Under the Shelter of Light

Hana of the low rains  
 Cliffs of the Ko‘olau  
 Stones of auahi  
 Heated by the sun  
 It is better to come inside  
 In the Shelter of Light [Huapala 2018 *Malu I Ke Ao*]

### 3.5.5 Wailae Nui

The *mele*, Wailua Nui, was composed in 1999 by Lei‘ohu Ryder. This *mele* speaks to the beauty and ancestors of the Wailua Nui area:

*Ka i ka nani*  
*Wailua Nui*  
*Ike wahipana la*  
  
*Ho‘oheno lai*  
*Ke i ka nani*  
*Ho‘olohe pu‘uwai*  
  
*Eo kapiliwai elua*  
*Eo ka manulani la*  
  
*Ke kua hine*  
*No Wailua*  
*Me ka maluhia la*  
  
*Na pohaku po‘okela*  
*No pu wai maha*  
*Ke koko ola nei*

*Na mele ohana  
No Wailua Nui  
Ho 'okipa ana mai*

The beauty  
Wailua Nui  
Is a sacred place indeed

Fragrance in the calm  
Is very beautiful  
To listen to the heart

Greetings (ancestors) bound of the two waters  
Greetings birds of heaven

My ancestors/kupuna wahine of Wailua  
Are in peaceful slumber

Foremost are the stones  
That call the waters to rest  
Giving life to the blood of the land

This song for the families of Wailua Nui  
Hospitable always [Ululua Productions]

## Section 4 Traditional and Historical Accounts

### 4.1 Pre-Contact to 1800s

#### 4.1.1 Traditional Background of Hāmākua Loa Moku

The division of Maui's lands into political districts first occurred during the rule of Kaka'alaneo under the direction of his *kahuna* (priest) named Kalaiha'ōhi'a (Beckwith 1970:383). The *moku o loke*, or *moku* as it is most commonly called, literally means "to cut across, divide, separate" (Lucas 1995:77). When used as a term of traditional land tenure, a *moku* is similar to a political district that can contain smaller divisions of land such as *'okana*, *kalana*, *ahupua'a*, *'ili*, and *mo'o*.

According to Mary Pukui et al. (1974:49), the literal translation of Hāmākua Loa is "long Hāmākua, where Hāmākua means corner." There are several place names in the various *ahupua'a* which make up this *moku* that are recorded by Pukui et al. (1974). Much of the historical and traditional information is related to adjacent *ahupua'a* and is recounted here briefly because of the close relationship to the adjacent *moku* of Ko'olau.

#### Agriculture and Habitation

The earliest estimation of the initial occupation of East Maui highlights settlement along the coastal region about AD 1200 (A. E. Haun et al. 2004). The abundance of traditional land divisions and place names between Hāmākua Loa and Hāna are suggestive that this period of habitation was extensive after initial establishment. To this effect, Handy (1940:109) observed that "the minute *ahupua'a* characteristic of this coast indicates a dense population."

E.S. Craighill Handy made some of the earliest observations of habitation and cultivation within the Hāmākua Loa Moku. Sterling (1998:100) relates observations made by Handy regarding cultivation near perennial watersheds in Peahi:

Shallow Kuiaha Gulch was not explored, but its stream must have watered a few taro patches on flats near the sea. According to Henry Ikoa and George Akiu, there were small terraced areas watered by Hoolawa, Waipio, Hanehoi, Hoalua, Kailua, and Nailiilihaele streams. These all have abundant water, but flow in deep gulches having practically no flatland suitable for terracing. Presumably stream taro used to be planted along the beds of these water courses well into the uplands, and forest taro throughout the lower forest. [(Handy in Sterling 1998:100)]

Cultivation in this region was not entirely dependent on perennial water and further utilized dry-zone agriculture on the slopes of Haleakalā above the coast. To this effect, Sterling (1998:101) references Handy's account from local informants:

On eastern Maui the semi-dry slopes of Hamakua must have been planted with sweet potatoes by the people living along the coast from Maliko to Waipio. Samwell says, probably referring to this region: "This island is mountainous, the sides of the hills are covered with trees, from thence to the water side are large

open plains on which stood their houses and where they have their plantations of sweet potatoes, taro, etc.” (Handy in Sterling 1998:101)

Within this area there are also some *heiau* that seem associated with agricultural practices (see Section 0, for more detailed discussion) and rituals. This seems suggestive of the extent of traditional cultivation practices within Hāmākua Loa where both wetland and dryland techniques were utilized to maximize food diversity and harvests, and where ceremonial centers like *heiau* would help to ensure the harvests sought by Hawaiians. Evidence of similar activities increase the farther one goes east along the coast toward Hāna.

### Open Ocean Fishing Traditions of East Maui

As a life near the shore would suggest, Native Hawaiians depended heavily on their access to ocean resources just as they depended upon the products of the land. In *Tales and Traditions of the People of Old: Nā Mo'olelo a ka Po'e Kahiko*, Hawaiian historian Samuel Kamakau (1991:78) states:

Ka po'e kahiko [the people of the old days] had many ways of catching fish. Perhaps there are no other people in the world like Hawaiians in doing this. The people of Maui, at Ko'olau, worshipped sharks – in order to be saved from being eaten by a shark when they went fishing (Kamakau 1991:78).

Documentation regarding Native Hawaiian tenancy, land use practices, and fishing rights are also found in the records of the Māhele 'Āina. The Māhele 'Āina gave *hoa'āina* (common people engaged in agriculture) an opportunity to acquire fee-simple property interest on land which they lived and actively cultivated. The lands awarded to the *hoa'āina* became known under the title of *kuleana* lands. Claims for some fishery resources made to the Land Commission of the Kingdom of Hawai'i were given Land Commission Award (LCA) numbers, some of which remain in use today. First-hand accounts from native tenants generally spanning the period from ca. 1819 to 1855 have become an important part of recognizing the traditional significance of these land use practices and fishing rights (Waihona 'Āina 2000).

In a series of articles about fishing from 1902 recounted in *Ka 'Oihana Lawai'a: Hawaiian Fishing Tradition* by Daniel Kahā'ulelio (2006), an open ocean type of fishing was the preferred method of fishing used in deep waters along the coast of East Maui. In waters of ten or more fathoms deep the use of *kākā* line fishing and the *kūkaula* line fishing techniques were developed and employed, which are defined by Kahā'ulelio (2006:45) as:

In this [*kākā*] kind of fishing, no stone weight was needed to anchor the canoe and it drifted to and fro moving with the current. The line was five *ka'au* in length, which was the equivalent of 200 fathoms, and that was about the depth of the fishing grounds desired to reach. Two or three men was enough for this type of fishing and each man had from forty to fifty hooks on his line.

This is the way in which it was done. The leader that fastened the hook to the line was a yard or so in length, and it would be tied along with a coconut stem to keep it firmly in place. The hooks were fastened at intervals the length of each coconut stem, lest the hooks be mixed up and entangled. This was done until all forty or fifty hooks were fastened on. Bait was secured in the evening and the hooks of all

the fishermen baited before time. When all was ready, then, just about daylight they set out, arriving at the fishing grounds when it was light. The man in the rear would release his line first, then the next man and so on. With a stone weight at the bottom of the line, to make it sink correctly, As the second man began lowering his line, the first already felt a jerking on his and as soon as he knew that all of his hooks had been taken he hauled in the line. They all did this. Then the sails were set up and the Ma'a'a breeze did the work of bringing them home. (Kahā'ulelio 2006:45)

Kahā'ulelio continues and defines *kūkaula* fishing:

This is still in use, and only where the fishing ground is shallow, from fifty, sixty to seventy fathoms deep and not any deeper than that. If at the depth of eighty fathoms, then only small fish will be caught such as the 'ukikiki [A species of snapper fish (*Apsilus brighami*)] and small 'ula'ula [red snapper (*Etelis coruscans*)]. At sixty or fifty fathoms in depth, the fish would snatch at the hook if the current is right.

The line is 80 or 120 fathoms in length and to it we tie coconut husks for signals when the hook is taken. It is made in this way; the first husk is tied on at forty fathoms and that is called the *nuku*, or snout; at five more fathoms, another is fastened on, this is the *alo*, or face; at the next five fathoms, another is fastened on, called the *kua*, or back; at the next five fathoms, is the *manamana*, the branching; at the next five, the *i'aiki*, or little fish; the next is the *kuaokai'aiki*, the back of the little fish; the next is *moe*, the recumbent, and that is the last of the coconut husk signals. (Kahā'ulelio 2006:45)

Using these techniques, Native Hawaiians were able to catch deep water fish from the waters off the north and east shores of Maui. This practice was not isolated to Hāmākua Loa Moku only and represents techniques used across many deep sea fisheries including those located off the coast of neighboring Ko'olau Moku to the East.

#### 4.1.2 Traditional Background of Ko'olau Moku

The *kālana*, or subregion, that forms the *moku* of Ko'olau has been defined as a collection of *ahupua'a*, including Honolulu Nui, Honolulu Iki, Honopou, Wailua, Honomanū, Kali'i, Kukui [Nāhiku], Ke'anae, Keopuka, [Ka]Pa'akea, Puakea, Kapehu, Kapā'ula, Kea'ā, Pauwalu [Ke'anae], Waiahole, Waiohue, Waianu, 'Ula'ino and Makapīpī [Nāhiku] that supported important population centers on the island of Maui. Handy stated that Ke'anae and Wailua Nui were regions that supported intensive and extensive wet-taro cultivation (Handy et al. 1991:272). It was further noted that, in this region of Maui, the *ahupua'a* are marked from stream to stream, rather than from ridge to ridge (McGregor 2007:83).

Ko'olau Moku, on the northeast coast of Maui is located in between Hāmākua Loa Moku to the west and Hāna Moku to the east. A literal translation of *Ko'olau* is "windward" (Pukui et al. 1974:117). Additionally, the name Ko'olau has been traditionally applied to the districts located on the windward side of many Hawaiian Islands (Soehren 2002-2010). Although Ko'olau Moku extends from O'opuola Point to beyond Nāhiku, the lands from Wailua to Ke'anae are



considered to be some of the denser areas of habitation throughout the region (Handy et al. 1991:499-501).

With regard to political influence and the course of pre-Contact Hawaiian history, it has been noted that there may have been some rivalry within Ko'olau Moku between the *ahupua'a* of Ke'anae and neighboring Wailua Nui (Handy 1940:109-110). These interregional rivalries, however, would give way to larger political battles concerning the rule of Maui Island and the line of succession between the sons of Pi'ilani (Kamakau 1992:22-29), and later, the consolidation of power and unification of the Hawaiian Islands under Kamehameha I (Group 70 International et al. 1995).

Chief Pi'ilani united all of Maui under his rule between the sixteenth and seventeenth centuries. Pi'ilani's sons, Lonopi'ilani and Kiha-a-Pi'ilani, were contenders for control of Maui. Kiha-a-Pi'ilani eventually took refuge at Hāna while fleeing the warriors loyal to his brother. While in Hāna, Kiha-a-Pi'ilani took as his wife Koleamoku, who had been betrothed to Lonopi'ilani, which again put the two brothers to warring. Kiha-a-Pi'ilani was on the run from his brother across Maui until a ritual ceremony performed by the *kahuna nui* [high priest] revealed that he must flee Maui to preserve his life, but would eventually return to conquer and unify the island (Kirch 2012:208).

At this time, the reigning chief of Hawai'i Island, 'Umi-a-Liloa, was married to Pi'ikea, the daughter of Pi'ilani and sister to Lonopi'ilani and Kiha-a-Pi'ilani. This marriage had formerly brought peace between the island polities of Hawai'i and Maui. Kiha-a-Pi'ilani and his wife Koleamoku fled Maui and set out to his sister's residence asking for help from 'Umi's household on Hawai'i Island. In response to this, 'Umi "[h]aving received favorable auguries from the high priest, Kaoleioku, 'Umi summoned the chiefs of the various districts to prepare for the invasion of Maui" (Fornander 1880:98). 'Umi not only sided with Kiha-a-Pi'ilani and sent an invasion fleet to Hāna, but also sent along one of his most notorious warriors, Pi'imaiwa'a, who had been instrumental in the battles that won 'Umi all of Hawai'i Island. The campaign met with difficulty in taking Hāna before the Hawaii Island men had even made ground on Maui. Samuel Kamakau (1992:293) relates the account:

When 'Umi-a-Liloa arrived with the later company he heard how his canoemen were unable to go ashore and how they were held at bay by the mighty Maui warrior, Ho'olae-makua. He asked Kiha-a-Pi'ilani, "Is there no other way of getting the war canoes ashore? We can fight them better on shore, for our present position is an unstable one." Kiha-a-Pi'ilani answered, "There is a small harbor at Ko'olau called Wailua-iki, and if all the canoes cannot land there, there is another landing at Wailua-nui." The blocked canoes turned about and sailed for Wailua-iki at Ko'olau. (Kamakau 1992:29)

In Hāna, at the fortress hill of Ka'uiki, Lonopi'ilani's forces under the command of Ho'olaemakua, withstood the Hawai'i forces until a nighttime raid overwhelmed them. In *A Shark Going Inland is my Chief*, Kirch (2012:210) tells that Kiha-a-Pi'ilani's men:

...fell upon the slumbering Maui forces. Many were killed, or leaped to their deaths off the steep cliffs encircling the hill. But in the darkness a few escaped, including Ho'olaemakua. Kiha sent Pi'imaiwa'a in search of Ho'olaemakua in the

backlands of Hāna... His hands were brought back to Kiha to confirm his death.  
[(Kirch 2012:210)]

With this battle, Kiha-a-Pi'ilani gained control of East Maui. Kiha-a-Pi'ilani's brother, Lonopi'ilani, reportedly died of fright before his brother's campaign had a chance to reach Wailuku (Kirch 2012). The death of his brother left Kiha-a-Pi'ilani as the standing ruler of Maui.

In Fornander's "Legend of Kihapiilani," after Kiha-a-Pi'ilani and 'Umi's forces conquered the fortress of Ka'uiki at Hāna, Kiha-a-Pi'ilani began to construct a "roadway from Kawaipapa to the forests of Oopulua [*sic*];" which, "was made and paved with smooth rocks" (Fornander 1918:180). The roadway Kiha-a-Pi'ilani built was the Ke Alaloa o Maui, which his father (Pi'ilani) had begun some time earlier. The portions of the Alaloa that Kiha-a-Pi'ilani constructed extended one of the first continuous overland routes on the north shore of Maui to help connect the distant communities of the eastern districts to the central isthmus. The section built at this time began in Ko'olau and stretched all the way to Hāmākua Loa (Moses Manu in Sterling 1998:108). For Kiha-a-Pi'ilani, asserting his influence in the region by way of public works was important both socially and economically as the "Makanali, Waikamoi, Puohokamoa and Ha'ipua'ena streams are found in this region of Ko'olau. Here, Native Hawaiian families settled and cultivated gardens in the narrow valleys fed by small streams" (McGregor 2007:91). By connecting the region via a paved trail, the agricultural and human resources became more accessible and could be mobilized in times of need with greater ease. An additional advantage of the Ke Alaloa o Maui was that word could be sent between villages and ceremonial centers of any invading forces from either Maui or Hawai'i Island encroaching upon the region, which was especially valuable during the middle to late pre-Contact period when the north shore of Maui was changing hands frequently between polities from both Islands (Kirch 2012:206-216).

It was also during this time that Kiha-a-Pi'ilani is believed to have built the massive structure Pi'ilanihale in the Hāna region. This site would later be known as the tallest *heiau* in the entire archipelago. It was built to house the royal line of Pi'ilani in East Maui and was likely the principal *luakini heiau* [war temple] of Kiha-a-Pi'ilani. Kiha-a-Pi'ilani also began restoring Honua'ula Heiau just inland of Pu'u Ka'uiki around this time (Griffin 1987). Following this notable battle over the Hāna and Ko'olau districts were the pre-Contact wars between Kahekili and Kalani'ōpu'u recounted earlier in this report (see Section 4.1.1).

#### Place Names of Ko'olau, Maui

In the preface of *Place Names of Hawaii* (Pukui et al. 1974:x), Samuel Elbert states that:

Hawaiians named taro patches, rocks and trees that represented deities and ancestors, sites of houses and heiau, canoe landings, fishing stations in the sea, resting places in the forests, and the tiniest spots where miraculous or interesting events are believed to have taken place.

Place names are far from static ... names are constantly being given to new houses and buildings, land holdings, airstrips, streets, and towns and old names are replaced by new ones ... it is all the more essential, then to record the names and the lore associated with them [the ancient names] now. (Pukui et al. 1974:x)

The regional place names below, along with the environmental data, indicate that the lands within Ko‘olau Moku were widely used for many purposes relevant to traditional Hawaiian subsistence, habitation, and history. The perennial watersheds that are abundant on this side of the island bear many names associated with agricultural, domestic, and recreational uses of the local streams and pools. Additionally, locations are named according to the type of resources associated with the area, such as Aihonu (eating of the turtle), which could be reflective either of the region as a harvesting area or as being associated with a specific notable instance of marine hunting and consumption. Along with references to food and resource gathering, many names are also present in the area that are names of fighting strokes in *lua* fighting or in some other way indicate violent past times and incidences of warfare or strife. In this vein, some of the place names are also associated with conquering polities and bear the names of the chief that took on the construction of sacred *heiau* or other vital infrastructure, such as the Alaloa trail that connects the deep vales of the region to other distant *moku*. This is also not surprising given the long history of political struggles between Maui and Hawai‘i Island chiefs for the wetter East-Maui region stretching from Hāna to Nā Wai ‘Ehā in the centuries leading into the period of Western contact. Other names simply exemplify the physical features of the named places in relation to common objects or stories. Some names also will remain elusive within the context of their meaning, obscured by the passage of time and the coveting or overall loss of the oral traditions that credit names to places of significance. Literal translations of many of the place names for land areas and divisions in Ko‘olau Moku are listed in Table 2 and may provide insight for the area prior to Western contact.

### Legends of Ko‘olau Moku

Oral tradition passed from one generation to the next provides valuable insight into the pre-Contact cultural landscape of Ko‘olau Moku. As with many of the named places in the archipelago, there is a rich oral tradition regarding the exploits of the legendary figures of Hawaiian mythology in the region.

The Ko‘olau region of Maui was made famous as the part of the island that the demi-god Maui chose to ascend to the top of Mauna Haleakalā to capture the rays of the sun-god Lā, in order that Lā would be forced to travel more slowly through the heavens during the day. This action would help his mother, Hina [wife of Akalana], to dry the *kapa* [tapa] that she had beaten out [traditional bark-cloth made of the *wauke* bark]. The eastern gap of the mountain of Haleakalā, named the Ko‘olau Gap, was the place the demi-god Maui mounted the summit. As the legend goes, once Maui ascended the slope he caught Lā in a noose, beat Lā into submission, and compelled him ever after to travel more slowly (Westervelt 1910:140).

Within the larger *moku* of Ko‘olau lies the fertile region of Ke‘anae. This region also bears the storied visits of gods and legends that passed through and reside in the region. The waters that feed Ke‘anae were said to have been brought forth by the god Kāne, who thrust his *kauila* staff into solid rock to bring forth the waters of Ke‘anae, similar to the flows of life giving water he is accredited with creating in a similar fashion in Hāmākua Loa while in the company of Kanaloa (Beckwith 1970:64; Sterling 1998:101).

Table 2. Place Names within Ko'olau Moku [from Pukui et al. (1974) unless otherwise noted]

| Name                  | Translation/Association  |
|-----------------------|--|
| <b>Āhole</b>          | Islet; <i>lit.</i> , “fish”; specifically <i>Kuhlia Sandvicensis</i> (p. 6)  |
| <b>Aihonu</b>         | Place name in Pauwalu along Waikamilo stream; <i>lit.</i> , “eating of turtle” (Soehren 1963)  |
| <b>Alaloa</b>         | Ancient paved trail; <i>lit.</i> , “long road” also known as Pi'ilani Trail; paved trail that ran around both east and west Maui (Handy et al. 1991:490)   |
| <b>Aluea</b>          | Islet; <i>lit.</i> , “sagging” (Soehren 1963:194)  |
| <b>Hahāhā</b>         | Bay east of Pauwalu Point; <i>lit.</i> , “pant, breathe hard”; noted as a place for shell fish gathering (Soehren 1963:192)  |
| <b>Hāmau</b>          | Stream flowing behind Lakini and into Waiokamilo Stream, within Wailuanui; <i>lit.</i> , “silent, silence, hush” (Pukui and Elbert 1986:55)  |
| <b>Hanawī</b>         | Stream; <i>lit.</i> , “seeking freshwater shellfish” (Handy et al. 1991:110)   |
| <b>Hau'oli Wahine</b> | Gulch, stream, and waterfall in Ke'anae; <i>lit.</i> , “feminine happiness” (Soehren 1963:192)   |
| <b>Honomanū</b>       | Land division and bay, Ke'anae qd., Maui   |
| <b>Ho'okuli</b>       | Place name in Ke'anae; <i>lit.</i> , “to feign deafness” (Pukui and Elbert 1986:80)  |
| <b>Ho'olio</b>        | Hill used as a marker in Wailua; <i>lit.</i> , “horse” or “horse like”; sometimes the noun, <i>lio</i> , is used as a general term for quadrupeds (dogs, pigs, etc.) (Pukui and Elbert 1986:80, 207) |
| <b>Huo</b>            | Astrological name of an unidentified star (Pukui and Elbert 1986:91)   |
| <b>Ka'alani</b>       | Place name of trigonometrical station used in geodetic surveys; <i>lit.</i> , “Those about the chief, members of the royal court” (Pukui and Elbert 1986:107)  |
| <b>Ka'aunaku</b>      | <i>'Ili 'āina</i> ; <i>lit.</i> , “separate” (Soehren 1963:194)  |
| <b>Kahukahu</b>       | Trigonometrical station located on northeast Ke'anae Park; <i>lit.</i> , “dedicate with prayer” (Soehren 1963:192)   |
| <b>Kake'e</b>         | <i>'Ili 'āina</i> ; <i>lit.</i> , “abrupt turn” (Soehren 1963:194)   |
| <b>Kaki'i</b>         | Land area name in Wailua; <i>lit.</i> , “to strike at, aim at, smite” or “to brandish threateningly, as in a war club” (Pukui and Elbert 1986:120)   |
| <b>Kala'alaea</b>     | <i>'Ili 'āina</i> in Wailua; <i>lit.</i> , “remove red ochre” (Soehren 1963:194)   |
| <b>Kaleiomanu</b>     | Stream in upper Ke'anae Valley; <i>lit.</i> , “a <i>lua</i> fighting stroke” (Pukui and Elbert 1986:122)   |

| Name               | Translation/Association   |
|--------------------|---|
| <b>Kalihi</b>      | <i>'Ili 'āina</i> in Wailua; <i>lit.</i> , “the edge” (p. 77)   |
| <b>Kali'i</b>      | Land area <i>makai</i> of Pauwalu; the act of hurling spears at a chief as he landed from a canoe, in order that he might exhibit his dexterity and courage in dodging them, almost ritualistic (Pukui and Elbert 1986:123)   |
| <b>Kaluanui</b>    | Ditch and <i>heiau</i> ; <i>lit.</i> , “the big pit” (p. 79); the pig god, Kama-pu'a, was born here, as a foetus; he was thrown away by an older brother but rescued by his mother, Hina (Westervelt in Pukui et al. 1974:79) |
| <b>Kalunapuhi</b>  | <i>'Ili 'āina</i> in Wailua; <i>lit.</i> , “the high place” (Soehren 1963:194)  |
| <b>Kama'ino</b>    | Trigonometrical station and ridge in Ke'anae; <i>lit.</i> , “naughty child” (p. 80)   |
| <b>Kamilo</b>      | Point, stream, and <i>heiau</i> ; <i>lit.</i> , “the <i>milo</i> tree” (p. 81)  |
| <b>Kano</b>        | Stream and falls in upper Ke'anae; <i>lit.</i> , “large, hard stem (as on a banana bunch)” (Pukui and Elbert 1986:129)  |
| <b>Ka'ōiki</b>     | Place name in upper Pauwalu; <i>lit.</i> , “small thrust” (p. 86)   |
| <b>Kapa'akea</b>   | Land division and stream in Ke'anae; <i>lit.</i> , “the coral/limestone surface” (p. 86)  |
| <b>Kāpae</b>       | <i>'Ili 'āina</i> in Ke'anae; <i>lit.</i> , “to set aside/deviate from” (Pukui and Elbert 1986:131)   |
| <b>Kapā'ula</b>    | Trigonometrical station between Waiohue and Pa'ea stream, boundary marker between Ke'anae and Wailua Ahupua'a; <i>lit.</i> , “the red enclosure” (p. 89)  |
| <b>Kaulanamoā</b>  | Place name on Ke'anae flats; <i>lit.</i> , “chicken roost” (Soehren 1963:192)   |
| <b>Kaulani</b>     | <i>Mauka</i> lands in Ke'anae flats; <i>lit.</i> , “to rely on/support the chief” (Pukui and Elbert 1986:136)   |
| <b>Kaumakani</b>   | Hill forming the boundary of Wailua; <i>lit.</i> , “place (in) wind” (p. 94)  |
| <b>Kauwalu</b>     | Islet; <i>lit.</i> , “eight landed” (Soehren 1963:192)  |
| <b>Kawe'e</b>      | Point of Ke'anae Park; no translation, formerly named Kahukahu, <i>lit.</i> , “to offer food and prayers to a god, or to the spirit of a dead person” (Pukui and Elbert 1986:114)   |
| <b>Ke'anae</b>     | Land section, village, stream, point, valley, peninsula; <i>lit.</i> , “the mullet (fish)”; Here, the god Kāne, accompanied by Kanaloa, thrust his <i>kauila</i> staff into solid rock, and water gushed forth (p. 103)       |
| <b>Ke'anae Uka</b> | Land section; <i>lit.</i> , “upland Ke'anae” (p. 103)   |
| <b>Ke'elaimaka</b> | Land section in upper Ke'anae; <i>lit.</i> , “fascinates the eyes” (Soehren 1963:192)   |



| Name                 | Translation/Association  |
|----------------------|--|
| <b>Keōpuka</b>       | Islet; <i>lit.</i> , “the perforated sand” (p. 109)  |
| <b>Kī‘apu</b>        | <i>‘Ili ‘āina</i> ; <i>lit.</i> , “ti-leaf drinking cup” (p. 109)  |
| <b>Ki‘inematikua</b> | <i>‘Ili ‘āina</i> ; possible mistranslation of Kanemiiku‘e, meaning “dark brown Kāne (god)”; area known for growing <i>olona</i> (Soehren 1963:192)                          |
| <b>Ki‘ioli‘olio</b>  | Place name in Ke‘anae; <i>lit.</i> , “loud cries of birds” (Soehren 1963:192)  |
| <b>Kīkahō</b>        | Small ridge in Kupa‘u; <i>lit.</i> , “to splash” or “to speak/interrupt rudely” (Soehren 1963:148)   |
| <b>Kīkau</b>         | Hill forming boundary between Ha‘ikū and Wailua south of Honomanū; <i>lit.</i> , “to give freely and with good will” (Soehren 1963:149)                                      |
| <b>Kikokiko</b>      | Place name in Ke‘anae; <i>lit.</i> , “dotted, spotted, or speckled” also “to peck or nibble” (Pukui and Elbert 1986:150)   |
| <b>Kilo</b>          | Area near base of Waianu Valley; <i>lit.</i> , “stargazer, seer, to watch closely” (Soehren 1963:151)  |
| <b>Kīpapa</b>        | <i>‘Ili</i> in Ke‘anae; <i>lit.</i> , “placed prone (as in a slain warrior)” (p. 112-113)  |
| <b>Koleamoku</b>     | <i>‘Ili ‘āina</i> in Ke‘anae; named in honor of the first Hawaiian to learn the use of herbs in healing and was subsequently deified after death (Pukui and Elbert 1986:162) |
| <b>Ko‘oiki</b>       | Land area in Ke‘anae flats; <i>lit.</i> , “small prop or support” (Soehren 1963:192)   |
| <b>Ko‘olau</b>       | <i>Moku</i> , gap, stream, ditch, gulch, and falls; <i>lit.</i> , “windward” (Pukui and Elbert 1986:166)   |
| <b>Kūālani</b>       | <i>Heiau</i> and trigonometric station above Pu‘uililua; <i>lit.</i> , “sour, as in unclean calabashes that have previously held <i>poi</i> ” (Pukui and Elbert 1986:170)    |
| <b>Kūāpōhaku</b>     | <i>‘Ili ‘āina</i> in Ke‘anae; <i>lit.</i> , “turn to stone” (p. 119)   |
| <b>Kukuilono</b>     | Trigonometric station near Ke‘anae Point; <i>lit.</i> , “light of Lono (god)” (p. 122)   |
| <b>Kūpau</b>         | <i>Heiau</i> above the road in Ke‘anae Valley; <i>lit.</i> , “entirely finished” or “fearful, shrinking, rare” (Pukui and Elbert 1986:185)                                   |
| <b>Lo‘iloa</b>       | <i>Ahupua‘a</i> ; <i>lit.</i> , “long taro patch” (p. 133)   |
| <b>Ma‘ino</b>        | Land section near Nāhiku; <i>lit.</i> , “defacement” (p. 139)  |
| <b>Makahuna</b>      | Land section in Ke‘anae flats; <i>lit.</i> , “hidden point” or “hidden eyes” (p. 140)  |
| <b>Makoloaka</b>     | Islet; <i>lit.</i> , “creeping shadows” (Soehren 1963:194)   |

| Name                 | Translation/Association  |
|----------------------|--|
| <b>Mii'ulu</b>       | <i>'Ili 'āina</i> in Wailua; <i>lit.</i> , “stiff from exercise” (Soehren 1963:194)  |
| <b>Moana</b>         | Land area above Kupa'u; <i>lit.</i> , “ocean, open sea” (Pukui and Elbert 1986:249)  |
| <b>Mokuhala</b>      | Islet; <i>lit.</i> , “pandanus island” or “island passed by” (p. 155)  |
| <b>Mokuhōlua</b>     | Islet; <i>lit.</i> , “sled island” (p. 155)  |
| <b>Mokuhuki</b>      | Islet; <i>lit.</i> , “pulling island” (p. 155)   |
| <b>Mokumana</b>      | Islet; <i>lit.</i> , “divided island” or “divided district” (p. 155)   |
| <b>Nāhiku</b>        | Land section, village, ditch, and landing; <i>lit.</i> , “the sevens” in reference to the districts of the area (p. 160)   |
| <b>‘Ōhi‘a</b>        | <i>'Ili 'āina</i> in Waianu; <i>lit.</i> , “ <i>ō 'hia</i> tree”, location of two famous springs called Waiakāne and Waiakanaloa, where Kāne thrust his staff into two rocks to procure water for himself and Kanaloa (p. 168)                       |
| <b>Pa'akamaka</b>    | <i>'Ili 'āina</i> in Wailua; <i>lit.</i> , “close the eye” (Soehren 1963:194)  |
| <b>Pa'akea</b>       | Land section, gulch, and stream; <i>lit.</i> , “coral bed, limestone” (p. 173)   |
| <b>Paehala</b>       | <i>'Ili 'āina</i> in Ke'anae; <i>lit.</i> , “row/cluster of pandanus trees” (Soehren 1963:192)   |
| <b>Pāhoa</b>         | <i>'Ili 'āina</i> or <i>ahupua'a</i> east of Ke'anae; <i>lit.</i> , “short dagger” (Pukui and Elbert 1986:300)   |
| <b>Pakanaloa</b>     | <i>Heiau</i> in Ke'anae Valley; Temple of Kahuna Kahekili, rumored descendent of the earliest “gods” (Ashdown 1971:45); upon his death, he was dismembered and distributed among other temples where his remains were deified ((Beckwith 1970:48-49) |
| <b>Pāku'i</b>        | Trigonometric station near shore beneath Wailuanui Catholic Church; <i>lit.</i> , “attached/add on” (p. 176)   |
| <b>Pālaha</b>        | Place name where Pōhaku'oki'āina is found on brink of Haleakalā Crater; <i>lit.</i> , “spread out/extended/flattened” (Pukui and Elbert 1986:307)  |
| <b>Pālahulu</b>      | Stream in Ke'anae; <i>lit.</i> , “to take all of a fish catch for a chief instead of dividing it” (Pukui and Elbert 1986:310)  |
| <b>Pali Kahekili</b> | Leaping place above Waiohuli Pond in Ke'anae; <i>lit.</i> , “precipice of Kahekili” (Pukui and Elbert 1986:312)  |
| <b>Paliuli</b>       | Cave near Hāna, where Queen Ka'ahumanu was rumored to have been born; <i>lit.</i> , “green cliff”; a legendary paradise of plenty (p. 178)   |
| <b>Pana'ewa</b>      | <i>'Ili 'āina</i> in Ke'anae flats; named for the legendary home of a <i>mo'o</i> destroyed by Hi'iaka (p. 178)  |

| Name                   | Translation/Association  |
|------------------------|--|
| <b>Papihii</b>         | Promontory east of Wailuaiki; bears earlier name of Poahonu, <i>lit.</i> , “choked with debris” (Soehren 1963:194)   |
| <b>Pā‘ula</b>          | Land area by ocean near Kopili‘ula; <i>lit.</i> , “red enclosure” (p. 181)   |
| <b>Pauwalu</b>         | Point near Ke‘anae; <i>lit.</i> , “eight destroyed”; named after a Moloka‘i shark-man who killed seven of a family’s children, until he was caught and killed using the eighth as bait (p. 182)  |
| <b>Pōhakukane</b>      | <i>‘Ili ‘āina</i> in Ke‘anae; <i>lit.</i> , “Kāne’s stone” (Pukui and Elbert 1986:334)   |
| <b>Pōhaku‘oki‘āina</b> | Boundary <i>pu‘u</i> marking the corners of the current Makawao and Hāna districts, and the traditional Hāmākua Loa, Ko‘olau, Hāna, Kipahulu, Kaupo, Kahikinui, Honuaula, and Kula <i>Moku</i> ; <i>lit.</i> , “stone dividing land” (Ulukau 2006) |
| <b>Puakea</b>          | <i>Ahupua‘a</i> , <i>‘ili ‘āina</i> , stream and gulch in Ko‘olau; <i>lit.</i> , “white blossom” (Ulukau 2006)   |
| <b>Pueo</b>            | Hilltop on west rim of Ke‘anae Valley; <i>lit.</i> , “owl” (Soehren 1963:194)  |
| <b>Pu‘u‘alaea</b>      | Peak in Wailua on Halakalā Crater; <i>lit.</i> , “red ochrous hill” (p. 195)   |
| <b>Pu‘u o Koholā</b>   | <i>Heiau</i> located in Honomanū; <i>lit.</i> , “hill of the whale” (Ulukau 2006)  |
| <b>Pu‘u Olu</b>        | Fishpond at southern end of Pauwalu Point; <i>lit.</i> , “restful place” (Soehren 1963:194)  |
| <b>‘Ula‘ino</b>        | Land section near Hāna, Maui. <i>lit.</i> “stormy red”   |
| <b>Wai‘aka</b>         | Pond; <i>lit.</i> , “reflection water” or “shadowy water” (p. 219)   |
| <b>Waiakamoi</b>       | Watershed in Ke‘anae; <i>lit.</i> , “water by the threadfish” (p. 219)   |
| <b>Waianu</b>          | <i>Ahupua‘a</i> between Ke‘anae and Wailuanui Streams; <i>lit.</i> , “cold water” (p. 221)   |
| <b>Waia‘ōlohe</b>      | Pond located within Ke‘anae Stream; <i>lit.</i> , “water of, or used by, ‘ōlohe” where ‘ōlohe means bare, naked, or hairless (Pukui and Elbert 1986:285; Ulukau 2006)  |
| <b>Wai‘āpuka</b>       | <i>‘Ili ‘āina</i> in Ke‘anae; <i>lit.</i> , “water coming out” (p. 221)  |
| <b>Wai‘eli</b>         | <i>‘Ili ‘āina</i> in Wailua; <i>lit.</i> , “dug water” (p. 221)  |
| <b>Waikamilo</b>       | Stream in Wailuanui; <i>lit.</i> , “water of the <i>milo</i> tree” (Soehren 1963:194)  |
| <b>Waikamoi</b>        | Land division, stream, and ridge trail; <i>lit.</i> , “water of the <i>mo‘i</i> taro” (p. 222)   |
| <b>Wailua</b>          | <i>Ahupua‘a</i> and <i>‘ili ‘āina</i> ; <i>lit.</i> , “two waters” (Soehren 1963:194)  |
| <b>Wailuaiki</b>       | Stream and land division in Wailua; <i>lit.</i> , “small two-waters” (p. 224)  |

| Name             | Translation/Association   |
|------------------|---|
| <b>Wailuanui</b> | <i>'Ili 'āina</i> in Wailua: <i>lit.</i> , “large two-waters” (p. 225)                                    |
| <b>Waiokilo</b>  | Waterfall at base of Waiokamilo Stream in Wailuanui; <i>lit.</i> , “landmark water” (Soehren 1963:194)    |
| <b>Waiokukui</b> | Waterfall on Waiokamilo Stream; <i>lit.</i> , “water of the candlenut tree” (Soehren 1963:194)            |
| <b>Waiokuna</b>  | Waterfall on Palauhulu Stream; <i>lit.</i> , “water of <i>kuna</i> (a freshwater eel)” (Soehren 1963:194) |

Beckwith (1970:65) further describes the site of this famous watershed in Keʻanae:

Two holes are pointed out just below the road across Ohia gulch beyond Keanae on Maui where Kane dug his spear first into one hole and then into the other with the words, "This is for you, that for me." The water gushing from these apertures is called "the water of Kane and Kanaloa. (Beckwith 1970:65)

According to the historian Samuel Kamakau, cited in Maly and Maly (2001), god-associated accounts in the lands of Pāpaʻaʻea, ʻO-opuʻola and Keʻanae centered around the god Kāne. Kāne's attributes also included *ka wai ola* – the waters of life, *kalo* [irrigated taro], sunlight, and a manifestation of thunder and lightning. These associations lend themselves to this wet, windswept, and sometimes stormy side of Maui. Kāne's attributes named Kānehekili, Kanewawahilani, Kahoalii, Kauilanuimakehaikalani, among many other gods belonging to the upper and lower strata of the firmament were called "gods of the heavens." The first *kahu* who observed the *kapus* [taboos] of these gods was named Hekili (Thunder). He lived at Pāpaʻaʻea, where he was born in a place where thunder claps very loudly, with double claps, and where flashes of lightning smashed to pieces the forest of ʻO-opuʻola (found between Hāmākua Loa and Koʻolau Moku) (Maly and Maly 2001:13).

According to Martha Beckwith (1970) Kāne-hekili was the god worshipped by those who claimed an *aumakua* (family spirit) in the thunder. In the forest uplands within the proximity of the *heiau* "Pakanaloa," erected back of Keʻanae at a place where violent thunderstorms occur, thunder being the divine form of the god Kāne-hekili. This god was said to have been seen in his human form as having one side of his body black and the other side white. Kahekili, the last ruling chief of Maui, was tattooed black on one entire side of his body (termed *pahupū*, *lit.* 'cut in half') to show he belonged to the family of the thunder god (Kirch 2012:248; Maly and Maly 2001:13).

The stream heads in many of the deep valleys in the region also hold a special significance as sacred spaces in Hawaiian traditions. The region of Waikamoi in the uppermost [*mauka*] portions of Kalialianui Ahupuaʻa and Honomanū Ahupuaʻa, within the Piʻinaʻau Stream valley situated *mauka* of Keʻanae, are lands that represent some of the most significant native forest resources remaining in the Hawaiian Islands. These forests are part of a unique cultural landscape, in that the native flora, fauna, mist, rains, water, natural phenomena and resources, were all believed to be *kinolau* (the myriad body-forms) of gods, goddesses, and lesser nature spirits of Hawaiian antiquity (Maly and Maly 2001:ii). The reluctance of the *makaʻāinana* (commoners) to venture into these inland sacred spaces is further documented in Honomanū. J.C. Elliott in Sterling (1998:109) provides an account of a *kapu* (taboo) surrounding Honomanū Valley:

I have heard from various sources that there are a lot of burials in the upper part of this Valley and there still seems to be a certain amount of superstition attached to the place; I am told that quite a number of people do not like to be in the Valley after dark, and that the [spirits of] aliʻi are said to walk there at such times. (Sterling 1998:109)

The deep valleys of East Maui are not the only geographic spaces with gods and spirits residing within them. Many common features of the landscape such as caves, hills, gulches, and streams are also known to have legendary associations. Another tale tells of a famous shark of



Ko'olau called Hi'u (the tail of a fish) (Sterling 1998:109). In *On the Hana Coast*, Youngblood et al. (1983:92) relates the tale:

According to this story, two families in the area used to exchange food, a common practice, the couple living seaside at Ke'anae giving fish and the couple living upland giving garden produce.

One day the woman from the shore gave her sister-in-law on the hillside nothing but a fishtail in exchange for bananas and sweet potatoes. The woman took the fishtail home in her calabash, saying nothing about the scanty trade.

That night both she and her husband dreamed of a shark, and when they woke up in the morning they found a live shark swimming around in the calabash, where only a tail had been the night before.

The excited couple freed the shark in an upland pool and made offerings to it. During a heavy rain, the shark was washed down to the ocean, where...it lives to this day in an underground cave near Ke'anae wharf. (Youngblood et al. 1983:92)

### Trails and Access

The initial occupation of this portion of Maui first occurred along the coastal region about AD 1200 (A. E. Haun et al. 2004). Of great importance to the reign of Pi'ilani, and to his subjects, was the creation of a network of roads extending throughout Maui. Each road was laboriously constructed of hand-fitted, adze-trimmed, basalt blocks laid in a mosaic to form paths four to six feet wide. One of these roads extended approximately 60 miles and connected Wailuku with Hāna. Around AD 1480, Pi'ilani's son, Kiha-a-Pi'ilani, had the road extended beyond Hāna: through the Kaupō Gap and across the Haleakalā Crater (Duensing 2005).

According to Fornander, Pi'ilani's son, Kiha-a-Pi'ilani, upon becoming *mo'i* of Maui, devoted himself to the improvement of his island:

*Kihapiilani* who thus forcibly succeeded his brother as *Moi* of Maui, had been brought up by his mother's relatives in the court of *Kukaniloko* of Oahu ... Having, as before related, through the assistance of his brother-in-law *Umi* obtained the sovereignty, he devoted himself to the improvement of his island. He kept peace and order in the country, encouraged agriculture, and improved and caused to be paved the difficult and often dangerous roads over the Palis of Kaupo, Hana, and Koolau – a stupendous work for those times, the remains of which may still be seen in many places, and are pointed out as the “Kipapa” of *Kihapiilani*. His reign was eminently peaceful and prosperous, and his name has been reverently and affectionately handed down to posterity

*Kihapiilani* had two wives – *Kumaka*, who was of the Hana chief families, and a sister of *Kahuakole*, a chief at Kawaipapa, in Hana. With her he had a son named *Kamalalawalu*, who succeeded him as *Moi* of Maui. *Koleamoku*, who was the daughter of *Hoolae*, the Hana chief at Kauwiki ... with her he had a son called *Kauhiokalani*, from whom the Kaupo chief families of Koo and Kaiuli descended. *Kamalalawalu* followed his father as *Moi* of Maui. He enjoyed a long and

proseperous reign until its close, when his sun set in blood and disaster (when Kahekili lost to Kamehameha I) (Fornander 1880:206-207).

A 1908 photograph depicts an unknown portion of the *alaloa* (long trail) in East Maui, paved with sub-angular and rounded basalt stone as it meanders through thick vegetation (Figure 13).

This *alaloa* was studied and described by anthropologist Martha Foss Fleming as follows:

...the method of building this paved roadway consisted of a line of men standing from the sea and handing stones one to the other until they reached the required place. Here the stones were placed into position. The trail was paved with flat, hard beach stones. (Fleming 1933:5)

Sections of the trail remained at Ka'elekū and between Wailua and Ke'anae in the 1930s (Fleming 1933:5). At the turn of the century, in the early 1900s, portions of the trail remained usable between Nāhiku, Kailua and Halehaku (Dodge 1916:347).

Maly and Maly (2001:398) further note that in addition to *alaehele* (trails) and *alaloa* that extend generally parallel to the shoreline, there were also trails that connected the near shore areas with the uplands in each *ahupua'a*. In this fashion the *ahupua'a* and *moku* were connected to each other, while also containing roads that enabled access to the *'ili*, *lele*, and other constituent small-scale land divisions within the individual *ahupua'a*.

#### Agriculture and Habitation

Evidence of cultivation in Ko'olau starts as far west as O'opuola Gulch that marks the traditional boundary between Ko'olau and Hāmākua Loa Moku. Sterling (1998:108) references Handy's description of the gulch who's "stream, and likewise Waikamoi, Puohokamoa, and Ha'ipua'ena streams watered small patches." A little further to the east the valley of Honomanū affords yet more evidence of stream cultivation. Honomanū Valley is best characterized as a large stream with a broad deep valley and a good beach for fishing canoes. In ancient times, Honomanū was said to have supported a sizable population. Terrace walls attesting to this were observed by Handy et al. (1991:498):

...as far as the level land goes – a little less than a mile. Above the valley, on elevated flatlands, there used to be some terraces and houses. These upland slopes were doubtless planted with all the plants that flourish where there is much rain, but they were too wet for sweet potatoes. (Handy et al. 1991:498)

Sterling (1998:110) further cites Handy regarding the attributes of pre-Contact Honomanū Valley that made it suitable for such habitation:

This valley anciently supported a large population, having a fishing bay of first rank, and a deep, flat valley bottom watered by a large stream. Only one family still raises taro in the old patches near the sea, but abandoned terraces extends up into the valley. [(Handy in Sterling 1998:110)

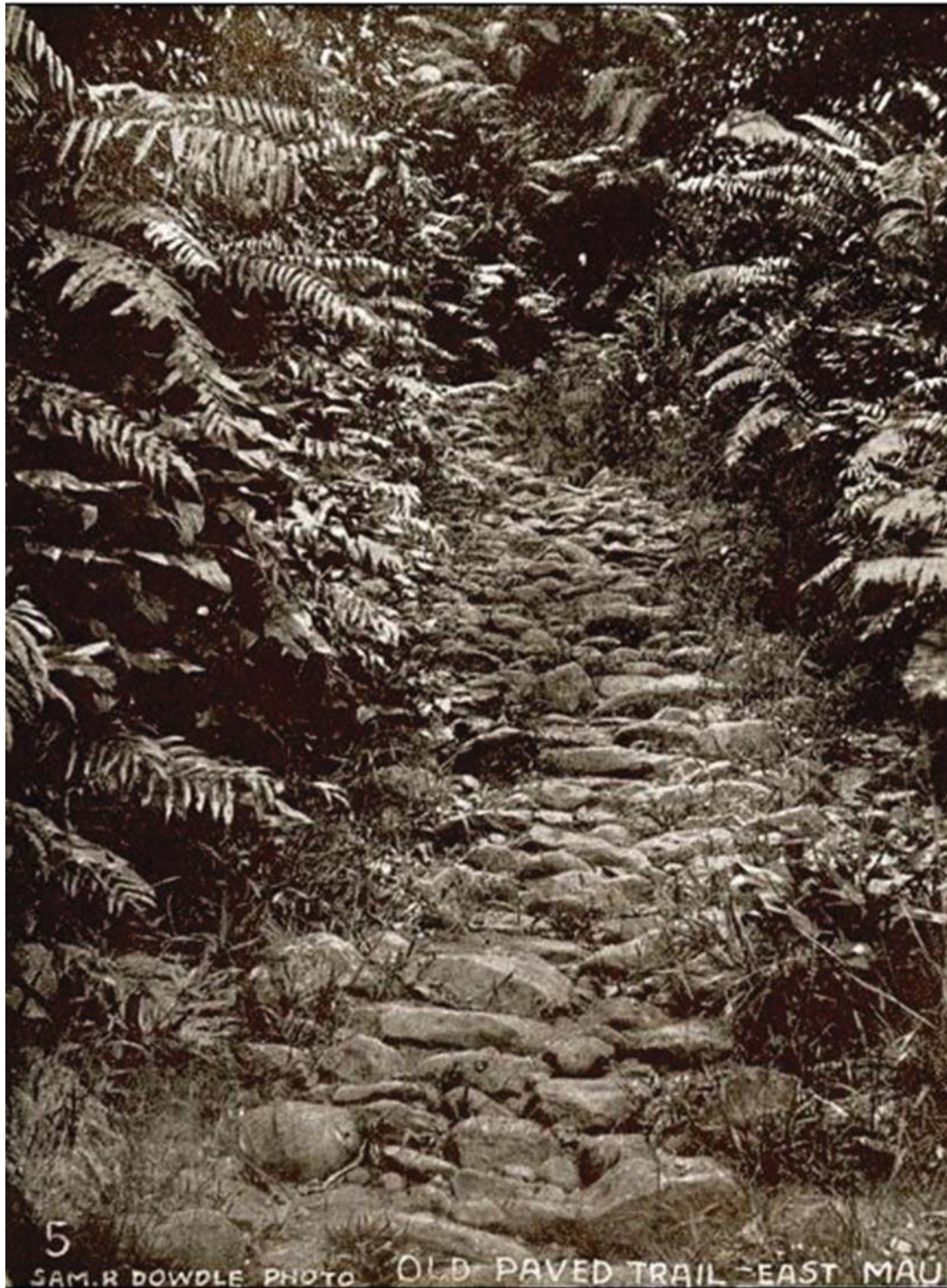


Figure 13.1908 photograph by Sam Dowdle of a section of the Pi'ilani Alaloa, the King's Highway, as it appeared in East Maui



Additional testament to the productivity of the region comes from neighboring Nuuailua Stream to the East, where “This smaller, flat-bottomed valley between Honomanū and Ke‘anae, now uninhabited, was formerly the site of a settled community which raised wet taro in terraces” (Handy in Sterling 1998:111). Continuing east of Nuuailua Stream, the region of Ke‘anae offers abundant evidence of traditional Hawaiian subsistence activities.

The accepted pre-Contact settlement pattern for the region of Ke‘anae and Wailua Nui centers on the series of occupational episodes that utilized the Pālauhulu Stream for taro (*Colocasia esculenta*) cultivation. A cultural landscape study (Group 70 International et al. 1995) recorded the intensive use of the Ke‘anae and Wailua Nui region for taro, identified three separate field systems, and noted the processes by which community cooperation led to the field system operation. Studies of the history of land use indicate that flat and terraced lands within Ko‘olau Moku were intensively and continuously used for wetland taro cultivation or *lo‘i* agriculture from the pre-Contact era up until the present day (Group 70 International et al. 1995; Handy et al. 1991). In regards to development in pre-Contact times Handy (1940:109-110) states:

In the extensive confines of Keanae Valley...the old Hawaiians planted a great deal of dry- or forest-land taro; but it was only in the lower part of the valley, on the eastern side, that wet patches were developed, although a vast area in the remainder of the valley might have been capable of such development...It is on the broad flat peninsula of lava that extends for nearly a mile into the sea from the western line of the valley, that Keanae’s famed taro patches are spread out in striking evidence of old Hawaii’s ingenuity. (Handy 1940:109-110)

According to traditional accounts this valley was made suitable for agriculture by the hands of Hawaiians in service of their chief, providing testament to long-term habitation planning in pre-Contact times. Handy (1940:110) relates the tale:

Anciently, according to Henry Ikoa, the peninsula was barren lava. But a chief, whos name is not remembered, was constantly at war with the people of Wailua and determined that he must have more good land under cultivation, more food, and more people. So he set all his people to work (they were then living within the valley and going down to the peninsula only for fishing), carrying soil in baskets from the valley down to the lava point. The soil and the banks enclosing the patches were thus, in the course of many years, all transplanted and packed into place. Thus did the watered flats of Keanae originate. [(Handy 1940:110)

It seems that the expansion into the valley floor may have been prompted by population pressure, hence the chief’s desire to increase food yields and insulate against the periodic famine common to Maui and Hawai‘i Island cultivation. Evidence of these famine cycles are seen in Honomanū Valley in the form of a *ka imu ki*, or *tī* leaf oven, used during times of shortage to render grated *tī* root into an edible famine food (Handy 1940:206).

From Ke‘anae to Hāna evidence of Hawaiian cultivation and habitation have been noted extensively. According to Kirch (1996:72) the geologically younger region of East Maui was once densely populated. The fertile volcanic soils in the region of Hāna included extensive tracts of dryland sweet potato (*Ipomoea batatas*) augmented by dryland taro, yams (*Dioscorea* spp.), sugar cane (*Saccharum officinarum*), and breadfruit (*Artocarpus altilis*). Irrigated taro was

raised in *lo 'i* [fields] in the narrow valleys. In the period of time prior to contact with the West, the irrigated taro fields of the Ke'anae Peninsula, the *heiau* at Wai'anapanapa, and the Pi'ilanihale Heiau were each major edifices physically attesting to the importance of the district of Hāna (Kirch 1996:69-71).

Additional evidence of habitation within Ke'anae comes from the presence of a derelict fishpond, Pu'u Olu Pond, situated just off of Pauwalu Point (Handy 1940:208). In addition to the pond there is also a habitation site closely associated with it, as the terrace comprising the platform of the residence is within a few feet of the Pu'u Olu Pond (Handy 1940:209). This residence shares a boundary wall with the pond and commands a view of a nearby natural arch beneath Pauwalu Point. A second platform, designated as a foundation for another thatch house, was observed on a slope of Paepaemoana Point. This foundation had its inner area paved with rough cobbles, with the exception of a smaller area delineated with larger stones containing finer internal paving between them (Handy 1940:210). It seems likely that the difference in paving within the inner areas reflect different spatial uses of the foundation.

East of Ke'anae are the terraced areas of Wailua, ranging between the boundaries of Wailua Nui and Wailua Iki. Handy (1940:110) noted that:

Wailua-nui has even more extensive terracing than Keanae, sloping seaward from the base of the cliff around which the road winds. About half of the terraces are still cultivated by Hawaiians. On the whole, Wailua is today richer agriculturally than Keanae. Wailua-iki, Waiohue, and Hanawai Streams supported small terraces on diminutive flats near the sea. (Handy 1940:110)

The agricultural development of this region is further attested to by the presence of at least four *heiau*. Two of these ceremonial structures, Heiau of 'Ōhi'a (Walker Site 94) and Kaluanui Heiau (Walker Site 95), were identified within a third of a mile from the sea and were designated as agricultural in their associations and uses (Walker 1931b:169-170).

The last of the intensified cultivation and habitation areas on East Maui before reaching Hāna is the Nāhiku region. This land area encompassed the *ahupua'a* from Kaliae to 'Ula'ino and their accompanying watersheds. According to Handy et al. (1991), Nāhiku was a fertile *ahupua'a*, which was cleared and terraced with irrigated taro cultivated in the tradition of Native Hawaiians. In ancient times, the settlement at Nāhiku spread over gently rising ground above the shore with a number of groups of *lo 'i* watered from Makapīpī Stream (Handy et al. 1991:501). Along the shore, there was a *hala* forest that extended from 'Ula'ino to Hāna (Wenkam 1970). The region above Nāhiku was traditionally forested with native trees such as *koa*, *'ōhia lehua*, and sandalwood. In regards to the Nāhiku region, Handy (1940:175) states:

Nahiku has a number of terraces, some still under cultivation, below the village. The people of this genuinely Hawaiian community also cultivate dry taro patches about their houses.

Throughout wet Koolau, the wild taro growing along the streams and in the pockets high on the canyonlike walls of the gulches bespeaks former planting of stream taro along the watercourses, on the sides of the gulches, and in the forest above. The same is true of the wild taros seen here and there in the present forest



above the road and in protected spots on what was formerly low forest land, now used as pasture. (Handy 1940:175)

These lands represent the last significantly sized portion of agricultural land before reaching Hāna Moku. The area between the two was sparsely populated, but evidence of cultivation on a smaller scale exists in this area as well. According to Handy (1940:111):

From Ulaino to Hana extends a *hala* forest, growing upon recent lava flows which cover the coast from Ulaino to Hana Bay. At Ulaino and Honomaele there are a number of places where dry taro is still planted by Hawaiians together with other small subsistence plantings. Formerly there was scattered planting all along the coast and forest plantations inland, between Ulaino and Nahiku, which are connected by an old trail crossing the lowlands near the coastline. (Handy 1940:111)

Thus, even the regions considered too arid for *lo'i* cultivation still supported sporadic small scale cultivation of subsistence crops by isolated families. By looking at the spatial associations of cultivation, habitation and access to sites of significance to traditional Hawaiians (i.e., access trails, fish ponds, and *heiau*) a clear pattern of intensive, predominantly coastal, occupation is seen throughout the lands of Hāmākua Loa and Ko'olau Moku.

#### Heiau

A *heiau* was a large ceremonial structure accompanying most larger pre-Contact Hawaiian settlements. The name literally means “place of worship” (Pukui et al. 1974:44). The *heiau* structure was an architectural feature as well as social institution of Hawaiian society and like many social institutions has served several functions over time. How *heiau* were used depended largely on the communities they served, the times during which they were actively built and used, and the types of subsistence practiced by the Hawaiians who used them. In *On the Road of the Winds*, Kirch (2000:290,295) cites water availability and ecosystems as two significant primary factors affecting the development of *heiau* use:

The older islands of Kaua'i, O'ahu, Moloka'i, along with the western half of Maui, display deeply weathered and dissected landforms, with valleys and permanent streams well suited to irrigate terrace agriculture... In striking contrast, geologically younger East Maui and Hawai'i - while they account for 74 percent of the total land area - mostly lack permanent streams and have large tracts of young lava flows. (Kirch 2000:290)

Kirch (2000:295) stresses the relationship of these ecosystem characteristics to political and social organization in the archipelago through the production of agricultural surplus:

Irrigation works in the western isles, and dryland field systems in the eastern group, both constitute forms of landesque [*sic*] capital intensification, but with rather different socioeconomic outcomes. . . With irrigation, higher yields could be produced per unit of labor and greater surpluses could be extracted by the chiefs. In the dryland regions, greater labor inputs were required and the limits of intensification were more quickly approached, making the extraction of a surplus that could be put to political use more contentious.

Two contrastive pathways to political (and ideological) transformation emerged. The chiefly elite of the western islands invested heavily in irrigation works, while their religious system emphasized Kane, god of flowing water and procreation. On Maui and Hawai‘i Island, in contrast, the chiefs exercised a cycle of territorial conquest, promulgating a legitimating ideology based on the cult of Ku, a human sacrifice demanding god of war, who seasonally alternated with Lono, god of rain and thunder. (Kirch 2000:295)

By depending on naturally existing streams for the creation of their agricultural surplus, how dry or wet an island was had a strong influence on scarcity and ultimately the stability of the local chiefdoms. This, in turn, had an effect regarding which god or godly attribute was worshipped and honored at the *heiau* sites. This is reflected in the Makahiki religious cycles of Maui and Hawai‘i Islands, where the war god (Kū) reigns for the eight driest months of the year, yielding to the agricultural god (Lono) of thunder and rain for the remaining four-month long wet season of cultivation (Kirch 2012:251-254). Since Hawaiian chiefdoms were dependent on the production of a surplus to support a non-laboring class such as the *ali‘i*, in the event of the loss of “the continued ability of a system to yield sufficient surplus, chiefly power was undermined. When such conditions did arise...a considerable struggle for power ensued” (Kirch 2000:323). In this manner, the limitations of the dryland agricultural systems of the eastern archipelago helped to develop a strong tradition of war and contention mingling with seasonal periods of ceremonial peace. Reflecting these cycles, *heiau* were constructed for both agricultural and political purposes, both of which were important to the peoples of the drier eastern islands.

Being a younger island with fewer perennial watersheds, Maui was steeped in many struggles between warring chiefs before the archipelago was ultimately unified under Kamehameha I, the last of the invading chiefs from Hawai‘i Island. Thus many *heiau* were built upon the island of Maui along its northeastern shore, a route routinely used by both Hawai‘i and Maui Island armies in their long struggle to gain control the wet Hāna region of East Maui, one of the wettest and most productive regions between the two islands. In this respect, *heiau* were a necessary institution to legitimize the rule of any reigning or conquering chief. In *A Shark Going Inland is My Chief*, Kirch (2012:229) elaborates:

New systems of ideas and beliefs—such as those of kings as divine beings—get actively reinforced through the use of ritual symbols...especially in ritualized public displays... The increasingly elaborate *heiau* rituals, carried out by full time priests on the impressive stone platforms, served to reinforce further the power and prestige of the chiefs and king. (Kirch 2012:229)]

Despite this observation, *heiau* were not only intended for the use of chiefs and kings in establishing their legitimacy. Kamakau in Kirch (2012:213) tells us that “Heiaus were not all alike; they were made of different kinds according to the purpose for which they were made.” Among these alternate types are the smaller coastal enclosures serving as *ko‘a* (shrine) for fishermen, the *heiau ho‘o‘ulu‘ai* located further inland for assuring crop fertility, and longer and later-built double court *heiau* which were usually much larger constructions with an elongated terrace overlooking a second lower-level terrace (Kirch 2012:213).

One of the earliest systematic studies of Native Hawaiian architecture was conducted by Winslow Metcalf Walker on Maui in the years between 1928 and 1929. In this study Walker compiled and expanded upon the earlier work of Thomas G. Thrum (1909b) and J.F.G. Stokes (1916), in addition to completing a survey of Maui Island for the Bernice P. Bishop Museum (Walker 1931b). By the time that Walker conducted his survey, many of the *heiau* sites previously observed on East Maui had been reduced in number from 182 to 134, citing that many structures had been destroyed by the cultivation of sugarcane and pineapple (Walker 1931b:97). In *Archaeology of Maui*, Walker (1931b:97-98) details novelties of the *heiau* he observed:

No two of them are built according to the same plan, but the general appearance of many is similar. The *heiau* are all quite simple in construction, native rock from the vicinity are used without any attempt at cutting or facing. Platforms are built by extending the natural level of some hill or eminence of ground and thus producing a solid rock filled platform with a sheer or terraced front. (Walker 1931b:97-98)

The largest of these terraced *heiau*, Pi'ilanihale (Walker Site 102) located in Hāna, is the largest in the state and is built over a large bluff, contributing to its massive 15 m profile (Walker 1931b).

About AD 1450, Pi'ilanihale was built at Honomā'ele near Hāna. The name of the structure translates to "Home of Pi'ilani" and likely refers to the *heiau* as the royal residence of the Pi'ilani Family, a long and storied dynasty of Maui chiefs from the sixteenth century (Sterling 1998:123). In *Sites of Maui*, Sterling (1998:123) cites a Walker (1931) plan view map (Figure 14) and his description of the impressive structure:

It is a stone platform 340 x 415 feet terraced in several steps on the north and east sides. The north slope is the highest seen anywhere, five step terraces built up to a height of 50 feet from the bottom of the hill. The south and west sides are enclosed by a great wall 10 feet high and 8 to 10 feet thick. . . The only structures found [on top] were the low walls indicated in the plan...The top appeared to be entirely paved with small pebbles and chunks of lava. A few pieces of coral were found. A house site is located just beyond the west wall, and the ruins of other structures in the cane fields below indicate all that is left of a former village. (Sterling 1998:123)

Due to its striking features and large scale Pi'ilanihale is currently preserved within the Kahanu Garden pandanus forest in Hāna.

Of the 230 structures that Walker (1931) surveyed on Maui, 39 of the recorded *heiau* (Walker Sites 64 through 102) were documented near the License Area and are depicted in Figure 15 and listed in Table 3. At the time of his writing, Walker (1931) identified 20 of the 39 *heiau* within the combined Hāna and Makawao Districts, leaving 19 of the *heiau* as either unidentified or presumed destroyed.

Within the modern Makawao District, containing the traditional *moku* of Hāmākua Loa, ten *heiau* were identified. Six of the ten identified structures (Walker Sites 64, 67, 68, 74, 77, and 78) were observed to be largely intact, of a generally larger size than those located east toward

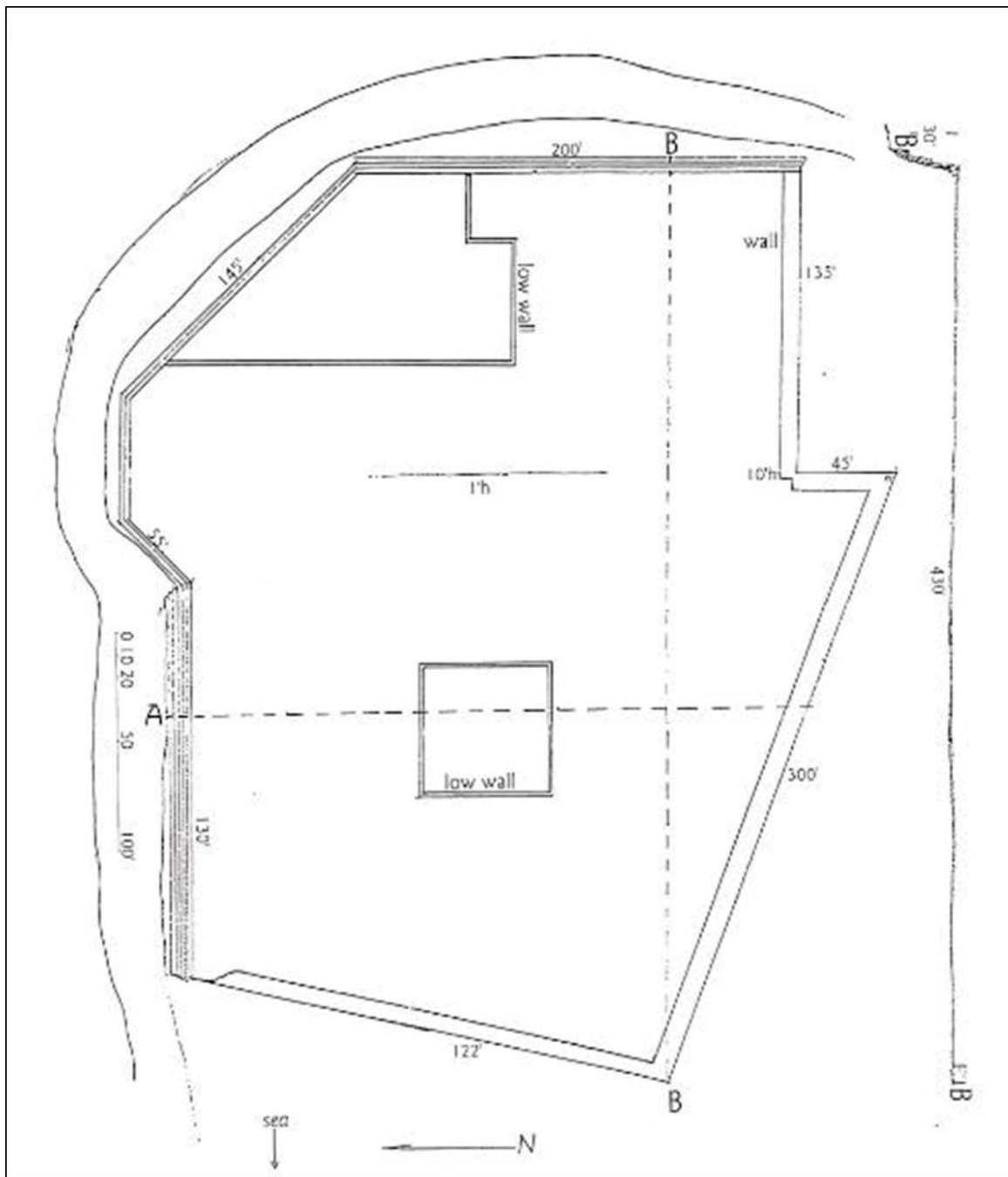


Figure 14. Walker (1931) plan view map of Pi'ilanihale Heiau, reprint from Sterling (1998:123)



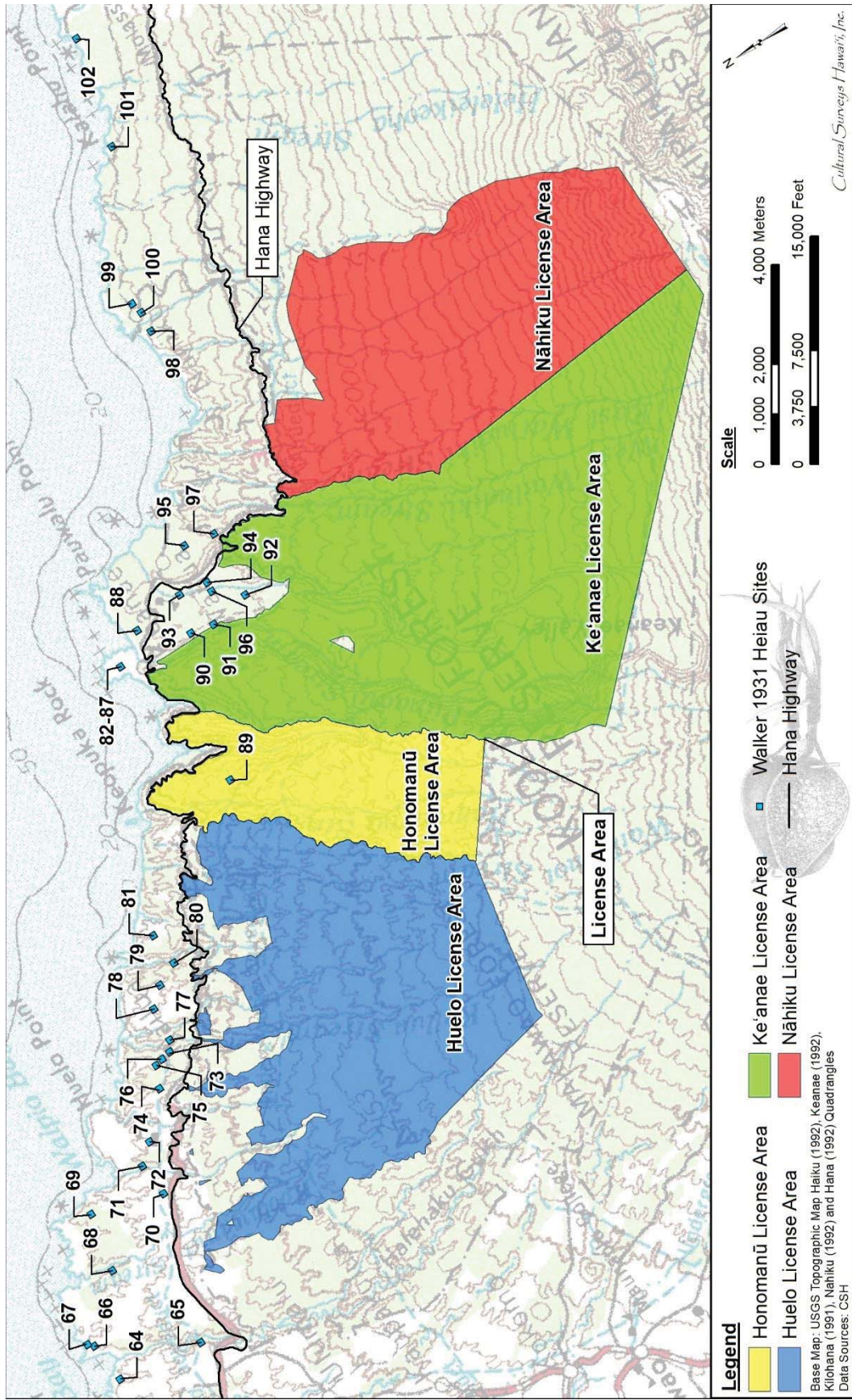


Figure 15. Portions of the 1992a Haiku, 1992c Keanae, 1991 Kilohana, 1992d Nahiku, and 1992b Hana U.S. Geological Survey 7.5-minute topographic quadrangle series showing Walker *heiau* sites 64 through 102 with overlay of project License Areas

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System),

Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various



Table 3. Walker Heiau Sites Located Near the License Area, as Documented in Sterling (1998)

| Walker Site No. | Name              | Ahupua'a | District | Adjacent Watershed | Description per Walker (1931b)  |
|-----------------|-------------------|----------|----------|--------------------|---|
| 64              | Mokahio           | --       | --       | --                 | Irregular <i>heiau</i> , terraced on several sides; walls and terrace facings measure 130-x-60-x-35-x-50-x-20-x-50-x-55 ft; greatest distance front to back - 85 ft; constructed of water-worn stones and pebbles; interior disturbed; outline follows hill contour; on top of a small knoll within a gulch a quarter mile from the sea (p. 102)  |
| 65              | Kaapahu at Kakipi | --       | --       | --                 | Destroyed   |
| 66              | Unknown           | --       | --       | --                 | Moderately sized <i>heiau</i> ; north side measures 128 ft, east side 120 ft; 68 ft from northeast corner a wall divides the <i>heiau</i> in two; back wall measures 115 ft; front wall facing is 4 ft high; north and west sides terraced in two to three steps; no coral or pebbles seen; partly destroyed to plant pineapples; on a bluff above Halehaku Bay, 50 yd. from the sea (p. 103) |
| 67              | Piilani           | --       | --       | --                 | Massive beach rock <i>heiau</i> ; 10 ft high, 60 ft wide; 2 ft terrace forms rear wall against hill; terraced on front; oriented parallel to the shore for 150 ft; interior once paved, now heavily overgrown; no coral found; numerous enclosures at hill base indicating a past village site; on shore of Halehaku Bay, 50 yd. from the sea (p. 103)  |

| Walker Site No. | Name                | Ahupua'a  | District | Adjacent Watershed | Description per Walker (1931b)  |
|-----------------|---------------------|-----------|----------|--------------------|---|
| 68              | Poohoolewa Heiau    | Honopou   | Makawao  | Ho'olawa           | Large walled <i>heiau</i> , possibly sacrificial class; 300 ft long, 130 ft wide at front; large 200 ft open court off front wall; remaining 100 ft divided into two 50 ft enclosures with walls 5 ft high and 6 ft thick; constructed of beach stones, pebbles, and basalt; western side collapsed to permit planting of pineapples; At Apiapi on high bluff beyond Honopou Gulch to the east (p. 105) |
| 69              | Puuokaupu Heiau     | Honopou   | Makawao  | Ho'olawa           | Destroyed   |
| 70              | Mokupapaaku a Heiau | Honopou   | Makawao  | Mokupapa Gulch     | Destroyed   |
| 71              | Oanapele Heiau      | Waipioiki | Makawao  | Waipio             | Measures 60-x-100 ft, has terraced face 10 ft high; structure was demolished to provide stone for the road; at Pu'uoneone, 200 ft north of school and main road (p. 105)  |
| 72              | Puuokalepa Heiau    | Waipionui | Makawao  | Waipionui          | Outline indicates 65-x-100 ft <i>heiau</i> ; front is faced 20 ft high against hillside; Stokes reports it as sacrificial class; 800 ft east of protestant church, atop small hill above steep unnamed gulch (p. 105)   |
| 73              | Kupaikaa Heiau      | Hanehoi   | Makawao  | Hanehoi            | Large <i>heiau</i> ; 48 ft high wall on east side, 94 ft high wall on north side; northwest corner 20 ft high, built of three terraces; partly washed out from irrigation ditch failure; Drums heard from this heiau; At Hinalekahi on hillside below Kailua ditch, west of Kailua Protestant Church (p. 105)   |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System),

Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

| Walker Site No. | Name                   | Ahupua'a      | District | Adjacent Watershed       | Description per Walker (1931b)   |
|-----------------|------------------------|---------------|----------|--------------------------|--|
| 74              | Pohakuokaia Heiau      | West Hanawana | Makawao  | Hanawana                 | Notched-shaped <i>heiau</i> ; measures 60-x-30-x-20-x-12-x-28-x-50 ft; basalt walls 3 ft high and 6 ft thick; constructed of beach stones, no coral or pebbles seen; at Hoalua, below church, on bluff near end of pineapple field (p. 106)  |
| 75              | Honomauloa at Hanawana | East Hanawana | Makawao  | Hanawana                 | Destroyed  |
| 76              | Halepaahau at Hanawana | Papa'a'ea     | Makawao  | Nā'ili'ilihale           | Destroyed  |
| 77              | Kaulihale Heiau        | Papa'a'ea     | Makawao  | Kailua                   | L-shaped <i>heiau</i> with walled enclosure; measures 200 ft long and 137 ft wide; two to three terraces on sides; northeast corner is triple terraced 10 feet high; 38-x-22 enclosure in northwest corner. Constructed of rough basalt, no coral or pebbles; at Moii in Pu'uomaile, mauka of road, opposite of store (p. 106) |
| 78              | Pohakuokane?           | West Makaia   | Makawao  | Nā'ili'ilihale and Puehu | Small notched-shaped <i>heiau</i> ; measures 66-x-36-x-32-x-6-x-32-x-36; walls are 4 to 6 ft thick and 5 ft high at corners; constructed of water worn basalt rocks; in dense <i>hau</i> thicket on ridge, east of Kailua Gulch, below road (p. 107)   |
| 79              | Halekanaloa at Papea   | West Makaia   | Makawao  | Puehu                    | Destroyed  |
| 80              | Kalaeohia at Papaeaiki | East Makaia   | Hāna     | O'opuola                 | Destroyed  |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System),

Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

| Walker Site No. | Name                              | Ahupua'a     | District | Adjacent Watershed      | Description per Walker (1931b)   |
|-----------------|-----------------------------------|--------------|----------|-------------------------|--|
| 81              | Nakeikiikalalo makaiwa at Makaiwa | East Makaiwa | Hāna     | Ka'aiea                 | Destroyed  |
| 82              | Kukuilono                         | Ke'anae      | Hāna     | Pi'ina'au               | Destroyed / not found; on point of Ke'anae peninsula (p. 109)  |
| 83              | Lalaola                           | --           | --       | --                      | Destroyed / not found; on point of Ke'anae peninsula (p. 109)  |
| 84              | Pakanalao                         | --           | --       | --                      | Destroyed / not found; said to have been a war <i>heiau</i> to Kanehekili; on upper slopes of Ke'anae peninsula (p. 109) |
| 85              | Lelewi at Ko'olau                 | --           | --       | --                      | Destroyed / not found  |
| 86              | Paliuli                           | --           | --       | --                      | Destroyed / not found  |
| 87              | Kanekaulono                       | --           | --       | --                      | Destroyed / not found  |
| 88              | Kamokukupeu                       | Ke'anae      | Hāna     | Ohia                    | Destroyed / not found  |
| 89              | Puu o Kohola at Honomanū          | Honomanū     | Hāna     | Punala'u                | Destroyed / not found  |
| 90              | Kawalimukala at Pauwahu           | Ke'anae      | Hāna     | Pi'ina'au/<br>Palauhulu | Destroyed / not found  |
| 91              | Kupau                             | Ke'anae      | Hāna     | Pi'ina'au/<br>Palauhulu | Destroyed; 84 ft terrace wall all that remains; above road in Ke'anae valley near ditch trail (p. 109)                   |
| 92              | Kualani                           | Ke'anae      | Hāna     | Waiokamilo              | Destroyed / not found; on top of west ridge, at Waiokane Falls (p. 109)  |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

| Walker Site No. | Name              | Ahupua'a  | District | Adjacent Watershed           | Description per Walker (1931b)   |
|-----------------|-------------------|-----------|----------|------------------------------|--|
| 93              | Kamilo Heiau      | Wailuanui | Hāna     | Waiokamilo                   | Small <i>heiau</i> enclosure; measures 22-x-25 ft walls, 3 ft high and 3 ft thick; constructed of basalt stones and some pebbles; at Kawaloa in dense <i>hau</i> and <i>puhala</i> grove, north side of stream (p. 112)  |
| 94              | Heiau of Ohia     | Wailuanui | Hāna     | Waiokamilo                   | Dimensions lost, stones removed to build pig pen; likely agricultural <i>heiau</i> , built by chief Kaimuki; at Ohia in the valley, 3/4 mi. from the sea (p. 113)  |
| 95              | Kaluanui Heiau    | Wailuanui | Hāna     | Wailuanui                    | Series of enclosures; measures 15-x-29 ft; south terrace is 11 ft wide; west wall is 6 ft wide and 4 ft high; higher terrace on one side; Stokes (1916) mentions oval pit in terrace pavement near southern end, measuring 6.5-x-4 ft and 2 ft deep; pit not present in 1931; at Kaluanui east of taro <i>lo</i> 'i, 1/3 mi. from the sea (p. 113)   |
| 96              | Kukuiaupuni Heiau | Wailuanui | Hāna     | Waiokamilo                   | Terraced platform; one platform measures 50-x-42 ft and 12 ft tall; second platform measures 47-x-51 ft and 5 ft tall; complex faces north by northwest; 200 ft open space between both terraces; on top of slope at Pauwalua, 300 ft south of road and 500 ft southwest of the school (p. 113)  |
| 97              | Makehau Heiau     | Wailuanui | Hāna     | Wailuanui and West Wailuaiki | Upper terrace outlines all that remains; measures 72-x-43 ft and is 5 ft high; waterworn stones and pebbles observed on platform surface; said to have once contained two platforms; eight coconut trees growing there were said to have been planted by Kaniho, last <i>kahu</i> of the <i>heiau</i> ; on level land at Makehau, 1/4 mi. from the Wailua road and 150 ft from the Makehau road (p. 113) |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System),

Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various



| Walker Site No. | Name              | Ahupua'a | District | Adjacent Watershed | Description per Walker (1931b)   |
|-----------------|-------------------|----------|----------|--------------------|--|
| 98              | Kaluakelea Heiau  | Ko'olau  | Hāna     | Makapīpī           | <i>Heiau</i> measuring 50-x-45 ft; three low terraces at northwest corner, 6 ft high; no coral or pebbles seen; partly destroyed by rubber plantation; at Honolulunui, on ridge west of Makapīpī Gulch (p. 114)  |
| 99              | Pohoula Heiau     | Ko'olau  | Hāna     | Kūhiwa Gulch       | Open platform <i>heiau</i> ; measures 72-x-72-x-65-x-64 ft; two terraces form top, the higher one measuring 36-x-25 ft, rising 1 ft above the lower; northeast corner is 8 ft high; east wall is 3 ft high and 4 ft thick; constructed of water-worn stones and pebbles, no coral seen; faces the sea; near Nāhiku village, on east side of Makapīpī Gulch (p. 114)  |
| 100             | Haleaka Heiau     | Ko'olau  | Hāna     | Kūhiwa Gulch       | Platform <i>heiau</i> ; 4 ft high in front, 6 ft high wall in back; northwest slope is double terraced; constructed of water worn stones; interior features trampled by cattle and pigs; located on a high hill; on east bank of Makapīpī Stream, 300 yards from the school (p. 115)   |
| 101             | Heiau at Lanikele | Ula'ino  | Hāna     | Heleleikeoha       | Walled <i>heiau</i> ; measures 116-x-90 ft; south and east walls are 6 to 8 ft high, and 12 ft thick; east wall is double terraced; gate on south wall is 8 ft wide, 4 ft high and 12 ft deep, low 2 ft wall closes the interior end; no interior structures noted, only a stone heap; outer terrace paved with pebbles, contained only scattered stone within; perched atop a high shoreline bluff, west of a canoe landing and trail up Lanikele Gulch; may have been a strategic fortification, though not corroborated (p.115-116) |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System),

Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

| Walker Site No. | Name              | Ahupua'a        | District | Adjacent Watershed | Description per Walker (1931b)   |
|-----------------|-------------------|-----------------|----------|--------------------|--|
| 102             | Piilanihale Heiau | West Honoma'ele | Hāna     | Honoma'ele Gulch   | Platform <i>heiau</i> ; platform measures 340-x-415 ft; several (up to 5) terraces make up the north and east sides, up to 50 ft high; south and east sides enclosed by wall 10 ft high, and 8 to 10 ft thick; paved with small pebbles and lava cobbles; no high internal walls or terraces; two low walls observed in northeast corner and center of platform; scattered coral pieces seen; internal features minimally mapped due to vegetation density; house site observed beyond west wall; evidence of remnant village in cane fields below structure; paved road leading up western slope of <i>heiau</i> , possible extension of the Alaloa (Kihapiilani Trail); Largest <i>heiau</i> on Maui and tallest in the archipelago; name means "Home of Piilani," indicating site as possible royal abode of the Piilani family of Maui chiefs, reigning in the 1500s; on a shoreline hill near Kalahu Point (p. 123) |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System),

Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

Hāna, and bore a few distinct features regarding the 'class' of *heiau* documented. Three of the six sites were considered large *heiau* as they each had at least two dimensions near or greater than 100 feet. One of these named Po'oho'olewa Heiau (Walker Site 68) was interpreted as a possible sacrificial *heiau* and had walled exterior dimensions of 300 by 100 ft, with an open court stretching out 200 ft from the structure (Sterling 1998:105). The other two large sites include the Pi'ilani Heiau (Walker Site 67) with its long beachfront terrace and remnant village foundations, and the L-shaped Kauhihale Heiau (Walker Site 77) several kilometers to the southeast (Sterling 1998:103,106). Another *heiau* of interest in this area was Pōhaku o Kāne (Stone of Kāne) Heiau.

Within the modern Hāna District, containing the traditional *moku* (districts) of Hāna and Ko'olau, 11 *heiau* were identified by Walker (1931). Five of the 11 *heiau* were observed to be largely intact, three of which (Walker Sites 93, 95, and 96) were located slightly inland of the coast and were smaller in that they measured less than 50 ft along any single dimension (Sterling 1998). The two remaining structures are of a significantly larger scale as they are roughly two to six times the size of the smaller *heiau*. One of these is the forementioned Pi'ilanihale Heiau (Walker Site 102) in Hāna. The second is the *heiau* at Lanikele (Walker Site 101) with high stacked walls and cobblestone paved exterior, thought by Walker (1931) to be a fortification due to its perch over a canoe landing 150 ft below it on the shoreline (Sterling 1998:115-116).

Many of the structures that Walker (1931) located within the Hāna and Makawao Districts were partially damaged from neglect, agriculture, civil projects, or some combination of the three. Modernity impacted the traditional ceremonial structures in a variety of ways. The *heiau* that were observed intact were largely overgrown and unkempt due to the passage of time and the neglect furnished upon them resulting from native Hawaiians abandoning the old *kapu* religious system with the arrival of missionaries to the Kingdom of Hawai'i in the 1800s. One example of this is Makehau Heiau (Walker Site 97) that was observed largely intact but partially collapsed (Sterling 1998:113). Many of the remaining structures that were either partially intact or missing altogether were unintentionally impacted by the advent of agriculture to the region during the historic period.

Kupaikaa Heiau (Walker Site 73) was partially washed down the hillside it sat upon when the irrigation ditch upslope failed and sent a torrent of agricultural water down the hillside (Sterling 1998:105-106). Haleaka Heiau (Walker Site 100) was largely trampled down into the soil from wandering cattle and pigs grazing in the region (Sterling 1998:115). Some *heiau* were destroyed intentionally, either for use of their materials or to make way for the development of agricultural pursuits. Kaluakilea Heiau (Walker Site 98) was intentionally destroyed while the Koolau Rubber Company was clearing fields for planting (Sterling 1998:114). Oanapele Heiau (Walker Site 71) was demolished in order to harvest its stone for the paving of local roads (Sterling 1998:105). The combined effect of neglect, the passage of time, and heavy handed agricultural clearing have been extremely detrimental to the longevity of most native Hawaiian architecture, and the state of East Maui's *heiau* stand as a physical testament to that damage. This can be further exemplified by the fact that 19 *heiau* could not be located and were assumed destroyed, comprising 48 percent of all known sites recorded between 1909 and 1931.

Of the 39 documented *heiau* sites, only one lies within the License Area. This *heiau* is named Pu'u o Koholā and was presumed to be located within the current Honomanū License Area.

According to Walker (1931), this site was not observed during his survey of Maui Island, thus not much can be said regarding its structure, size, or ceremonial purpose (Sterling 1998:109). Given the wetness of the tropical jungle, the high and steep cliffs of the region, and the propensity for devastating landslides, it is possible that the site of the temple could have been washed out. Another account of this rumored *heiau* comes from Inez Ashdown who places this *heiau* just south of Kaumahina Wayside Park along the *mauka* side of Hāna Highway just west of Honomanū. In *Ke Alaloe o Maui: The Broad Highway of Maui*, Ashdown (1971:54) states:

Where the Kaumahina park is now on land of that name, there stood a big temple and around it and its village grew an abundance of bananas, 'ohia-ai, rice and taro all in and around Punalu and above there to Kolea. Four streams above there form waterfalls over the cliffs and flow into Honomanu Bay. Nuailua stream does not reach far up the slope but it once watered large taro lands in olden times. [(Ashdown 1971:54)]

A portion of a U.S. Geological Survey (1992) map of the Ke'anae region (Figure 16) also confirms the same place-name of Pu'u o Kolohā belonging to a local *pu'u* (hill) located south of the Kaumahina Wayside Park in the approximate location that Ashdown (1971:54) describes. Here again we see a *heiau* situated atop a very high promontory near rushing waters typically harnessed for the community that would have resided near such a ceremonial structure. Whether this site was washed down the hill from erosion caused by the nearby falls, was reclaimed by the jungle, or was impacted during the construction of the park remains uncertain. As later adventurers, businessmen, and homesteaders would discover during the ensuing historic period, the high cliffs and jungles of East Maui can hide many difficulties for the would-be explorer.



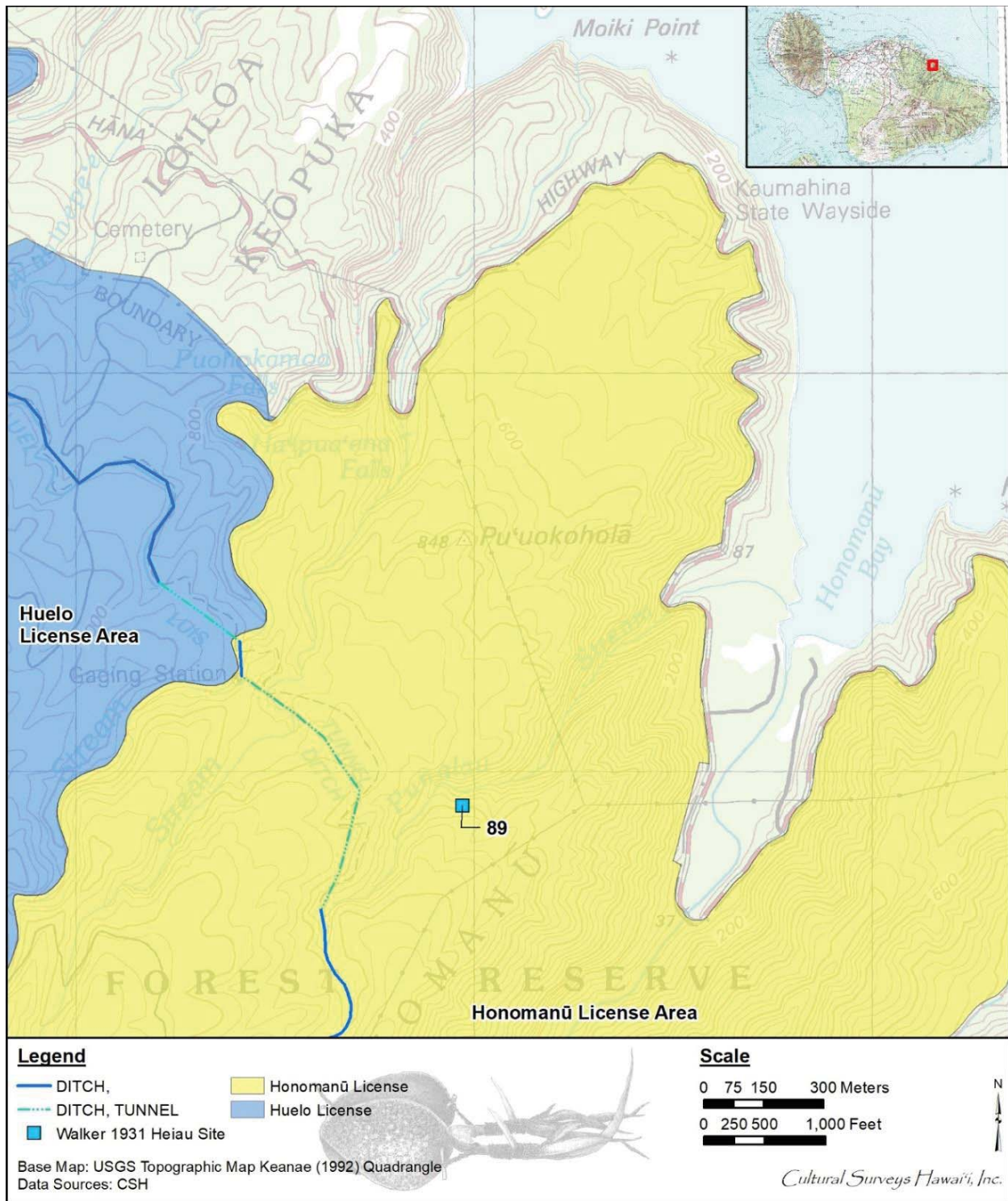


Figure 16. Portion of the 1992 Keanae U.S. Geological Survey 7.5-minute topographic quadrangle series showing the approximate location of Pu'u o Koholā heiau (Walker Site 89), roughly corresponding to the location of Ashdown's unnamed heiau near Kaumahina Wayside Park



## 4.2 Historic Background of East Maui

### 4.2.1 Early Historic Period (1778 to Mid-1800s)

With regard to political influence and the course of Hawaiian history, it has been noted that there may have been some rivalry within Ko'olau Moku between the *ahupua'a* of Ke'anae and neighboring Wailuanui. This rivalry, however, would give way to larger political battles concerning the rule of Maui Island and the line of succession between the sons of Pi'ilani (Kamakau 1992:22-29), and later, the consolidation of power and unification of the Hawaiian Islands under Kamehameha (Group 70 International, Inc. et al. 1995).

Chief Pi'ilani united all of Maui under his rule during the sixteenth or seventeenth century. Pi'ilani's sons Lonopi'ilani and Kiha-a-Pi'ilani fought for control of Maui. Kiha-a-Pi'ilani eventually took refuge at Hāna. While in Hāna, Kiha-a-Pi'ilani took as his wife Koleamoku, who had been betrothed to Lonopi'ilani, which again put the two brothers to warring. Kiha-a-Pi'ilani and his wife Koleamoku fled to Hawai'i Island to enlist the aid of Umi. Umi was married to Pi'ikea, the daughter of Pi'ilani (sister of Lonopi'ilani and Kiha-a-Pi'ilani), a marriage that had formerly brought peace between the islands of Hawai'i and Maui. However, Umi sided with Kiha-a-Pi'ilani and sent an invasion fleet to Hāna. In Hāna, at Ka'uiki, Lonopi'ilani's forces, under the command of Ho'olaemakua, withstood the Hawai'i forces for a while until a nighttime raid overwhelmed them. With this battle Kiha-a-Pi'ilani gained control of Maui.

During the last half of the eighteenth century the battles between Maui and Hawai'i were carried on by the high chiefs Kahekili of Maui and Kalani'ōpu'u of Hawai'i. Kalani'ōpu'u was in control of the Hāna and Kīpahulu areas from ca. 1759 to 1765 when Kahekili won out. However, the Hawai'i forces were able to regain control from ca. 1775 to 1783. With the death of Kalani'ōpu'u in 1782, Kahekili regained control of Hāna, which he retained, though not without further battles with Hawai'i Island forces (i.e., Kamehameha), until his death in 1794. With the death of Kahekili and the assistance of newly acquired foreign power (cannons, muskets, men) Kamehameha gained control not only of Maui, but of all the Hawaiian Islands, except Kaua'i, by 1795.

This period also saw the arrival of the first European explorer, Captain James Cook, on his pan-pacific voyage. This occurrence would inevitably lead to the arrival of even more European explorers, merchant vessels, and missionary passengers across all Hawaiian Islands, including Maui. The interactions between Hawaiians and these newly arrived visitors would come to mark the reshaping of traditional land use patterns in Hawai'i toward the islands we see today.

#### European Explorers

In 1778, when Captain James Cook's ships returned from their North American explorations, they stopped at Hāna and encountered Hawaiians for the first time on board the decks of their ships. This came just before the well-known incident that cost Captain James Cook his life on Hawai'i Island when he attempted to kidnap Kalani'ōpu'u for use as ransom (Cordy 2000:294).

In *Exalted Sits the Chief*, Ross Cordy (2000:294) places Kalani'ōpu'u at this first point of contact between Hawai'i and the West:

Kalani'ōpu'u had regrouped and again invaded Maui ca. 1778-pillaging Kaupō and Kaho'olawe...and raiding and engaging Kahekili's forces in Ko'olau and Hāmākualoa. It was during this campaign when Captain Cook arrived off Maui's Hāmākualoa in November 1778. Kalani'ōpu'u went on board briefly, wearing a helmet with yellow and black feathers and a long feathered cloak. (Cordy 2000:294)

Kalani'ōpu'u and Kamehameha I (then, in the war company of Kalani'ōpu'u) both visited Cook's ships, indicating who controlled the East Maui region.

In December 1788, William Douglas, commanding the British ship, *The Iphigenia*, arrived at Hāna and continued to sail on to the island of Hawai'i where he presented Kamehameha with a swivel cannon. This cannon was mounted on a large double canoe, together with a number of muskets and a quantity of ammunition. In his account of Maui from aboard *The Iphigenia*, Meares (1791:335-336) wrote the following passage:

We had no longer appeared off Mowee than a great number of canoes came off with hogs, yams and plantains.-On this side of the island there is a large town, the residence of Titeeree, the sovereign of Mowee, who was at this time on a visit to Taheo, king of Atooi, in whose absence the government was left to the care of Harwallanee, brother-in-law to Tianna, of whose arrival he was no sooner informed, than he ordered a present of hogs to the ship; but before it arrived Tianna had observed his brother of shore, and having dressed himself in his best apparel, desired that message might be sent to invite him on board.-On his arrival they met as brothers should do after a long separation; the whole of their conduct to each other was affectionate; they melted into tears, and almost drew the same from the eyes of those who held them. After their first emotions had subsided, the chief requested Captain Douglas to remain with him for a few days, and engaged to supply him with any quantity of provisions that might be demanded; but as he saw no place where they could come to an anchor in safety, the surf at the same time beating with great violence, and an heavy swell with the wind blowing in shore, Captian Douglas was under the necessity of declining the invitation. (Meares 1791:335-336)

#### Battles at Hāmākua Loa and Hāna Districts

Given the state of warfare between Maui and Hawai'i Islands in the late pre-Contact period, there are storied accounts of the actions of passing armies in their disputes over ownership of the resources of East Maui.

##### *4.2.1.1.1 Ke Alaloa O Maui*

Kiha-a-Pi'ilani "is credited with finishing the paved road around the island (Ke Alaloa o Maui), which his father (Pi'ilani) had begun" (Griffin 1987:9). The paved roadway was utilized in Hāmākua Loa by a group of missionaries touring Maui in 1828.

...having descended from the summit of Haleakala, they came down to a small village on the Halehaku seashore. On the next day, proceeding toward Hana, they came upon 'a pavement said to have been built by Kihapiilani, a king

contemporary with Umi, an ancient king of Hawaii ... It extends more than 30 miles, and is a work of considerable magnitude. This pavement afforded us no inconsiderable assistance in traveling as we ascended and descended a great number of steep and difficult paries (palis)' ... [Kuykendall 1931:4]

In describing the building of Kiha-a-Pi'ilani's road Beckwith (1970:387) states, "men are said to have stood in line and passed stones from seashore to upland." Once the road was paved however, residents of Hāmākua Loa most likely benefitted from having access to the road and to the people traveling through the district, particularly given its location between Wailuku and Hāna, two prominent political centers during the last two centuries of pre-Contact Hawaiian history.

The Alaloa also served as an instrument of transportation in wartime, which during the last half of the eighteenth century, was very frequent. During these times, the people of Hāmākua Loa and the surrounding districts (between Hāna and Wailuku) who were situated near the war path including canoe landings, the Alaloa and the cultivated and inhabited places in between were subject to plundering by warring chiefs. Kamakau (1992:230) remarks on the impacts of war on the commoners, "wars were frequent in old days and entailed robbery and murder of the common people." Between 1778 and 1779, Kalani'ōpu'u invaded Hāmākua Loa after purportedly being provoked by a resident.

As he was sailing just off Kahakuloa, a certain man was sitting on the crest of Pu'ukoa'e, and as the war canoes came in sight the man made a gesture of contempt ... At Hamakualoa Ka-lani-'ōpu'u landed and engaged in battle, but Kahakili hastened to the aid of his men, and they put up such a fierce fight that Kalani-'ōpu'u fled to his canoes. Landing at Ko'olau he slew the common people and maltreated the captives by urinating into their eyes. [Kamakau 1992:91]

#### *4.2.1.1.2 Battle of Kapalipilo*

Kalani'ōpu'u and his forces invaded Maui, taking the districts of Hāna and Kipahulu and the Kau'iki Hill. Kau'iki Hill is also referred to as the "fort of Kau'iki." Kau'iki Hill is a "natural fort and people on it are general safe from assault, being protected on all sides by steep and inaccessible cliffs (Sterling 1998:135)." Several battles were fought, however, Kamehamehanui and the Maui forces attempted and failed to reclaim Kau'iki Hill.

Suddenly, therefore, he [Kalaniopuu] concentrated his forces and war-canoes at Kohala, and, without previous rupture of peace or declaration of war, he invaded Maui, where Kamehamehanui then ruled as Moi, and made a descent in the Hana district. Little or no resistance was offered, and in a short time he possessed himself of the two valuable districts of Hana and Kipahulu, as well as the celebrated fort on Kauwiki Hill overlooking the harbour of Hana. The date of this invasion is approximately, and probably correctly, fixed at 1759.

But Kamehamehanui, though taken by surprise by the invasion of East Maui by Kalaniopuu, was not a man to yield to such a usurpation and affront without an effort to recover the lost districts .... With these forces Kamehamehanui set out for Hana and laid siege to the fort on Kauwiki. Several battles were fought with the

Hawaii army under Puna, especially at Makaolehua and at Akiala, where the Maui forces were victorious, and in which the valour of Kaohelani is greatly extolled. The fort of Kauwika, however, withstood all attempts to take it, and, after a prolonged and unsuccessful [sic] siege, Kamehamehanui withdrew his forces, and left Hana in possession of Kalaniopuu, while Puna remained as its governor and chief; and it does not appear that Kamehamehanui again attempted to drive the Hawaiians out of Hana. In the native legends this campaign is called the war of "Kapalipilo". [Fornander 1880, 2:146-147]

#### 4.2.1.1.3 *Kalani'ōpu'u Landing on Maui*

In an excerpt from *Account of the Polynesian Race*, Fornander (1880) describes the account of Kalani'ōpu'u landing on Maui to reprovision after a successful military campaign on Lāna'i:

Then, rounding Kahakuloa, he stood to the eastward, and landed at Hamakualoa, on Maui, where he plundered the country, and committed fearful barbarities on the people, until Kahekili came to their support with his forces, and after several encounters, drove Kalaniopuu on board of his fleet. Foiled in Hamakualoa, Kalaniopuu made his next descent in the Koolau district, committing similar depredations and barbarities there. While there, he was joined by Mahihelelima, the Hawaii governor of the adjoining Hana district, with a select force of warriors, and being thus enabled to rally and hold his ground against Kahekili, he again attempted the invasion of Hamakualoa, where the war was protracted, with varying success, for several months. [Fornander 1880:2:157]

#### 4.2.1.1.4 *Landing of the Canoes*

Samuel M. Kamakau provides a passing reference in the context of the fleet of the Big Island chief 'Umi-a-Līloa coming to the aid of the Maui chief Kiha-a-Pi'ilani in his fighting against Lono-a-Pi'ilani and the Hāna chief Ho'olaemakua. The Hāna chief initially repulsed the landings of the Hawai'i Island canoes and 'Umi-a-Līloa asks how best to get his men ashore:

Kiha-a-Pi'ilani answered, "There is a small harbor at Ko'olau called Wailua-iki, and if all the canoes can not land there, there is another landing at Wailua-nui." The blocked canoes turned about and sailed for Wailua-iki at Ko'olau.

When the canoes reached Wailua-iki, they were dismantled and set upright, and in that way the innumerable war canoes from Hawai'i could be beached. After all the canoes were beached the men began to go overland to the site of the battle [at Ulaino well to the southeast] [Kamakau 1961:29-30]

When 'Umi-a-Līloa's fleet arrived in Maui, the canoes were so numerous, the shores between the boundaries of Hāna and Ko'olau were completely filled with canoes.

Also at the place called the surf of Keanini as far as Pueokahi it was choked with the canoes of the Hawaii people, and so it was off Mokuhanu and Naniuakane and Kaihalulu. At Aleamai, Haneoo and Hamoa, these places were completely filled with canoes. At Honokalani and at Honomaele and Ulaino, the boundaries of Hana and Koolau, the canoes were thick. The last of the canoes landed on further at Opikoula, Nahiku, Waiohū, Wailuaiki and Wailuanui in Koolau.

When Hoolaemakua saw the numbers of canoes and men, he and his men prepared to fight the men of Hawaii when the Hawaii warriors arranged themselves on the plain of Kuakaha. [Sterling 1998:122]

#### 4.2.1.1.5 *Battle at Puu Koa'e*

Around 1790, Kamehameha and his forces land on Maui at Hāna. After having invaded Hāna, Kamehameha's forces traveled to Hāmākua Loa. Kalanikupule, ruling chief of Maui at the time, sent his warrior Kapakahili to resist the invasion.

When Kalanikupule heard of the landing of Kamehameha at Hana, and that he was marching with his force through the Koolau district, he sent Kapakahili with the best troops he had through the Hamakua districts to meet and resist the progress of the invader. [Fornander 1969:2:236]

The battle met at a small hill called "Bosun-bird Hill" (Pu'ukoa'e) situated on the makai side of Pu'umaile at Hanawana in Hoalua, and Kapakahili was defeated. In the evening Kamehameha beached at Halehaku, went ashore, and built temporary shelters just where he stepped foot. The feather god Kuka'ilimoku encouraged him to fight, for its feathers bristled and stood upright in the direction of Hinawaikoli'i; Kamehameha therefore lost his fear of a fight with slingshot. The next morning he saw through the koa and hala trees the red gleam of feather capes. It is said that he narrowly escaped defeat by Kapakahili's company. But reinforcements came up, Kamehameha put the enemy to flight, and pursued them along the main road or they would have rejoined their fellow warriors at Kokomo. At the ascent of 'Opaepilau, Kapakahili was exhausted and was overtaken. "Slain by Pipili," Kamehameha boasted over him. [Kamakau 1961:148]

Of the campaign in Hamakualoa some momentos are still pointed out. The fortified position at Pu'ukoa'e on Hanawana, which was attacked and taken by Kamehameha, who had brought his fleet round from Hana. The hill is known as "Kapuai-o-Kamehameha," to the west of the Halehaku stream, where he encamped for the night after taking Puukoae ... the Maui forces were routed and fled as far as Kokomo, where a final stand was made. [Fornander 1969:2:236]

#### 4.2.1.1.6 *Battle of Great Canoes*

In 1790, Kamehameha then began to muster his armies for a planned invasion of Maui. That summer, Kamehameha landed at Hāna. In a battle known as "Kaua o Kawa'anui," (Battle of Great Canoes) Kamehameha defeated the Maui advance guard there, after which he sailed for Hāmākua Loa, sweeping the remaining Maui defenders along the coast and back into 'Īao Valley, and annihilating them at the battle called "Kaua i Kapaniwai o 'Īao," (Battle of the Dammed Water of 'Īao), during which the slain warriors were said to have been so numerous, that they dammed the water of 'Īao Stream. Kamehameha then returned to Hawai'i to settle disputes there. In his absence, both Kahekili and the High Chief of Kaua'i, Ka'eokūlani formed an alliance to retake Hāna. After that success, both chiefs launched an attack on Kamehameha at Waipi'o on Hawai'i, where they were both defeated. After the death of Kahekili in 1793, Kamehameha assumed the rule over all of Maui, through his victory over the High Chief



Kahekili's successor, the High Chief Kalanikūpule, in the battle of Nuʻuanu on Oʻahu in 1795 (McGregor 2007:99).

### Missionaries

Evidence of a cohesive religious population in East Maui is best described by the first Europeans to visit Keʻanae. From the journal of William Richards (1829) comes information that the region between Honomanū and Wailua was densely populated:

We went on board the canoe, and rowed a few miles, avoiding some difficult *paries* [steep cliffs]. After landing, we walked a few miles further, to Wailua, where we put up for the Sabbath. Very early the morning [of the Sabbath], the horns, summoning the people to the house of God, were heard in every direction; and we soon perceived that the call had not been heard with indifference. At the early hour, the house was thronged with attentive worshippers. [The next day] we examined the schools, which were large. About 10 o'clock, A.M., the princess [Nahienaena] arrived, and addressed the people; after which, we proceeded on our way [to Hāna]. [(Richards et al. 1829:249)]

The Hāna region of Maui was known as “one of the most isolated places in these islands, remote and difficult to access” (Bishop 1861). Because of the many treacherous ravines and unpredictable flooding, Native Hawaiians usually rode on horseback to a point before Keʻanae, then completed the journey to Hāna by canoe. Before the establishment of the Hāna protestant mission in 1837, missionaries reached East Maui no more than once or twice a year. From the early writings of the protestant missionaries in the Sandwich Islands, it appears that the first excursion to Hāna by an American protestant teacher was made in 1823. In regards to this, Richards and Stewart (1825:141) in *The Missionary Herald* write:

...A similar adventure is related by Honorii [Native assistant to the missionaries], in a late visit to the eastern part of the island of Mowee, whither he went in the company of Keoua, wife of Governor Adams. That part of the island [Hāna] had never been visited by missionaries, and Honorii took occasion to preach to them Jesus Christ. He found them wholly uninstructed, and exceedingly attached to their idols, and disposed to resist every argument in favor of a change in their religion. Before he left the place, he ascended a neighboring hill which overhangs the sea on the top of which were several huge stones erected, covered with tapa (native cloth), and dignified with the appellation of gods. With the aid of some of his company, he succeeded in displacing them from their beds, and rolled them into the sea. (Richards and Stewart 1825:141)

The Protestant mission station of Hāna was administered in its early days by the Reverend Mark Ives and his wife, Mary Ann Brainerd Ives. The Ives were protestant missionaries who had both arrived from New England in 1836 (Judd et al. 1969:122). The Ives were joined by the Reverend Daniel Toll Conde and his wife Mrs. Andelucia Lee Conde, who were stationed in Hāna following their arrival in 1838 (Judd et al. 1969:72). The isolated missionary station of Hāna was serviced by the 39 ton schooner *Missionary Packet* which had been built in 1825 at

Salem, Massachusetts, for use between the Hawaiian Islands, as well as other schooners and steamships (Mifflin 1983:19).

#### 4.2.1.1.7 Catholic Missionaries and the *Pa'akaula* of 1843

Protestant missionaries, having a strong presence in Hawai'i by the early 1800s, had almost exclusive claims to managing the salvation of its inhabitants, but the Catholic Church was soon to follow its protestant fellows to Maui's shores. Catholic missionaries had found a favorable foothold with a few courtiers of Kamehameha III just a year after he passed the Edict of Toleration in 1839. This Edict allowed religious freedom for all inhabitants of the Kingdom of Hawai'i. Six years later, the first Catholic missionaries arrived in the busy whaling town of Lahaina and found themselves amid a population receptive to their teachings, despite the fact that many of the *ali'i*, the protestant missionaries, and the Queen Regent Ka'ahumanu were outwardly opposed to their presence on Maui (Speakman 1978:87-88). The earliest Maui converts to the recently arrived faith were two brothers, Helio and Petero Kaoeloa from Wailuku (Schoofs 1978:291). The next generation of catechist converts were soon to follow, especially Helio Kaiwiloa who passionately converted from the fold of the Protestant Church into Catholicism. Helio Kaiwiloa had left East Maui to be officially baptized, shortly before returning to Maui to travel the East Maui districts preaching the Roman Catholic faith (Speakman 1978:87-88).

Helio Kaiwiloa's influence was significant during his lifetime spent preaching in remote East Maui. Robert Schoofs (1978:257) in his *Pioneers of the Faith* describes Helio:

Kaiwiloa assiduously studied his Christian doctrine and shared his knowledge with others. Going from house to house in Kahikinui he was not a little surprised to find many catechumens. He gathered them in a little chapel, where they said their prayers together and took part in the instructions. Kaiwiloa covered several adjacent villages, displaying great zeal in propagating the faith. (Schoofs 1978:257)

The increase in the number of catechumens acquired by Catholics in the Hāna district became a point of concern for Protestant missionaries, and in 1843 they prevailed upon Judge Mahune of Wailuku to send policemen to investigate the activities of Catholics and catechumen, arrest them, and transport them to Wailuku to stand trial. The charges were simple, that Kaiwiloa had gathered the catechumen once weekly in his private home for the purpose of practicing communal prayer. Perhaps perceived as a type of conspiracy, it was deemed unlawful and ordered to be stopped (Schoofs 1978:260).

Eventually, the Wailuku police made it to remote East Maui to begin the arrests. In one of the first villages they reached they arrested a half-dozen Catholics and moved onto the next village, gathering a few more of the faithful at every stop along the long road back to Wailuku (Schoofs 1978:260). All along the way additional arrests were tied together to manage the ever increasing crowd of offenders, this is why the procession was named the *pa'akaula* (sometimes *pakaula*), or the "tying, binding with ropes" (Speakman 1978:88). Schoofs (1978:260) then relates the impressive display of solidarity that followed:

The catechumen of Maui had agreed on the following line of conduct. If any Catholic or catechumen were arrested for any crime other than for his religion, nobody would take an interest in the case. But if, however, anyone were arrested for religion's sake, all would declare their solidarity and voluntarily join the arrested one.

This is precisely what was done. Going eastward, the ever increasing band passed through Kaupo and Kipahulu, and continued the journey along the north coast of the island until they reached Wailuku. A striking feature of this procession was that the prisoners were dressed in their Sunday best and were wearing gay floral wreaths. (Schoofs 1978:260)

This large display crossed every major *moku* on their way into Wailuku to stand trial, allowing the procession to preach as they travelled through Hāna, Nāhiku, Keʻanae, Kailua, Haʻikū, and Pāʻia (Speakman 1978:87). The entire distance travelled by the officers and their prisoners covered close to 90 miles of difficult terrain over the course of a month. There were also periodic rests along the way which afforded the persecuted Catholics time to speak with the inhabitants at their brief respites and proselytize, gathering more catechumen into their fold as they proceeded (Schoofs 1978:260).

By the time that the procession had reached Wailuku for their trial the crowd was too massive for the courts to handle. Seeing the size of the crowd containing the Catholics and their sympathizers, Judge Mahune bid all the participants to “go home” and dismissed the charges against the Catholics (Schoofs 1978:260). Helio and his catechumen had prevailed against the persecution perpetrated by Protestant influences entrenched in Maui. An unexpected benefit of this persecution was that the number of catechumen on Maui had nearly tripled during the ordeal, bringing the count near a thousand adherents. The faithful Catholics then walked the long road back to their homes lead by Helio Kaiwiloa, spreading their faith along the way (Speakman 1978:88). Although religious ideas were developing at a rapid pace in the Hawaiian Islands after European contact, another major change was simultaneously taking place surrounding the relationship of Native Hawaiians to the land they inhabited for generations immemorial, The Māhele.

#### 4.2.2 The Māhele and Kuleana Act

The most significant change in land-use in the Hawaiian Archipelago came with The Māhele of 1848 which brought about the privatization of land in Hawaiʻi. The word *māhele* meaning literally “to divide, cut, partition” (Pukui and Elbert 1986:219), hastened the shift of the Hawaiian economy from that of a subsistence based economy to that of a market based economy. During The Māhele, all of the lands in the kingdom of Hawaiʻi were divided between *moʻi* (king), *aliʻi* (chief/ruler), *konohiki* (land manager), and *makaʻāinana* (tenants of the land) marking passage into the Western land tenure model of private ownership. On 8 March 1848, Kamehameha III further divided his personal (*mōʻī*) holdings into lands he would retain as private holdings and parcels he would give to the newly budding Hawaiian Government in trust. This act paved the way for government land sales to foreigners as a source of funding for government operations, and in 1850, the legislature granted resident aliens the right to acquire fee simple land rights (Moffat and Fitzpatrick 1995:41-51).

Native Hawaiians who desired to claim the land on which their families had historically worked and resided were required to present testimony before the Board of Commissioners to Quiet Land Titles. Upon acceptance of a claim the Board granted a Land Commission Award (LCA) to the successful applicant. The awardee was then required to pay, in cash, an amount equal to one-third of the total market value of the awarded parcel as a commutation fee. If this payment could not be made in cash, an acceptable substitute was to cede the one-third of the awarded parcel to the government as payment for the commutation fee (Chinen 1958:13).

By 1850 portions of *mō'ī*, *ali'i*, *konohiki* and government LCAs were being sold to help pay commutation fees owed by their awardees and for simple cash profits from selling so-called unused land. As these lands belonging to Hawaiian elites had historically been cultivated by the *maka'āinana* in pre-Contact times, when the lands were being sold many tenant farmers were being inadvertently dispossessed of their homes and arable plots that lied within the sold portions of land. In acknowledgment of this dispossession, the Board passed resolutions authored by the Privy Council through the legislature in 1850 that aided in the protection of the rights of tenant farmers whose homes and plots were essentially owned by overarching LCA awardees (who may have owned the entire *ahupua'a* or *'ili* in which the plots were located). The plots awarded to tenant farmers in this fashion were termed *kuleana* lands, or simply *kuleana* (*kuleana* meaning "right, privilege, responsibility") (Chinen 1958:29-31; Pukui and Elbert 1986:179). Under this type of land acquisition, claimants were required to produce accurate surveys of the claimed plots, and to have these claims scrutinized by the Board to ensure that claimants were not attempting to acquire waste-lands or additional arable lands with "the seeming intention of enlarging their lots" (Chinen 1958:30). Upon completion of this process, Chinen (1958:30) states that:

The native tenants were awarded their *kuleanas* free of commutation. The owner of the *ahupua'a* or *'ili kupono*, out of which the individual *kuleanas* were taken, was deemed responsible for the settlement of the whole government commutation... Though other lands escheated to the government upon the death of an owner without an heir, the *kuleanas* escheated to the owner of the *ahupua'a* or *'ili kupono* within which it was located. (Chinen 1958:30)

This change in escheating was because the overarching LCA owner was deemed to have "reversionary interest" in the parcels due to having been responsible for its commutation fee to the government (Chinen 1958:30). This reclamation of *kuleana* land would later come to have repercussions across large tracts of land as Western disease continued to run rampant in Hawaiian populations, and as people drifted toward more populous city centers, leaving many *kuleanas* abandoned and heirless. Patrick Kirch drives at the inevitable conclusion of the escheating of these lands in a time of Western economic expansion by stating that "By the 1870s, vast tracts of lands had been acquired by an expanding class of white sugar planters. Mostly of American origin..." (Kirch 2012:287). Similar acquisitions in the name of commerce were also being carried out in leeward ranching lands where abandoned and heirless *kuleanas* also existed.

*Kuleana* claims could be made for nearly any resource procuring activity from agricultural plots, to fishing grounds, to rights to harvest naturally existing vegetation, to naturally existing and artificially channeled water sources. Within the Māhele records for the four license areas (Figure 17 through Figure 20) there are claims for terrestrial agricultural features such as *lo'i*,

*pākanu* (garden, planting enclosure), *‘auwai* (artificial irrigation canals, used to feed *lo‘i*), *kula* (fields, open pasture), *pali* (cliff, precipice, or steep hill suitable for cultivation of select plants), *kīhāpai* (small cultivated patch or orchard), *mo‘o* (ridge for similar purpose as *pali*), and *pō‘alima* (small agricultural patches tended in traditional times solely for chiefly tribute) (Pukui and Elbert 1986:147,178,305,312,334). There are also *kuleana* claimed for their naturally occurring vegetation and the right of tenants to collect these resources, such as *‘ie* (aerial roots of the *‘ie‘ie* vine, used in plaiting, basketry, and wicker weaving), *olonā* (shrub with fibrous bark used in fishnets, baskets, and to construct *tī* leaf raincoats and capes), *wauke* (paper mulberry used in making *tapa* cloth), *hala* (pandanus tree) and wildy occurring *kalo* (taro) and sweet potato (Pukui and Elbert 1986:50,94,256,286). Lastly are the *kuleana* claims over aquatic resources such as off-shore fisheries (documented as “sea” in LCA awards) and *muliwai* (river mouth, freshwater pool behind a shoreline sand bar) that are naturally occurring and not man made (Pukui and Elbert 1986:256).

*Kuleana* claims were slightly more complicated in that many of these claims were made to lands within several *ahupua‘a* or *‘ili kupono* that lie in neighboring land divisions. These claims were documented, in their entirety, within the individual Māhele books for different land divisions. This means that often multiple separate claims to any one person will be duplicated within the record books of different land sections, though the parcels comprising the entirety of the claim are distributed among several larger land divisions distant to each other. Resulting from this process the entire contents of *kuleana* claims will be fully enumerated in its respective table, though only a portion of an individual’s *kuleana* claim may be present in the accompanying map for the specific license area. LCAs documented within the four license areas are displayed below in Figure 17 through Figure 20 and listed in Table 4 through Table 7.



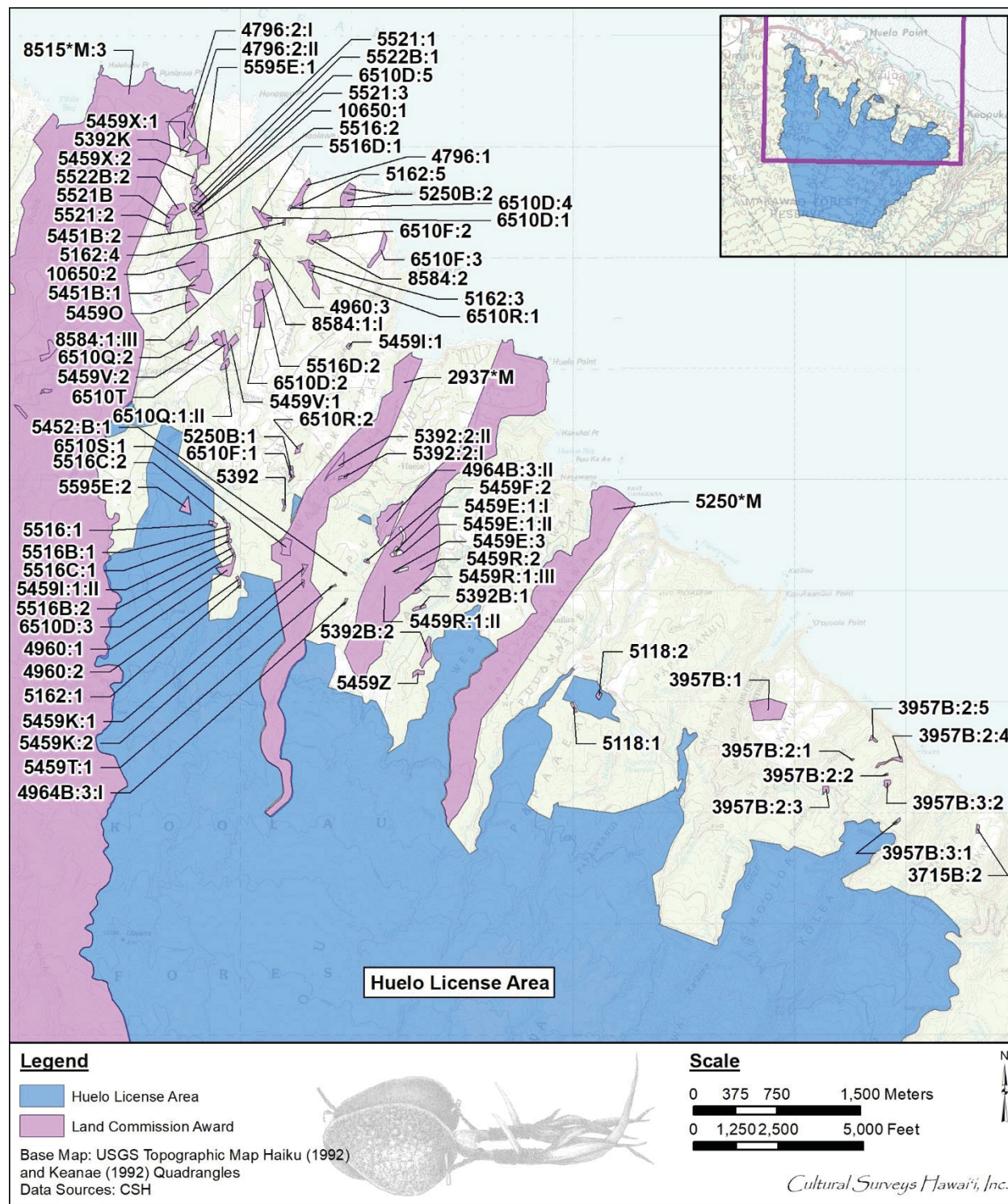


Figure 17. LCAs within and in proximity to the Huelo License Area (U.S. Geological Survey 1992a, c)



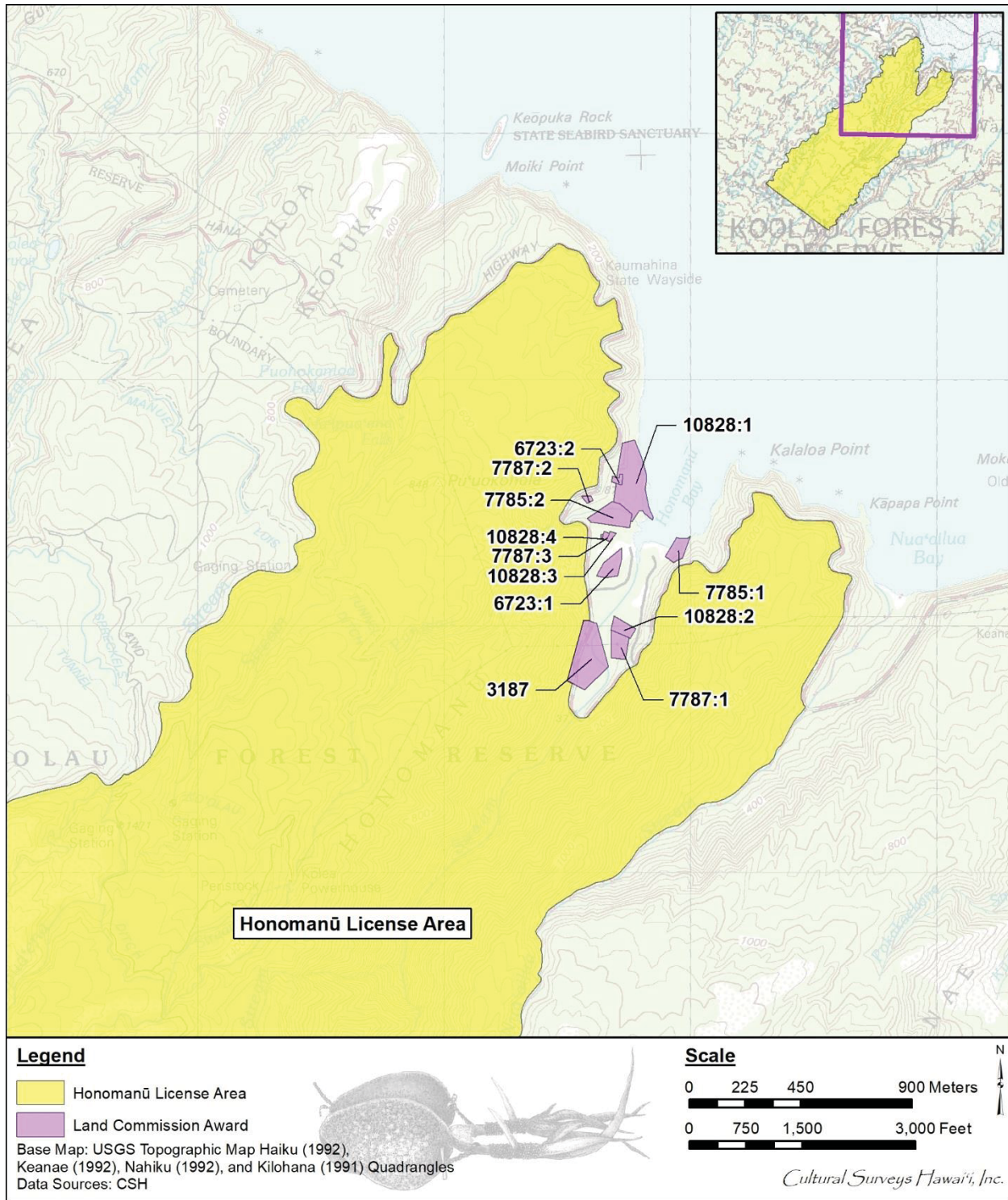


Figure 18. LCAs within and in proximity to the Honomanū License Area (U.S. Geological Survey 1991, 1992a, c, d)



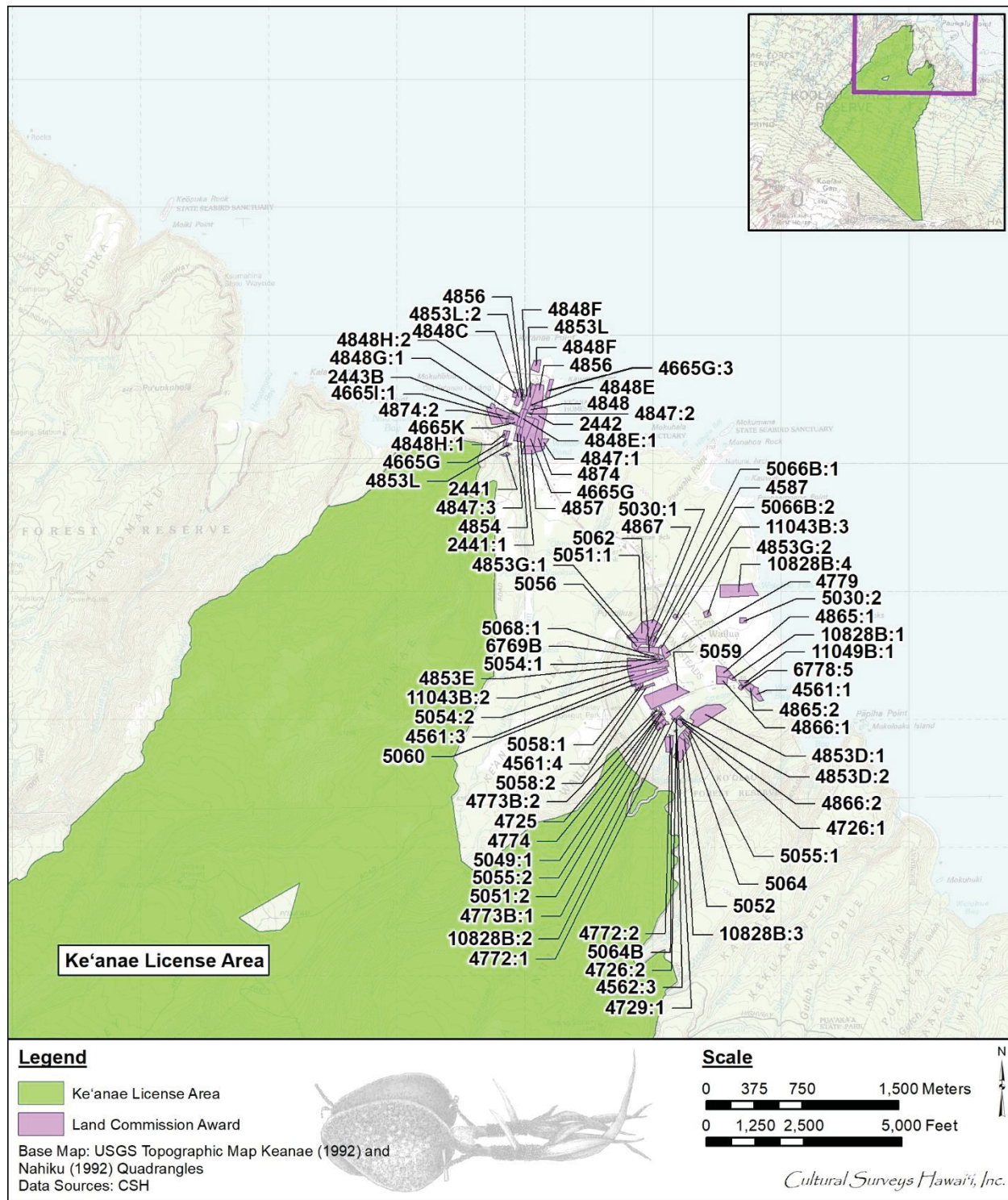


Figure 19. LCAs in proximity to the Ke‘anae License Area (U.S. Geological Survey 1992c, d)



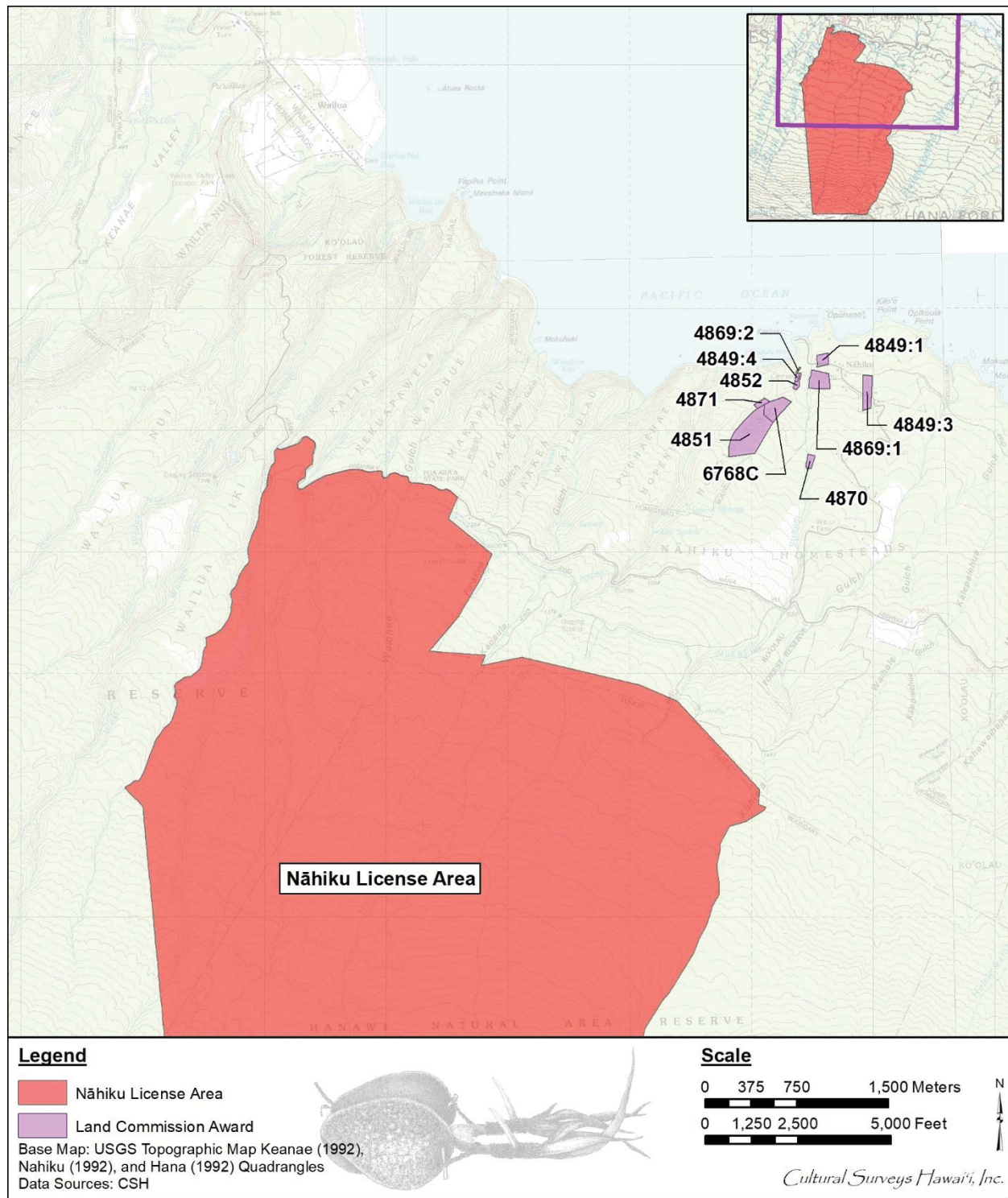


Figure 20. LCAs in proximity to the Nāhiku License Area (U.S. Geological Survey 1992b, c, d)

Table 4. LCAs within and in proximity to the Huelo License Area (Waihona 'Aina 2002)

| LCA #  | Claimant           | 'Ili                                    | Land Use   |
|--------|--------------------|---|--|
| 2937M  | Harbottle, William | NA                                      | Possible residence and the sea   |
| 3715B  | Kekuahani          | Keopuka, Loiloa                         | Two <i>lo 'i</i> , <i>kula</i> , sea shore, <i>pali</i> , an <i>olonā</i> pasture, and government road                     |
| 3957B  | Keuoho, Luka       | Punahū                                  | Two <i>kīhāpai/pākanu</i> , <i>pali</i> , and a stream   |
| 4796   | Kealoha            | Waikakulu, Paniawa, Punahēle            | Three <i>lo 'i</i> , two <i>kula</i> , three <i>kīhāpai</i> , sea shore, and two <i>pali</i>                               |
| 4960   | Kapahu             | Halepohaku, Kahauiki, Kahikiloa         | Four <i>lo 'i</i> , two <i>kula</i> , <i>pali</i> and a stream   |
| 4964B  | Kaiewe Kamakau II  | Kapalaoa, Kauulu, Wailaahili, Waialaea  | One house lot, a government road, a road, <i>pali</i> , and the sea  |
| 5118   | Kaualeleiki        | Papaaea, Ha'ikū, Hanawana               | Five <i>lo 'i</i> , a house lot, two <i>kula</i> , <i>pali</i> , government road, two streams, and <i>wauke</i>            |
| 5162   | Kamohai            | Haniapuaa, Halelua, Kahakona, Waikakulu | Five <i>lo 'i</i> , a <i>kula</i> , a <i>pali</i> , and sea shore  |
| 5250B  | Uheke              | Keaweula, Paomai                        | One <i>lo 'i</i> , a <i>kula</i> , a <i>pali</i> , and sea shore   |
| 5250*M | Kanui              | Kawahae, Keahou                         | Two <i>lo 'i</i> , a <i>kula</i> , a <i>pali</i> , three <i>pō 'ālima</i> , and a stream                                   |
| 5392   | Huluhulu           | Puolua, Hanehoi, Waipi'o                | Two <i>pali</i> , a stream, and sea shore  |
| 5392B  | Kawahine           | Popopanui, Nuukele                      | Three <i>lo 'i</i> , three <i>pō 'ālima</i> , two <i>pali</i> , and a <i>kula</i>  |
| 5392K  | Makahikipuni       | Kapapaanae                              | One <i>lo 'i</i> , a <i>pō 'ālima</i> , a stream, and a <i>pali</i>  |
| 5451B  | Palea              | Kahauiki, Ulukaa                        | 25 <i>lo 'i</i> , four potato <i>mo 'o</i> , 'ie, three <i>pō 'ālima</i> , a stream, a <i>pali</i> , and a road to the sea |
| 5452   | Pia                | Mauluku                                 | 19 <i>lo 'i</i> , five potato <i>mo 'o</i> , a house lot, and <i>wauke</i>   |
| 5459E  | Kuluwaimakalani    | Makauke, Hanehoi                        | Two <i>lo 'i</i> , two <i>kula</i> , a <i>pō 'ālima</i> , and a <i>pali</i>  |
| 5459F  | kaahaiea           | Palau, Ohia                             | Three <i>lo 'i</i> , two <i>kula</i> , a <i>pō 'ālima</i> , <i>pali</i> , and <i>olonā</i>                                 |
| 5459K  | Kamaau             | Waipi'o, Holawa, Mokupapa               | Two <i>lo 'i</i> and <i>pali</i>   |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System),

Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various



| LCA # | Claimant    | 'Ili   | Land Use  |
|-------|-------------|--|---|
| 5459I | Pohina      | Ohia, Opae   | Three <i>lo 'i</i> , a <i>kula</i> , <i>pali</i> , a stream, sea shore, and a government road               |
| 5459O | Hewahewa    | Papuaa, Pohaku                                       | One <i>lo 'i</i> , a <i>pali</i> , a stream, and a road   |
| 5459R | Pahia       | Kahuku, Pulehu                                       | Two <i>lo 'i</i> and one <i>pō 'alima</i>   |
| 5459T | Lalahili    | Ohia, Kawahapulua                                    | One <i>lo 'i</i> , a <i>kula</i> , a house lot, and a <i>pō 'alima</i>                                      |
| 5459V | Kaliki      | Kuamoohua  | One <i>lo 'i</i> , a <i>kula</i> , and two <i>pō 'alima</i>   |
| 5459X | Imihia      | Kaalukanu, Papamuku, Puniawa                         | Four <i>lo 'i</i> , a <i>kula</i> , potatoes, three <i>pō 'alima</i> , a stream, the sea, and a <i>pali</i> |
| 5459Z | Kaleo       | Mohala   | One <i>lo 'i</i> , a <i>kula</i> , and a <i>pō 'alima</i>   |
| 5516  | Hillawe     | Kaloiki, Kamania                                     | Two <i>lo 'i</i> , a <i>kula</i> , two <i>pō 'alima</i> , a stream, and a <i>pali</i>                       |
| 5516B | Mua         | Kuahanahana  | Two <i>lo 'i</i> , a <i>kula</i> , and a <i>pali</i>  |
| 5516C | Kaio        | Halenoni   | One <i>lo 'i</i> , a <i>pali</i> , and a stream   |
| 5516D | Naoopu      | Kuahanahana  | Two <i>lo 'i</i> , two <i>kula</i> , a stream, and a <i>pali</i>  |
| 5521  | Nakaikuaana | Halaula, Kamania, Kapahi                             | Four <i>lo 'i</i> , four <i>kula</i> , a stream, a <i>pali</i> , and shatteredd <i>koa</i>                  |
| 5521B | Kanewaa     | Halaula  | One <i>lo 'i</i> and a <i>kula</i>  |
| 5522B | Kaopu       | Halaula, Papamuku                                    | One <i>lo 'i</i> , a <i>kula</i> , a <i>pō 'alima</i> , a <i>pali</i> , and a stream                        |
| 5595E | Kepaa       | Hunananiho   | 27 <i>lo 'i</i> , a stream, freshwater shrimp, two <i>pō 'alima</i> , and seven <i>koa</i> trees            |
| 6510D | Manoa       | Kauhamano, Waikakulu, Halumaumau, Kahikiloa, Kamania | Five <i>lo 'i</i> , a house lot, three <i>pō 'alima</i> , and two <i>pali</i>                               |
| 6510F | Hanauwaha   | Puuokaupu, Maoli, Kauhiulu, Pukuhale, Waikakulu      | Five <i>lo 'i</i> , four <i>kula</i> , a <i>pō 'alima</i> , and two <i>pali</i>                             |
| 6510Q | Kawaha      | Kalanikahuli, Waiohiwa, Kalualaea                    | Three <i>lo 'i</i> , <i>kula</i> , and <i>pali</i>  |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System),

Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

| LCA #  | Claimant                 | 'Ili   | Land Use   |
|--------|--------------------------|--|--|
| 6510R  | Naone                    | Kauhiulu, Lapo   | Two <i>lo 'i</i> , a <i>kula</i> , a <i>pali</i> , and a stream  |
| 6510S  | Makue                    | Lui, Panau, Haliimaumau, Waikakulu                       | Four <i>lo 'i</i> , a <i>kula</i> , a <i>pō'alima</i> , a stream, and a <i>pali</i>  |
| 6510T  | Kuewa                    | Waiohiwa   | One <i>lo 'i</i> , a <i>kula</i> , a <i>pali</i> , and a stream  |
| 8515*M | Keoni Ana/John Young, Jr | Owa, Puako, Haleu, Halehaku, Holili                      | No details for Halehaku LCA  |
| 8584   | Keoho                    | Kahaniki, Kahakona, Waikakuhe, Kaiui, Kaluaalaea, Ukulei | 14 <i>lo 'i</i> , <i>kula</i> , sweet potatoes, 'ulu, two 'ōhi'a trees, <i>moku mau 'u</i> , two <i>pali</i> , three streams, and shattered <i>koa</i> |
| 10650  | Pia                      | Kamania, Uohale, Ulukee, Puniana, Kawaipaa               | Five <i>lo 'i</i> , a <i>kula</i> , sweet potatoes, two <i>pali</i> , <i>wauke</i> , a gobey fish stream, forest, and a road to the mountains.         |

Table 5. LCAs within and in proximity to the Honomanū License Area (Waihona 'Aina 2002)

| LCA # | Claimant  | 'Ili                        | Land Use  |
|-------|-----------|-----------------------------|---|
| 3187  | Kekio, Z. | Kekia, Keehue               | <i>Kalo</i> patch, stream, and <i>pali</i>                |
| 6723  | Malaiula  | Palawai, Niulii             | One <i>kīhāpai</i> , <i>lo 'i</i> , and a stream          |
| 7785  | Kinolau   | Halelaau                    | A <i>pali</i> and a stream                                |
| 7787  | Wahine    | Kanaha                      | Six <i>lo 'i</i> , <i>pali</i> , and stream               |
| 10828 | Palaile   | Niulii, Okuhekuhe, Halelaau | Nine <i>lo 'i</i> , <i>pali</i> , 'auwai, and a fish pond |

Table 6. LCAs in proximity to the Ke'anae License Area (Waihona 'Aina 2002)

| LCA # | Claimant      | 'Ili                 | Land Use  |
|-------|---------------|----------------------|---|
| 2441  | Kealina, Tito | Lalaola, Kuoo, Pahoa | 19 <i>lo 'i</i> , a <i>kula</i> , forest, <i>olonā</i> , two house lots, 'auwai, and stream |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

| LCA # | Claimant          | 'Ili   | Land Use   |
|-------|-------------------|--|--|
| 2442  | Kaea              | Analoa, Kiapu  | Six <i>lo 'i</i> , a <i>kula</i> , forest, <i>hala</i> grove, and a stream                             |
| 2443B | Kanehaku, I       | Kanemakue  | Two <i>lo 'i</i> , a pond, a <i>kula</i> , forest, <i>olonā</i> , the sea, a stream, and a <i>pali</i> |
| 4561  | Wahinemaikai      | N/A  | Two <i>lo 'i</i> , <i>pali</i> , government road, 'auwai, and stream                                   |
| 4562  | Wailaahia         | Kaakee, Maulu, Palolena, Paula                               | 13 <i>lo 'i</i> , <i>pali</i> , stream, and a house lot  |
| 4587  | Hoonoho           | N/A  | 12 <i>lo 'i</i> , one <i>kula</i> , and a house lot  |
| 4665G | Ehu               | Kalihi, Pahoa, Kukuiohoko                                    | 17 <i>lo 'i</i> , a house lot, <i>pali</i> , stream, the sea, and <i>olonā</i>                         |
| 4665K | Kanuku            | Panaewa, Kuoo, Makaiwa                                       | One house lot, the sea, <i>olonā</i> , stream, and <i>pali</i>   |
| 4665I | Kauakahi/Kanakahi | N/A  | Three <i>lo 'i</i> , a <i>pali</i> , stream, and <i>olonā</i>  |
| 4725  | Moo               | Paakamaka  | Nine <i>lo 'i</i> and a <i>kula</i>  |
| 4726  | Makaole           | Paulae, Kaonohikaa, Pohonui, Pohoiki                         | 23 <i>lo 'i</i> , two <i>kula</i> , streams, the sea, <i>olonā</i> , a path/road                       |
| 4729  | Moo II            | Makuku, Paulae, Palolena, Maulu                              | Eight <i>lo 'i</i> , a house lot, and stream   |
| 4772  | Naiwi             | Makaku, Waieli, Waikani, Maulu, Keononalu, Kalimapuhi, Kaahu | Nine <i>lo 'i</i> , a path/road, a stream, and a <i>pali</i>   |
| 4773B | Nakihei           | Kalimapuhi, Paakamaka  | Ten <i>lo 'i</i> , an 'auwai, a stream, and a <i>pali</i>  |
| 4774  | Nalimanui         | Kealia   | Residence and a <i>pali</i>  |
| 4779  | Naiapea           | Keononalu  | 18 <i>lo 'i</i> , <i>kula</i> , and <i>kīhāpai</i>   |
| 4847  | Maelaelua         | Kuoo, Paehala  | 11 <i>lo 'i</i> , a house lot, <i>pali</i> , the sea, a foot path, and 'auwai                          |
| 4848  | Kuluhiwa          | Ololoakehi, Pīlanolipi, Ohia                                 | Nine <i>lo 'i</i> , a <i>kula</i> , stream, and <i>pali</i>  |
| 4848C | Keiiaea           | Kuoliolio  | One house lot, a <i>kula</i> , and a <i>pali</i>   |
| 4848E | Maewaewa 2        | Lalaola, Ololoakehi  | One <i>lo 'i</i> and a house lot   |
| 4848F | Maewaewa 1        | Kekaele & Kukuolono, Kehaele                                 | The sea  |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System),

Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

Table 7. LCAs in proximity to the Nāhiku License Area (Waihona 'Aina 2002)

| LCA # | Claimant           | 'Ili                          | Land Use   |
|-------|--------------------|-------------------------------|--|
| 4561  | Wahinemaikai       | N/A                           | Two <i>lo 'i</i> , <i>pali</i> , government road, ' <i>auwai</i> , and stream                              |
| 4849  | Kalohelau, wahine  | Kahoomanamana, Koakumanamoana | Three <i>lo 'i</i> , one <i>kula</i> , a house lot, road, a foot path, a pig pen, a stream and <i>pali</i> |
| 4851  | Aoao               | Kahooana                      | A stream   |
| 4852  | Uwaua              | Kawiwi                        | Possible residence and a stream  |
| 4869  | Kaumoki/Kaomoai ki | Kaohe, Kaohipoka              | One house lot and a <i>pali</i>  |
| 4870  | Kealiiokekanaka    | Waawaa, Haawaa, Waikupo       | Four <i>lo 'i</i> , a pig pen, stream, ' <i>auwai</i> , <i>olonā</i> , forest, and <i>pali</i>             |
| 4871  | Kalahie            | Olopana                       | Stream, forest, and the sea  |
| 6768C | Naholo             | Ihuhinui                      | A house lot, <i>lo 'i</i> , road, stream, <i>pali</i> , and beach  |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

### 4.2.3 Mid- to Late 1800s

The foundation for private land ownership set by the Māhele of 1848 began a very marked pace of development across the entire archipelago, and Maui was no exception to the age of Western development that was about to dawn across the island. The Māhele enabled many foreigners and foreign nationals to acquire land for the establishment of ranching and plantation operations, including the infrastructure projects that were aimed at supporting these land-intensive industries (aqueducts, roads, etc.). All of this was happening alongside civic development in the more populated areas as the Hawaiian economy grew, a growth funded in part by the government land sales to foreigners. Additionally, many foreign nationals who relocated to Maui to work were enabled to acquire their own homestead lands, and thus establish themselves and future generations on the island, increasing the ethnic and cultural diversity of Maui. Though these changes would signify a new period of economic growth for the Kingdom of Hawai‘i as a whole, the pace of development would continue to impact the social and environmental landscape of East Maui.

#### Disease in East Maui

One of the earliest impacts of European contact on Native Hawaiians was the spread of Old World diseases into island populations. With the arrival of Captain Cook in the late 1770s came the initial introduction of venereal disease and possibly respiratory ailments (Kirch 2012:158). Kirch also suggests that venereal disease is often overlooked in disease impact studies since it does not usually kill its victim “although its effects on a population with no prior exposure may have been more severe than usual” (Kirch 2012:158). Resulting from the introduction of venereal disease, the birthrate very likely plummeted because of the severe effects of disease on women’s reproductive organs who have never been exposed to them. The number of rampant diseases was to increase steadily alongside the number of traders, merchants, and visitors arriving from distant shores. To this effect Kirch (2012:158) observes:

Later ships brought even more virulent diseases: dysentery, measles, tuberculosis, smallpox, and leprosy. Before Cook the islands were free of all these old-world scourges; consequently, Hawaiian bodies did not have antibodies or resistance against them. As we now know, such ‘virgin soil’ epidemics can have devastating effects on indigenous populations. (Kirch 2012:158)

Although there is serious debate about the actual count of the Hawaiian population at first contact with Europeans, making an exact figure for the depopulation of Hawaiians by disease difficult to grasp, the known effects of the introduction of foreign disease make a population reduction from 500,000 in 1779 to 130,000 fifty years later seem feasible (Kirch 2012:158). Given the histories of European contact in other previously unexposed locations it is likely that morbidity can account for much of the decline. Though early mortality rates are sporadic at best and often inaccurate in their measurements, there is some evidence of the impact of disease in Hawai‘i in this early period.

Lack of demographics regarding salient mortality rates is best explained by logistical issues present in the developing nation of Hawai‘i in the early to mid-1800s. In *Historical Statistics of Hawaii*, Robert Schmitt (1977:40) explains that “statistics on deaths by cause of death are particularly lacking in long term comparability, not only because of serious underregistration in



the early years but also because of major changes instituted from time to time in classification procedures.” The first statewide collection of mortality statistics associated to a cause of death did not occur until the early 1900s, and then the statistics were only in terms of individuals affected and were not tabulated according to either ethnic heritage or nationality. Regardless of this glossing of demography, the early records show tuberculosis being particularly ravaging in the beginning of the 20<sup>th</sup> century. The first half of the 1900s regularly shows over 1,000 active cases of tuberculosis with as many as 531 deaths annually (Schmitt 1977:80). Record keeping for infectious disease (barring those transmitted by intercourse) gained more coherence by the mid-1900s, demonstrating the most commonly reported disease afflictions across the archipelago were leprosy, tuberculosis, gonorrhea, syphilis, chicken pox, influenza, measles, mumps, pertussis, shigella, and typhoid (Schmitt 1977:80-82).

From the early census data it becomes evident that one of the most alarming among the contagions was influenza, which in some years had death tolls well above 1,000 souls, with some years having as many as 6,677 (Schmitt 1977:82). Such observations were frequently reported in the local newspapers, such as with an article by J.S. Green (1857:1) in *The Pacific Commercial Advertiser*, where the author reported that “we have all been afflicted with the influenza, natives and foreign residents. Not a few of the aged and feeble among the people have died.” Sporadic reports begin to appear with regular frequency in newspaper editorials after this, such as a 10 February article in the *Daily Honolulu Press* (1883:1):

In the month of July of this year we had a visitation of Influenza. . . Very many among the foreign population were attacked, and it prevailed extensively among the natives, death not infrequently resulting with the latter, from disposing causes. Among these was John Young (Keoni Ana) the Minister of the Interior, aged only 47 (*Daily Honolulu Press* 1883:1)

Even with the high instance of mortality among Hawaiians, it should be noted that the person responsible for the census of the Kingdom in the mid-1800s, Richard Armstrong, thought the reported numbers were far too low. He believed that for every reported death two to three went unreported (Daws 1968:140). Flu was not the only concern in the Hawaiian Islands as made apparent by a newspaper advertisement in the 4 October 1892 *Evening Bulletin* announcing the closure of all Hawaiian Ports with the sole exception of Honolulu, due to Cholera outbreaks (Macfarlane 1892:2) (Figure 21). Despite the remoteness and relative isolation of East Maui there was still sporadic reporting of disease afflictions affecting the population there.

Smallpox made an appearance in the early newspaper reports regarding disease among residents of East Maui. There is a November 1853 account of the first case of small pox in Hāmākua Loa from a passenger aboard the schooner *Sally* (The Polynesian 1853a:2). In a 24 December 1853 update of the account, the Commissioners of Public Health provide a description of how the disease arrived in the region as follows:

The woman, as near as we could learn from herself and her husband, left the schooner on Friday evening, and staid over night not far from Kahului. The next day she made her way home: traveling, as we suppose through Hamakuapoko, Maliko and Kalanakahua, and reached her mother’s house, at Haiku, on Saturday night. This was one of five or six houses built as close together as they could

stand; and we think from 12 to 20 persons occupied these houses. Sabbath morning some 30 individuals passed within a few rods of the house, on their way to meeting. Once of us rode to the house and saw the woman. At 2 o'clock, P.M., he returned to the house, with the magistrate of the district, and found the woman's face covered with the small pox. She was ordered to be removed to the infected district, and the house was immediately destroyed, and the village deserted. No other case of the small pox have we had in Hamakualoa. (The Polynesian 1853b:2)

The following month, another update on small pox in East Maui is provided in the 21 January 1854 edition of Polynesian as follows:

A correspondent on East Maui writes,—"I am happy to report the state of things on this part of the island, as prosperous. There have been from six to ten cases of small pox in Hamakua, and three deaths. No new case during the past six weeks. We can now report freedom from the small pox, if no new case should be introduced from abroad. There has been no case in Koolau, none in Kula, none in Honuaula, and but one or two in Wailuku. We hear that there are but few cases remaining in the districts of Hana, Kipahulu and Kaupo." (The Polynesian 1854)

These accounts may have been related to a Honolulu epidemic of smallpox in 1853 and 1854 (Daws 1968:139) and of its impacts to the neighbor islands. It was a large pan-Hawaiian problem of which the population was wholly unprepared. Daws (1968:140) relates the scene of devastation in the more populated cities:

The Hawaiians had never given much attention to Western ideas about medical treatment, and in this instance they paid a terrible price...Hawaiians fell sick everywhere. Some were abandoned and died alone; their bodies were left to rot. Others were buried where they lay, without coffins, in graves so shallow that wandering pigs and dogs could unearth them. Some native families nursed their sick at home, devotedly and uselessly, and carefully laid the dead under the dirt floors of their thatch huts or in their house yards, following their old burial practices and condemning themselves to follow the dead into the grave. (Daws 1968:140)

Partly because of the cultural gulf that existed between the Hawaiian and Western cultures, many people who had neither the antibodies, or the knowledge, to combat European scourges passed away.

Although large epidemics were rare in the eastern districts of Maui, when they did arrive, they often had devastating effects. On 2 October 1869, a brief call to action was published in *The Pacific Commercial Advertiser* describing a deadly epidemic that was occurring in Honomanū and throughout the Island of Maui as follows:

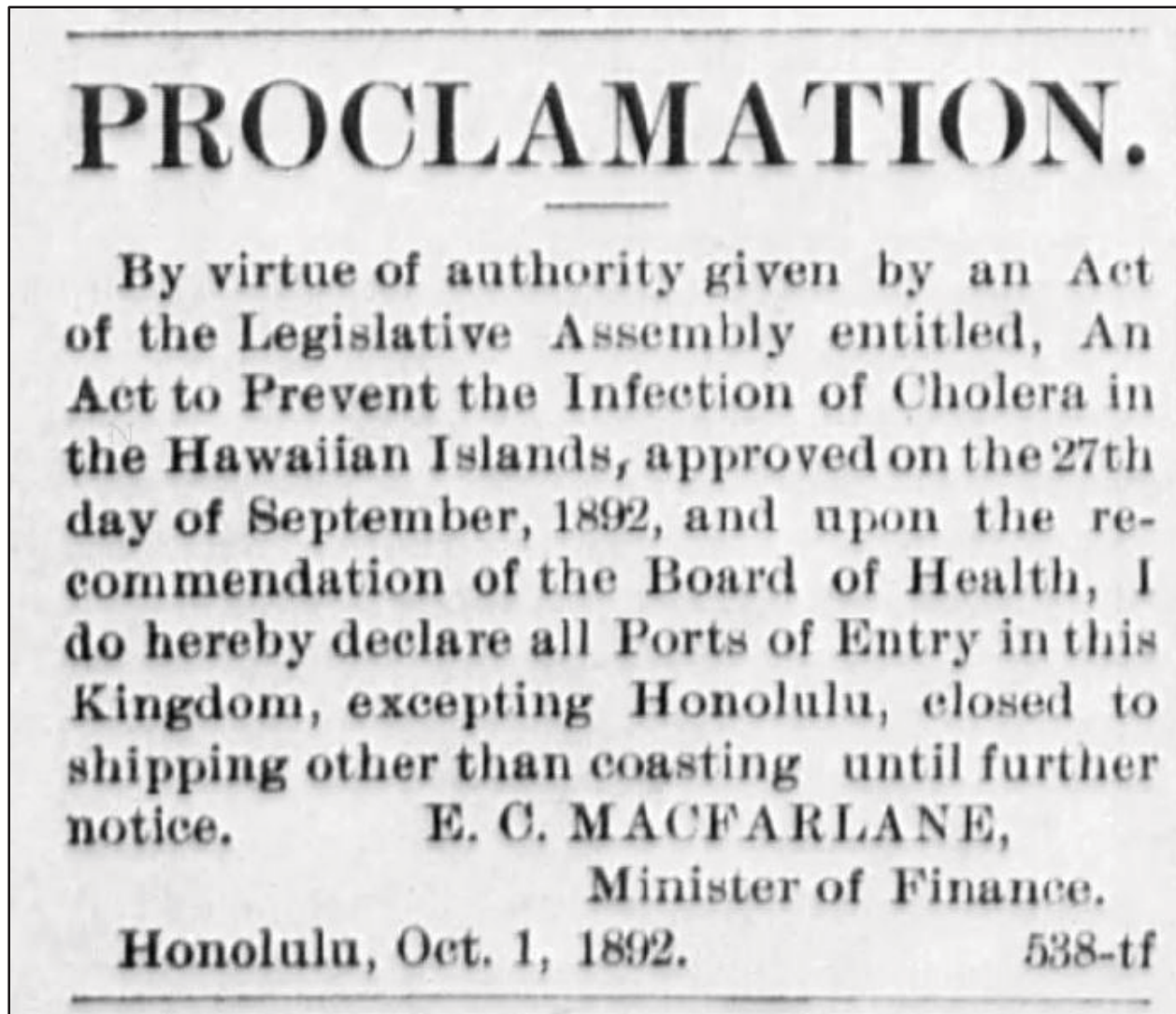


Figure 21. Announcement of port closure published in a Honolulu paper resulting from a cholera outbreak (Evening Bulletin 1892:2)

By a letter received yesterday from East Maui, we learn of the continued ravages of the epidemic fever which has prevailed for months on that Island. Rev S. Kamakahiki states, under date of the 23d, that since the 1<sup>st</sup> of September there have been fifteen deaths at Honomanu and seven at Keanae, and that a large number of the natives were sick. From another source we learn that the once numerous population of Honomanu valley has dwindled down to two or three families. In behalf of these dying natives, we ask the Board of Health if all has been done that can be done to save them and stay the ravages of the fever? If not, is not the Board censurable? (The Pacific Commercial Advertiser 1869b:3)

The ailment to blame for the 1869 outbreak was never explicitly named, but given the poor state of disease reporting in general in more populous areas (Figure 22) it is unsurprising that only small attention was paid to this affliction from Honolulu newspapers. The testament of the reporter clearly shows that even something as common as fever could have terrible repercussions on isolated and non-immune communities. The precise impact of various diseases on the populations of East Maui is wanting in terms of public recordation, but it does call to mind the many reports of early island wide archaeological studies (Stokes 1916; Thrum 1909b; Walker 1931b) that report evidences of extensive habitation and agricultural features lying abandoned throughout East Maui.

#### Linton L. Torbert in Honua'ula

As early as the mid-1800s, there was a small farming settlement located at Honua'ula, complete with a small landing servicing passing merchant ships traversing the southeast corner of Maui on their way to Kahului, Honolulu, and beyond. A prominent figure associated with Honua'ula at this time was Linton L. Torbert, an established rancher and agriculturalist operating a sizable tract of land in the Kula uplands and a small plantation at Honua'ula (Ulupalakua Ranch 2017). Torbert was a native of Newton Pennsylvania and his entry into the Territory of Hawai'i went quietly unnoticed.

In *Chapter of Firstling's*, Thrum (1909a) reports that, circa 1820, a large red variety of Irish potato was introduced to Hawai'i by Captain Jos. Vaughn. Some of these potatoes were sent to Governor Hoapili on Maui where they flourished better than on other islands (Thrum 1909a:129). Torbert was a prominent figure in the potato trade that had developed between California and Hawai'i between 1845 and 1856 while he oversaw the growing of corn and potatoes on his *kula* lands on the western slope of Haleakalā. Torbert's foodstuffs were then shipped to California by way of island merchant ships to fuel the population boom associated with the California gold rush. Tolbert was also one of the first individuals to plant sugar cane on Maui under the direction of King Kamehameha III (Ulupalakua Ranch 2017), in addition to being appointed as a committee member of the Royal Hawaiian Agricultural Society (The Polynesian 1850).

In February 1846 Torbert was charged, along with one of his employees named Benjamin Furbush, in the killing of a man named Aki in the Honua'ula region. Although both men were found guilty of the crime their sentences were commuted upon payment of \$200 each for extenuating circumstance (Cushing 1985). Robert L Cushing in his account of the proceedings found within *The Beginnings of Sugar Production in Hawaii* (Cushing 1985:22) stated that:



The circumstances of the shooting, described in the newspaper account of the trial, suggest that there was some provocation, that it was also to some extent accidental, and that Torbert and Furbush provided as much assistance as they could to Aki, in spite of which he died (Cushing 1985:22)

The exact reasons for the shooting are never explicitly detailed in Cushing's account of the incident, but neither the shooting or the verdict seemed to have adversely affected Torbert's standing in the Honua'ula community. According to Cushing, "Torbert had lived several years in the district and bore among all classes an excellent character. [He] had, by his good habits and friendly conduct won the esteem of the natives" (Cushing 1985:22).

In early 1851, Torbert had become intolerant of the conditions of drunkenness in the town of Kalepolepo surrounding the nearest entrepot and landing located downslope of his *kula* plantation, acting as the closest port of sale for his *kula* produce. As part of an editorial responding to a proposed lightening of taxes on imported beer into Hawai'i, Torbert lends his account of the conditions at Kalepolepo to an unnamed "Pastor of Makawao" in *The Polynesian* (1851b:1) as follows:

Kula is full of potatoes, nearly ripe, of a fine quality...so that, with the blessings of God on good management there is nothing to prevent gains flowing in like a river...and yet there is danger that all these benefits will be counteracted by the beer shops at Kalepolepo, and other places along that shore. The people tell me they have great trouble with their teamsters... After a taste of the wretched beverage, they care little for their teams or for their loads; neglect all till they have filled themselves with this vile compound... They fill their kegs with the good creature, and take with them a sufficient quantity to make their friends drunk at home. Of this I have no doubt, and the fact is as alarming as it is shameful. (The Polynesian 1851b:1)

The decline of Kalepolepo entrepot may be the reason that L. L. Torbert began advertising the selling of his potatoes on commission from his plantation at Honua'ula starting in 1851 (The Polynesian 1851a) (Figure 23). Having worked in the region since the 1840s, Torbert used Honua'ula as a port of sale for his goods until at least 1855 (The Polynesian 1855b). During his period of operation at Honua'ula, Tolbert was renowned for the quality of his goods. In the 1852, published meetings of the Royal Hawaiian Agricultural Society in a column appearing in *The Polynesian* (1852:2), Torbert was awarded third place in the islands for the quality of his sugar cane and first place for his Irish potato specimens. Several years later, Torbert was also awarded first place for the quality of beef (The Polynesian 1855a). Despite Torbert's excellent products, the Honua'ula plantation was put up for auction in mid-1855 (The Polynesian 1855b).

In 1862, Torbert moved to O'ahu, and died in Honolulu in 1871 at the age of 55 (The Hawaiian Gazette 1871; The Pacific Commercial Advertiser 1862). Although the growing and shipping operations by Torbert at Honua'ula were eventually closed, sugar would continue to be grown in the region by small growers, as well as by the East Maui Plantation and several decades later by the Nahiku Sugar Company.



| Year                   | Disease                            | Deaths <sup>1</sup> |
|------------------------|------------------------------------|---------------------|
| 1804                   | "okuu" (cholera?)                  | <15,000             |
| 1818                   | "catarrhs and fevers"              | 60                  |
| 1825                   | unnamed                            | "Great"             |
| 1826                   | influenza                          | "Thousands"         |
| 1839                   | mumps                              | "Great numbers"     |
| 1848-1849              | measles, whooping cough, influenza | 10,000              |
| 1853                   | smallpox                           | 5,000-6,000         |
| 1857                   | influenza, dengue                  | "Many"              |
| 1870-1871              | scarlet fever                      | "Great"             |
| 1878-1880              | whooping cough                     | 68                  |
| 1881                   | smallpox                           | 282                 |
| 1888                   | whooping cough                     | 104                 |
| 1889-1890              | measles, dysentery                 | 26                  |
| 1895                   | cholera                            | 64                  |
| 1899-1900              | bubonic plague                     | 61                  |
| 1918-1920              | influenza                          | 1,700               |
| 1928-1929              | cerebrospinal meningitis           | 68                  |
| 1936-1937 <sup>2</sup> | measles                            | 205                 |

Figure 22. Table of epidemic mortality rates within the Hawaiian Archipelago demonstrating insufficiencies in detailed documentation prior to the late 1800s, from Schmitt (1977:58)

THE BEST QUALITY  
of  
**IRISH POTATOES**  
IN ANY QUANTITY,  
at the  
**LOWEST PRICES,**  
on the  
**Shortest Notice,**  
by  
**L. L. TORBERT,**  
at  
**HONUAULA, EAST MAUI.**

Cargoes bought on commission at \$1 50 per ton  
or 12 1-2 cents per bbl.

Enquire in *Honolulu* of A. P. Everett, or Makee,  
Anthon & Co.

There is a greater proportion of the RED pota-  
toes at Honuaula than at any other part of the po-  
tato region.

Honuaula is the most convenient anchorage at  
the Island of Maui, to get cargoes on board. 6m-17\*

Figure 23. Advertisement from *The Polynesian* (1851a:1) for L. L. Torbert's sale of commissioned potato cargo from Honua'ula

### The Stranger's Home of Wailuanui

The 4 September 1869 edition of *The Pacific Commercial Advertiser* provides an account of an August 1869 journey through East Maui from the harbor in Hāna to central Maui by reporter "H.M.W." The account describes the lush landscape, referring to the region as "The Largest [Mountain] Apple Orchard in the World" and "The Switzerland of Hawaii" (*The Pacific Commercial Advertiser* 1869a:3). During the trip, heavy rains in Wailua Nui created flood conditions that made the streams of the area impassable and the travelers were invited to stay at the house of Hiniau, described in the following passage:

Here we sought refuge in a neat native house, whose landlord, a well-to-do native, named Hiniau, invited us in, and urged us to stop for the night, as it would be impossible to cross the next stream, which was considered dangerous when swollen. This we found to be correct, as the river forms a narrow gorge, where the road passes, and the water tumbles through it from ten to twelve feet deep, compelling travelers to stop till it subsides, which it generally does as rapidly as it rises. Our host, who was an eccentric genius, decidedly loquacious and somewhat of a jester as we found, was full of praise of the resources of the valley and his house, which he called *hale malihini* or the Stranger's Home,- and on being interrogated, said he could furnish food in abundance such as fowls, pigs, fish, eggs, potatoes, taro, poi, pine-apples, oranges, bananas, &c. (*The Pacific Commercial Advertiser* 1869a:3)

In addition to characterizing the extreme abundance of resources that were locally available in Wailua Nui, the traveler's account provides early documentation of how stream freshets affected access and travel through the region.

### The Growth of Early Sugar in East Maui

With the decline of the whaling industry in the Pacific in the mid- to late-1800s, the Hawaiian Islands attracted a new generation of managers, professionals, and entrepreneurs who would reshape the landscape for Western enterprises and pursuits. Samuel T. Alexander and Henry Perrine Baldwin were prominent in this movement. Alexander had been sent from his family home at Lahainaluna to study at Oahu College (Punahou School) in Honolulu followed by studies at Williams College in Massachusetts. Alexander returned to Lahainaluna in 1862 as a teacher, and he is credited with using irrigation for improving the town's sugar cane and banana yields with his students (Dean 1950). Reverend Dwight Baldwin (1798-1886) had arrived in the Hawaiian Islands in 1831 and was stationed at Lahaina between 1835 and 1870. During the early 1850s, Rev. Baldwin had been granted 2,675 acres of land in northwest Maui. This land holding became the basis for enterprises expanding over areas of West Maui undertaken by his son, Henry Perrine Baldwin, during subsequent decades of the nineteenth century (Dean 1950).

With the ratification of the treaty of reciprocity with the United States in 1876, the future success of sugar in the Hawaiian Islands seemed assured. At that time, several small plantations in the districts east of Wailuku and Kahului and north of Makawao developed new plans to expand the growing of sugar. The Haiku Plantation, managed by Samuel T. Alexander, as well as the Paia Plantation of Henry P. Baldwin, and the Grove Ranch Plantation of T. H. Hobron all suffered from frequent drought. In 1867, S. T. Alexander proposed a massive construction

project to bring mountain water from the streams of East Maui west to their plantations along the slopes of Haleakalā (Kuykendall 1967:64).

The stockholders of the Haiku Plantation agreed to back the project. On 30 September 1876, the government of Hawai'i gave permission to the plantations of East Maui to take water from the principal six streams of the region and convey the water by ditch to their fields, for an annual rental of \$100. The grant for the water was to last for a period of twenty years, with the stipulation that the ditch construction be completed within the next two years (Kuykendall 1967:64). The system by which mountain water was brought from East Maui to the Haiku Plantation fields in Ha'ikū and further west onto the isthmus of Maui was the breakthrough that the sugar industry needed to flourish (Wilcox 1996:127).

The "Hamakua Ditch Company" was organized on November 2, 1876, and specifically allotted the shares and costs and the divisions of water to the various plantations, as thus;

The ownership, share of costs and division of water were 9/20ths Haiku Sugar Company, 5/20ths the Alexander and Baldwin Company, 2/20ths James Alexander, and 4/20ths T. H. Hobron. Construction of the Hamakua Ditch, which consisted of a combination of an open ditch, tunnels and iron pipes, was carried on throughout 1876-1877. Funding for the project was accomplished by the agency of Castle & Cooke. Castle & Cooke agreed to finance the project, with the belief that Samuel Alexander and Henry Baldwin could bring the ditch project in for between \$25,000 to \$50,000 (Kuykendall 1967:64).

Thrum (1877:39-42) in *Hawaiian Annual and Almanac for 1878*, published a description of the project:

The digging of the ditch was a work of no small magnitude. A large gang of men, sometimes numbering two hundred, was employed in the work, and the providing of food, shelter, tools, etc., was equal to the care of a regiment of soldiers on the march. As the grade of the ditch gradually carried the line of work high up into the woods, cart-roads had to be surveyed and cut from the main road to the shifting camps. All the heavy timbers for flumes, etc. were painfully dragged up hill and down, and in and out of deep gulches, severely taxing the energies and strength of man and beast, while the ever-recurring question of a satisfactory food supply created a demand for everything eatable to be obtained from the natives within ten miles, besides large supplies drawn from Honolulu and abroad. (Thrum 1877:39-42)

When construction got under way, Sam Alexander and Henry Baldwin began to find out what a monumental job they would have to tackle. Torrential rains and landslides plagued the project. Workers had to hack their way through jungle and descend sheer cliffs by rope. When the men balked at the final barrier of the sheer drop of over 300 feet at the Māliko Gulch, Henry Baldwin, who had lost an arm in a sugar mill accident, shamed them into returning to work by sliding down a rope with his one good arm (Taylor et al. 1976:87).

In July 1877, the first water began flowing through the ditch. Approximately 60 million gallons of water a day were soon running through the ditch system. The ditch system had cost



\$80,000, which was paid for by Castle & Cooke. At the same time that the success of the Hamakua Ditch became known in the islands, the wealthy refiner of beet sugar in San Francisco, Claus Spreckels, arrived in Honolulu. Seeing the early success of the Alexander and Baldwin partnership, Spreckels moved fast to do business with the sugar growers of Hawai'i. Within three weeks, he had bought more than half the sugar crop of 1877 and was laying plans to take over the industry as a one-man monopoly (Taylor et al. 1976:87).

Spreckels had watched the Hamakua-Haiku Ditch development on Maui with special interest, hoping it would fail so that he could pick up the pieces. Anticipating the success for the future of sugar at East Maui, Spreckels acquired 8,000 acres of barren plain adjacent to Ha'ikū and the Alexander & Baldwin properties. He then leased 24,000 acres of Crown land in Wailuku through an agreement with a prominent member of the royal family. In 1882, Spreckels was able to obtain title to these lands in fee simple. All he needed was water. Here, Spreckels turned to his friend, Kalakaua; the newly-elected king of the Hawaiian Islands. Kalakaua dismissed his cabinet, whom had previously turned down Spreckels' application for water from the same general area as Alexander & Baldwin's Hamakua Ditch. A new cabinet was appointed by the king, who then approved a new right to water for Spreckels. Spreckels went on to build his own ditch and develop his Maui lands into a profitable sugar plantation (Taylor et al. 1976:88-89).

Spreckels was quick to consolidate his gains. His sugar venture on Maui was named "Hawaiian Commercial & Sugar Company." His expenditures on irrigation and mill machinery were lavish, and his Spreckelsville plantation was nothing short of magnificent. When Claus Spreckels received permission to the use of water found in East Maui, he built his own ditch from Honomanū stream to Maui's south shore (Wilcox 1996).

### Sugar in Hāmākua Loa

By the late 1870s, the sugar industry had made its way to Hāmākua Loa. The first record of a sugar plantation in the Hāmākua Loa area appears in the 1879 Hawaiian Annual in a list of plantations. Huelo Sugar Plantation is documented as situated in "Hamakua, Maui". There is evidence, however, that cane was being grown prior to 1879. An 1877-78 map of Hāmākua Loa depicts a cane field *makai* of the main road in the vicinity of present day Huelo Town (RM 1064, Hawaii State Survey Office). In addition, a store named "Honopou Store" is noted on the western bluff overlooking Ho'olawa Bay. An 1881 map of the Huelo Sugar Plantation (RM 862) depicts good sugar lands, and Huelo Sugar Mill (SIHP # -1504) situated in Honokalā Ahupua'a.

It is unknown when the first sugar mill was built here, although it probably existed by 1879. Peter Cushman Jones of C. Brewer reported that the year 1879 had been difficult due to the company's lack of funds (Sullivan, 1926). Apparently, the situation did not improve much because by 1895, the company had gone out of business. The company's failure was attributed to the distance from the mill to the Ho'olawa Landing (*Maui News*, March 31, 1900). A second sugar mill was erected in 1901, this one situated near the landing. In March 1902, *Maui News* reports the mill is a success "an improvement over the old Huelo Sugar Company which had old-fashioned machinery, one set of rollers, one vacuum pan, no triple effects" (March 29, 1902). According to the Hawaii Register of Historic Places, the "second mill was situated to utilize water from Hoolawa Stream and to be close to the landing in Hoolawa Bay. Processed sugar in bags was sent down to the landing on a simple inclined tramway." A local informant believed the



company went out of business in 1905 (Hawaii Register of Historic Places, Short Form, Site 50-50-06-1505).

No doubt the Huelo Sugar Plantation had a great impact on those living in Hanawana and surrounding areas. During this time, many provisions were needed in order to operate the sugar mill, one of which was wood. Documentation of a matter pertaining to wood cutting in the area gives a clear picture of the transformation of the landscape in Hanawana and the surrounding *ahupua'a*. In 1891, the Deputy Sheriff of Maui, L.A. Andrews was sent to Hāmākua Loa to investigate the cutting of woods on government lands. Apparently, Huelo Plantation had contracted certain residents to cut and cart woods to the Plantation from their own Plantation lands. Those who were questioned claimed they did not know the boundaries between government lands and Plantation lands and therefore may have mistakenly cut wood off of government lands. The sheriff, however, had a different view of the situation:

They cut all the wood from the flat lands of the Plantation several years ago and three years ago when I was at Huelo were cutting from the sides of the pali and carting from the bottoms of the gulches. [Hawaii State Archives, Department of the Interior, Land, 1891]

This suggests that by the late 1870s, early 1880s, in the formative years of the Huelo Plantation, most of the plateau lands had been deforested. By the late 1880s, the wood supply was beginning to dwindle and more inaccessible areas such as gulches and cliff sides were being harvested. During the period of the wood cutting investigation, people were spilling over into government land and in some cases, privately owned land to procure a good supply of firewood to sell to the Plantation.

### The Rise of Commercial Enterprise in Hāna

A 2 February 1897 article in *The Hawaiian Star* discusses the future of the Hāna region from the perspective of the continued growth of industry and commerce in Hawai'i at the turn of the century (The Hawaiian Star 1897). Hāna and the undeveloped slopes of East Maui are described as one of the last natural environments remaining in the State in the following excerpts:

The district of Hana is one of the least known to the general public of any districts on the Islands. Beyond the fact that there are three sugar plantations, viz: Hana, Reciprocity and Kipahulu, the average citizen of Honolulu knows very little about it. It is one of the districts that, like Kona and Puna, will one of these days awake out of sleep.

The prospects of the Hana district are good. The sugar plantations lie on the belt of the undulating land at the extreme east of the Island. To the northwest of Hana Plantation there is an extent of country stretching for twelve or fourteen miles, which, at one time, supported a large population, but which at present time has only a scattered villages here and there.

The energy to develop these lands must come from without, it can never come from within. Again, it is not only energy and capital that are required, but roads. The roads of the portion of the Hana district have hardly been touched since the

days of Dr. Judd, who, so far as memory serves, had the present so-called road constructed. (The Hawaiian Star 1897:4)

The ambition for successful commercial cultivation in East Maui continued to be the focus of all endeavors throughout the mid- and late-1800s. Sugar, coffee, and rubber plantations were started throughout the region with high hopes of success. A 19 December 1898 article in *The Hawaiian Star* documents a large land sale in Nāhiku and describes the beginning of “the awakening” of the region to foreign industry in the following excerpts:

The land sale which took place at Paia on Saturday afternoon, December 17<sup>th</sup>, was indeed a phenomenal one. There were three lots for sale, and each of them sold for a little over five times the appraised price.

The lands in question are situated in Nahiku among the Palis of East Maui. A couple years ago it would have been hard to give the land away and no one wanted it, unless the chances of permanent government and therefore capital were assured. So the land lay a waste of guava scrub, ferns, ohia, kukui, lauhala and so forth. The thundering waterfalls crashed over the cliffs and the streams roared over their rocky beds to the ocean, with no tribute to the soil in the shape of irrigation. For miles there would be no habitation.

Now all this is being changed. The district, one of the most fertile on the Islands, awakes out of its lethargy. The valleys which have only heard the roar of the cataract and the rush of the stream will wake to the sound of the steam whistle and the ax, and man will enter upon his kingdom. Cultivation and civilization with reign, but the wild beauty of the Koolau district with be gone. Again this is progress under annexation. (The Hawaiian Star 1898)

#### East Maui Irrigation Company

The prospect of growing sugar in Hawai‘i was very appealing to the Kingdom as it would provide a renewable economic base. This view was further exemplified in 1876 by “An Act to Aid the Development of the Resources of the Kingdom” in which eminent domain rights reserved for public purposes (such as water) could be applied by the government to private enterprises for the development of sugar (Wilcox 1996). Along with the Reciprocity Act of 1876 that allowed the duty-free export of Hawaiian sugar to the mainland U.S., the groundwork had been set for the start of the sugar industry in the archipelago (ASCE 2001). This new industry would require a vast amount of water as exemplified by the poem about sugarcane named *The Crop* by Beryl Blaich: “And water, all the water you can find, dig, direct, scrounge, divert, tunnel and hold. Bring the water tribute to me, King Cane” (Beryl Blaich in Wilcox 1996:v).

The East Maui Irrigation Company (EMI) ditch system (EMI Aqueduct System) was constructed to deliver water from the abundant watersheds of East Maui into coastal and central isthmus plantations to aid in sugar production. The EMI Aqueduct Sytem has been in use for over 134 years and continues to collect water today for both private and municipal entities. In its current state, the EMI Aqueduct System contains 50 miles of tunnels, 24 miles of open ditches, inverted siphons and flumes, 388 intakes, eight reservoirs, and a solar powered radio telemetry system to monitor ditch flow. The catchment begins at roughly 1,300 ft elevation and delivers

water to central Maui at an elevation of 1,150 ft, covering 18 miles from its western to eastern extent (ASCE 2001).

Built at a time when Hawai'i was still an independent kingdom, the EMI Aqueduct System was the first of its kind both in the Pacific and on the West Coast of the U.S. It is also the largest privately financed, constructed, and managed irrigation system in the U.S. The initial construction of the first section of the ditch system in the 1870s, named Old Hamakua, began the engineering trend of catchment ditches that would later fuel the sugar industry on Kaua'i, O'ahu, Hawai'i, and Maui, making sugar the major economic sector of Hawai'i for over a century. The EMI Aqueduct System itself is composed of a mosaic of multiple smaller ditches, all built at different times by different groups of financiers and engineers (ASCE 2001).

Hawai'i was moving through many economic and demographic shifts in the late 1800s following the intensification of Western commerce, including the continued drift of rural populations toward town centers, which made water a highly contested and protected resource on islands such as O'ahu where these demographic trends were most pronounced. This is largely because water had to be diverted from distant watersheds to support growing cities. The legality surrounding watershed catchment was continuously challenged for leaving too-little water for residents where streams were diverted by the government (Wilcox 1996). Regardless of the dismay this may have caused, the costs of abandoning water catchment had to be carefully balanced by the Kingdom, since much more than the municipal water supply hung in the balance. In *Sugar Water: Hawaii's Plantation Ditches*, Carol Wilcox (1996:27) states:

Hawaii moved steadily through this transition because it always had something that it could trade. At first the orient traded for Hawaiian sandalwood; then the whaling fleet needed crew and provisions; there was California Gold Rush market; the Westerners wanted land-and these commodities all became available. Both the markets and the resources, however, were limited, and before long they were "used up." Unless it developed a new commodity, Hawaii ran the risk of becoming a political and economic non-entity, a backwater nation. This did not fit the vision that the monarch, the resident haole, or the people had for the future of the kingdom. (Wilcox 1996:27)

Old Hamakua, the first catchment marking the start of the EMI Aqueduct System, was constructed during the reign of King Kalākaua. This section of ditch was constructed by Henry P. Baldwin, Samuel T. Alexander, and James M. Alexander between 1876 and 1878 under the name of the Hamakua Ditch Company. The result of the project was 17 linear miles of non-lined ditch (Wilcox 1996). This ditch was servicing Ha'ikū fields by July 1877 with the water it harvested from Kailua, Hoalua, Huelo, Ho'olawa, and Honopou streams on their way to the terminus at Nā'ili'ilihale Stream.

The second addition to the ditch system was the Spreckels Ditch, also known as the Haiku Ditch, constructed between 1879 and 1880 amid much controversy regarding how Claus Spreckels secured the water rights from the Kingdom by manipulating his financial ties to the monarchy (see Section 0). The lease granted to Spreckels gave him rights to all water not already in use by 30 September 1878, the same date as the deadline for the completion of the Old Hamakua Ditch. Taking advantage of his unrestricted access to all streams not currently under

collection, the Haiku Ditch was twice as long, three times as large, carried 50 percent more water than the Hamakua Ditch, and stretched from Honomanū Stream to the Kīhei boundary (Wilcox 1996). The ditch was thirty miles long and could deliver up to 60 million gallons per day (mgd), costing nearly half a million dollars by the time it was completed (ASCE 2001). The breadth and scale of this endeavor would redefine standards of water collection for the sugar industry in Hawaii. The massive Haiku Ditch was the first developed by a foreign engineer, named Herman Schussler, a trend that would continue for all future additions to the EMI Aqueduct System (Wilcox 1996). Shortly after Spreckels formed the Hawaiian Commercial and Sugar Company (HC&S), construction also began on Center Ditch (1898), Manuel Luis Ditch (1900), and the Lowrie Ditch (1899-1901) by Schussler (ASCE 2001).

In 1898, Spreckels lost controlling interest of HC&S to the agency of Alexander & Baldwin, who took up and completed construction of the Manuel Luis and Lowrie ditches. Along with the Center Ditch, these two sections completed a lower elevation catchment running through the Hāmākua Loa and Koʻolau regions. Most notable was the Lowrie Ditch, sometimes called the Lowrie Canal, named after the manager from the HC&S plantation and mills at Spreckelsville, William J. Lowrie. The 22 mile-long Lowrie Ditch could deliver 60 million gallons per day and contained seventy-four tunnels (totaling 20,850 ft, with a single tunnel of 1,955 ft), nineteen flumes (totaling 1,965 ft), and twelve siphons carrying water from distant Honomanū Valley to the central isthmus (Figure 24 and Figure 25). This ditch was also engineered by a foreign expert, E. L. Van Der Neillen, and constructed by Japanese laborers under the direction of Carl Jensen (Wilcox 1996).

Following the completion of the Manuel Luis/Center/Lowrie Ditch extensions, the next large irrigation project for the Hamakua Ditch Company would be the Koolau Ditch, constructed between 1904 and 1905 by M.M. O'Shaughnessy. This extension of irrigation catchment reached an additional 10 miles toward the Hāna Region and consisted of 7.5 miles of tunnel and 2.5 miles of open ditch and flume. Given the extreme difficulty of working in the narrow and deep gulches of the region it was necessary to build a road alongside the ditch where it passed into tunneled rock, the span of these borings ranged from 300 to 2,710 ft in length (Wilcox 1996). It is this road that was famously travelled by author Jack London in 1905 (The Honolulu Advertiser 1914). This newest ditch section extended out to Makapīpī Stream in Nāhiku and cost the Hamakua Ditch Company \$511,330 to complete. The Koolau Ditch was constructed concomitantly with the New Hamakua ditch, transferring the Koʻolau water further west toward Hāmākua Loa, located parallel to the Lowrie ditch but further upslope (Figure 26) (Wilcox 1996).

In 1908 the Hamakua Ditch Company was succeeded by their new business entity, EMI. The purpose of this new entity was to develop and administer the surface water collection for all plantation entities under the Alexander & Baldwin umbrella, including the newly acquired Kīhei Plantation. Shortly after this transition, in 1912, EMI added lining to the Koolau Ditch bed and started construction on the Kauhikoa Ditch. The Kauhikoa Ditch collected the water originating in the Koolau/New Hamakua ditches and carried them further west through Haʻikū, Pāʻia, and further out to Puʻunene in the central isthmus. This newest extension was completed in 1915 at 29,910 linear ft and carrying 110 million gallons per day. Shortly after starting the Kauhikoa





Figure 24. Surface water collection along the walls of Honomanū Valley (Wilcox 1996)



Figure 25. Photo of Banana Intake in Honomanū Valley (CSH 2018)





Figure 26. Koolau Ditch water diversion at Pi'ina'au stream (Courtesy of EMI)

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

Ditch, EMI also started construction of the New Haiku Ditch in 1913. Construction of this lower altitude ditch, running from Halehaku gulch in Peahi to dry North Kīhei, was completed in 1914 with a finished length of 54,044 ft and a daily delivery of 100 mgd. The much longer New Haiku Ditch was completed faster than its Kauhikoa contemporary as the terrain it had to traverse was less severe (Wilcox 1996). Plans for the last major addition to the EMI Aqueduct System, the Wailoa Ditch, was started in 1918. By the time this ditch was completed in 1923 it was the highest capacity channel in the entire network and had a greater median flow than any natural river in Hawaii. The Koolau Ditch was connected to the new Wailoa section, being diverted away from the New Hamakua Ditch, and connected to a series of hydro-electric power plants on the north shore of Maui (Figure 27). The Wailoa Ditch consists of 51,256 ft of mostly lined tunnel, and its water capacity ranged from 160 mgd upon completion to a later increased capacity of 195 mgd. This ditch ran parallel to, and above, the earlier New Hamakua and Kauhikoa Ditches (Wilcox 1996).

Accompanying the water collection infrastructure were 12 siphons, 62 miles of road, 15 miles of telephone line, and numerous small feeders, dams, reservoirs, intakes, pipes, and flumes (Figure 28). The totality of the collection system was managed by four license areas (Huelo, Honomanū, Keʻanae, and Nāhiku) that dictated the circumstances and conditions under which EMI could collect the runoff from the various Government lands it crossed. The development and improvement of the EMI Aqueduct System over time has cost nearly \$5,000,000, compared to its modern assessment of nearly \$200,000,000 to create a comparable system. In addition to supplying Alexander & Baldwin's private sugar cane plantations with water, EMI also provides Maui County potable water for domestic purposes from the various license areas of East Maui (Wilcox 1996).

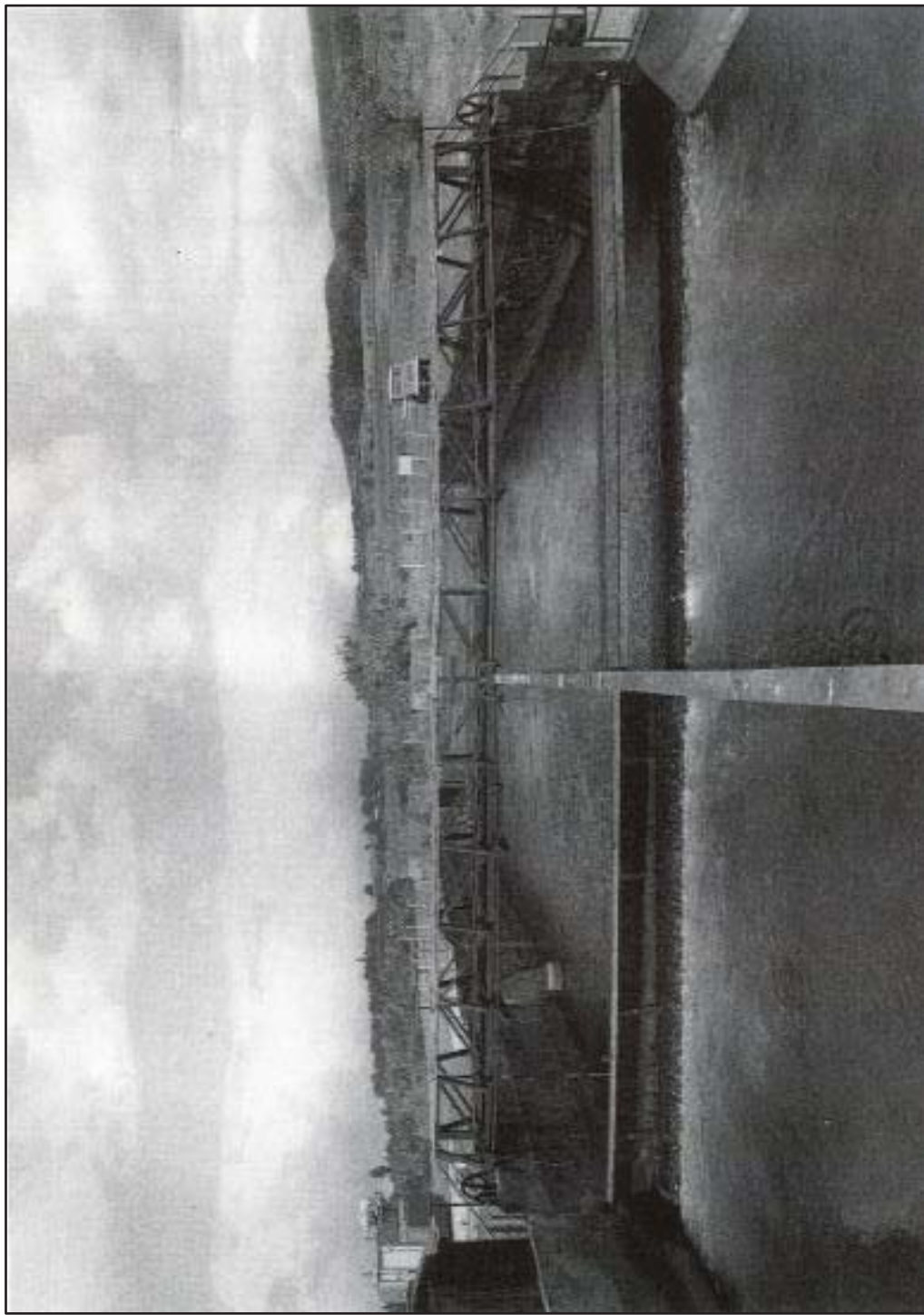


Figure 27. Wailoa forebay, a section of Wailoa Canal that drops into a low-head hydro-electric power plant (Wilcox 1996:118)

CIA for the Proposed Water Lease for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas (East Maui Aqueduct System),  
Multiple Ahupuaʻa, Makawao and Hāna, Maui

TMKs: Various





Figure 28. Collection of water at Hanawī Dam near Ke‘anae (Courtesy of EMI)

### Nahiku Sugar Company

In the late 1890s, sugar was grown in the Nāhiku region of East Maui by the Nahiku Sugar Company. Smaller sugar growers likely planted in the region prior to the establishment of this larger plantation due to the proximity of the area to the Makapīpī Stream watershed. From the beginning, water rights for the Makapīpī watershed were jointly shared between the Nahiku Sugar Company and multiple homesteaders who collectively formed the body of the company's sugar growers. The business of growing sugar at the plantation in Nāhiku was also dependent upon local farmers in that a significant portion of the land under cultivation by the company was deeded to the same homesteaders who held a portion of the water rights (Honolulu Advertiser 1902:2). For a brief period, the Nahiku Sugar Company was acquired by Alexander & Baldwin. In early 1899, Alexander & Baldwin took 250 shares and were appointed agents for the 370 acre Nahiku Sugar Company. Even with significant financial backing, profits declined, and by mid-summer 1900 development work on the plantation had stopped.

In addition to the day-to-day operations, the Nahiku Sugar Company completed the construction of a landing for the Territorial Government of Hawaii in 1901 and constructed rail lines for a derrick at the landing. There is no record of the use of locomotives on the rail lines that the Nāhiku plantation constructed, although the neighboring Hana Plantation began railroad operations in 1883 (Conde 1993:30). The construction of the landing at Nāhiku placed the plantation owners in additional financial hardship, and in the House of Representatives general assembly on Tuesday 25 June 1901, the *Honolulu Advertiser* reported that it was agreed upon that "the amount expended on Nāhiku landing be paid the incorporation by the Government, at whose suggestion the landing had been taken in hand and finished" (1901b:9-14). Deferring the landing's construction cost to the Government proved to be of minimal short-term financial benefit to the company.

In 1902, local homesteaders petitioned their Congressman, Delegate Wilcox, not to grant additional water rights to the Nahiku Sugar Company that would infringe on the already established rights of the local farmers who had since had a falling out with the Company. Water rights and land were shared from the start, so when local homesteaders refused to plant additional cane for the mill in response to a perceived threat to their individual water rights, the Nahiku Sugar Company petitioned for additional water rights from neighboring watersheds in inaccessible gulches to the northwest to supplement the shortage. Since the initial licenses were upheld, and the homesteaders' rights protected, the Nahiku Sugar company was forced to "either get more land under cultivation, or the plantation must be given up" (Honolulu Advertiser 1902:2).

Eventually, the founding homesteaders gave up on the Sugar operation altogether, putting the company at risk of collapse due to insufficient land and water access for continued cane cultivation. In a *Honolulu Star Bulletin* article dated 24 July 1943, Mrs. Shaw, widower of a Nahiku Sugar Company homesteader, summarized the failed operation as follows:

Mr. Shaw and I moved from Paia, Maui, to our newly acquired homestead of 125 acres at Nahiku, on the windward side of Maui. At that time the land was in its virgin state and unimproved...and Mr. Shaw planted cane for the Hana plantation while plans were being developed for the Nahiku Sugar Co. The prospects for this



new company were so promising that all those owning land there were planning to plant for the newly organized plantation, but unfortunately the company failed. In 1903 we had to vacate our homestead and came back to Honolulu. (Honolulu Star Bulletin 1943:6)

In 1902, a merger was planned with the Hana Sugar Plantation by which the Hāna plantation would pay an annual rental of \$4,500 over a 26 year lease which included a valuable set of water rights (Thompson 1902:272). In 1904, Alexander & Baldwin bought out all the remaining stock in the Nahiku Sugar Company (Dean 1950:62). Efforts were made by the company to diversify their planting operations, potentially adding a new income stream to the business by dedicating ten percent of their arable land (200 acres) to the cultivation of latex rubber (Pacific Commercial Advertiser 1910). The rubber industry had a short boom in the region around this time with several other rubber plantations opening around the Nahiku Sugar Company. Attempting to capitalize off this new regional industry did not pan out for the company, since in the years leading to 1920, all rubber plantations in the area had closed (see Section 4.3.1.1.1). Eventually, all the former sugar plantation land at Nāhiku was acquired by HC&S and EMI under the parent corporation of A&B (Hatch 1922:1410).

## 4.3 Twentieth Century to Present

### 4.3.1 1900s

According to the Census Bulletin of 1900, the population of Hāna District was reported to be 5,276 and the population of Makawao District was reported as 7,236 (Thrum 1909a:18). The Board of Health reported 755 births and 422 deaths in Maui County in the year 1900 (Schmitt 1977:13). An interesting population dynamic of this period of time is that while the populations of the Wailuku and Makawao districts continued to grow by at least a thousand inhabitants every ten years, there is a corresponding negative effect on the population of Hāna. Official census figures have the Hāna population shifting from 5,276 persons in 1900 to only 969 persons in 1970 (Schmitt 1977:13-14). While disease and urban drift may play a role in these figures, there is also the added regional strain of the establishment, and subsequent collapse, of agricultural industries throughout the East Maui region. While East Maui was originally slotted for agrarian development in the eyes of the early developers, this industry would, during the course of the twentieth century, gradually give way to tourism as its primary draw to visitors and businessmen.

A feature section in the 4 September 1910 edition of the Honolulu Advertiser documents an August 1910 tour through the Hāna District of Maui by H.M. Ayres, a reporter for the paper (The Honolulu Advertiser 1910:13). The tour, which began on the government road and then continued along the Koolau Ditch trail, provides a first-hand account of the region, albeit from an outsider's perspective, along with photographs of homesteads, homesteaders, landscapes, and prominent structures. While passing through Honomanū Gulch, Ayers relates "...there is none more impressive in the islands. Its beauty baffles description and were its attractions name widely known, tourists in plenty would assuredly visit..." (The Honolulu Advertiser 1910:13). Continuing along the ditch trail to Ke'anae, Ayers stopped at the house of Halemano and recounts the following observations of life in Ke'anae:

At the house of Halemano we were made very welcome, supper being ordered by our host at a Chinese restaurant nearby. He naively remarked that poi and fish

were no good for haoles. Halemano, who is postmaster and political boss of the precinct, is a dignified old native. His house is on the campaign circuit and when election time rolls round there are stirring times at his residence. His daughter, Aunie, is easily the belle of the district.

Many of the Keanae girls have Chinese husbands and appear to be quite happy with them. They are better providers than the Hawaiians and this probably accounts for the phenomena.

Before leaving Keanae we offered to buy a squid stone from Halemano but the old man refused to part with the relic, declaring that it was his wife's and that he didn't need the money-a rare thing with the average Hawaiian today.

While we were in Keanae the natives were conspicuous by their absence. Returning for some article that I had forgotten, after my departure, I found quite a gathering discussing the business of the malihini haoles while across the rice fields men, women, and children were hastening toward the house of Halemano. (The Honolulu Advertiser 1910:13)

Nāhiku was the next stop on the tour for Ayers who was welcomed by C.S. Austin, manager of the American-Hawaiian Rubber Company. Ayers described the rubber industry in Nāhiku (described in greater detail in subsequent sections) and provides the following account of the work and resources in the region:

There is a very good class of Hawaiian at Nahiku, industrious and contented. The rubber affords them more or less constant employ and fish are very plentiful off the shore. The natives working for Mr. Austin regard him as a friend. He speaks their language fluently and both he and his mother have, by their helpful attitude, endeared themselves in the hearts of the Hawaiians of Nahiku. (The Honolulu Advertiser 1910:13)

The account of Mr. Ayers illustrates a significant degree of social interaction and integration between the lifestyles of the Native Hawaiians, *haole* (foreign) businessmen, and the various ethnic laborers and homesteaders that had adopted the region as home. Though agrarian industries were still trying to scratch profits from the rocky slopes of Makawao and Hāna District's coastal plantations at this time, the makings of East Maui as a destination of note for travelers to the islands was in the making. Tourist activity would become more frequent with the advancement of local infrastructure into the region, eventually supplanting agriculture as the economic cornerstone of the region.

### Jack London

In the summer months of 1907, renowned travel writer Jack London and his second wife Charmian, stopped at Maui on the South Pacific portion of their sailing trip around the world to travel the ditch trail across the Hāna District. His horseback travels around Haleakalā and overland to Hāna appeared in his book "The Cruise of the Snark," a non-fiction account of London's travels and experiences during their world tour that was published in 1911. In select excerpts from London's book reprinted in *The Honolulu Advertiser* (1914:10) the beautifully rugged East Maui coast is described as follows:

The windward side of Haleakala is serried by a thousand precipitous gorges, down which rush many torrents, each torrent of which achieves a score of cascades and waterfalls before it reaches the sea. More rain comes down here than in any other region in the world... Hundreds of inches of rain annually, on fertile soil, under a tropic sun, means a steaming jungle of vegetation. A man, on foot, cutting his way through, might advance a mile a day, but at the end of a week he would be a wreck, and he would have to crawl hastily back if he wanted to get out before the vegetation overran the passage way he had cut. (Jack London in The Honolulu Advertiser 1914:10)

London also observed the lay of the land near the Ko'olau Gap in Haleakalā Crater, travelling into Hāna, Ke'anae, and eventually Nāhiku. As a keen observer and seasoned writer, London took notice of the abundance of water flowing from the local watersheds. London also inspected the rubber plantation at Nāhiku and traveled by way of the Nāhiku Ditch Trail, of which he commented:

Water means sugar, and sugar is the backbone of the Territory of Hawaii, wherefore the Nahiku Ditch, which is not a ditch, but a chain of tunnels. The water travels underground appearing only at intervals to leap a gorge, travelling high into the air on a giddy flume and plunging into and through the opposing mountain. This magnificent waterway is called a "ditch," and with equal appropriateness can Cleopatra's Barge be called a box-car... There are no carriage roads through the ditch country, and before the ditch was built, or bored, rather, there was no horse-trail... O'Shaughnessy was the daring engineer who conquered the jungle and the gorges, ran the ditch and made the horse-trail. He built enduringly, in concrete and masonry, and made one of the most remarkable water-farms in the world. Every little runlet and dribble is harvested and conveyed by subterranean channels to the main ditch. But so heavily does it rain at times that countless spillways let the surplus escape to the sea. (Jack London in The Honolulu Advertiser 1914:10)

Turning his attention from water collection of the Nāhiku Ditch to the engineering feat of the ditch trail running alongside of it, London comments on the trials of the passage:

The horse trail is not very wide. Like the engineer who built it, it dares anything. Where the ditch plunges through the mountain, it climbs over: and where the ditch leaps a gorge on a flume, the horse trail takes advantage of the ditch and crosses on top of the flume. That careless trail thinks nothing of travelling up or down the face of precipices. It gouges its way out of the wall, dodging around waterfalls or passing under them where they thunder down in white fury; while straight overhead the wall rises hundreds of feet and straight beneath it sinks a thousand... The only relief from the flumes was the precipices; and the only relief from the precipices was the flumes, except where the ditch was far underground, in which case we crossed one horse and rider at a time, on primitive log-bridges that swayed and teetered and threatened to carry away... The ceaseless iteration of height and depth produced a state of consciousness in which height and depth were accepted as the ordinary conditions of existence; and from the horses back to

look sheer down four hundred or five hundred feet became quite commonplace and non-productive of thrills. And as carelessly as the trail and the horses, we swung along the dizzy heights and ducked around or through the waterfalls... I advise only those with steady nerves and cool heads to tackle the Nahiku Ditch trail. (Jack London in The Honolulu Advertiser 1914:10)

Some of the heights experienced by riders on London's overland expedition were said to have shaken even the steadiest nerves. London relates an incident involving a lifelong cowboy from a local ranch with a reputation for fearlessness, having to dismount his horse while crossing a particularly deep gorge on a flume, gladly surrendering his reputation for the security of knowing he would be returned safely to his wife and children (The Honolulu Advertiser 1914).

The creator of the ditch system and its horse trail traveled in London's narrative, Michael M. O'Shaughnessy, was considered at the time the world's foremost irrigation engineer. O'Shaughnessy arrived in the Hawaiian Islands in 1899, and engineered the 1904-1905 Koolau Ditch through Nāhiku, referred to by London as the "Nahiku Ditch" (Wilcox 1996:117). Of the condition surrounding the construction of this section of the Koolau Ditch and its accompanying trail, O'Shaughnessy reported:

The country was so steep and precipitous that little ditching could be employed, and it was necessary to make four and one-half miles of wagon road and eighteen miles of stone paved pack trails to facilitate during construction the transportation of supplies. About 4,000 barrels of cement and 100,000 pounds of giant powder were used. In all, ten mountain streams are intercepted, which are admitted into the main aqueduct through screens of grizzly bars spaced three quarters of an inch apart (O'Shaughnessy in Wilcox 1996:117)

London's visit to East Maui could not have been better timed and his observations more appropriate considering the ongoing development of agricultural endeavors in the Hāna District. Surely his descriptions of the local watersheds, his experiences in plantation communities, and the feats of engineering that connected them would reach many readers abroad by way of his penmanship. Even the impressive engineering feats London witnessed in this environment could not detract from the wildness of the surrounding countryside he observed:

The vegetation ran riot over that wild land. There were forests of koa and kolea trees, and candlenut trees... Wild bananas grew everywhere, clinging to the sides of the gorges, and, overborne by their great bunches of ripe fruit, falling across the trail and blocking the way. And over the forest surged a sea of green life, the climbers of a thousand varieties, some that floated airily, in lacelike filaments, from the tallest branches; others that coiled and wound about the tree like huge serpents; and the one, the ie-ie, that was for all the world like a climbing palm, swinging on a thick stem from branch to branch and tree to tree and throttling the supports whereby it climbed... In fact, the ditch country is nothing more nor less than a huge conservatory. Every familiar variety of fern flourishes, and more varieties that are unfamiliar, from the tiniest maidenhair to the gross and voracious staghorn, the latter the terror of the woodsmen, interlacing with itself in

tangled masses five or six feet deep and covering acres. (Jack London in The Honolulu Advertiser 1914:10)

London's visit to the Nāhiku Ditch trail and to East Maui capture both the wildness of the countryside and the efforts of twentieth century business men to tame it in the name of commerce. The living in this area was rough and isolated, a fact that would become better known to the many agriculturalists who called Nāhiku their home during this period of plantation development in the area. Even with the collapse of the Nahiku Sugar Company's planting operations around the same time, the wild country with its abundant water and volcanic soils would continue to be a powerful draw for agriculturalists seeking their fortunes.

### Haiku Pineapple Cannery

During the first part of the 20th century Hawaiian Commercial and Sugar Company was acquiring land in Hāmākua Loa which suggests that sugar cane continued to be cultivated in the area (Lib. 843:386, 857:283). However, there is no documentation of where cane was cultivated and in what years. At around this same time, Alexander & Baldwin opened the Haiku Pineapple Cannery (Daniel 1995). Much of the land in the Ha'ikū area was leased to grow pineapple. During his survey of the heiau of Maui, Winslow Walker documents several heiau in Hāmākua Loa as having been partially destroyed in order to cultivate pineapple. Poohoolewa Heiau in Honopou (west of Hanawana) and Pohakuokaia Heiau are mentioned in association with pineapple fields (Walker 1931:90, 92). A local informant also indicated that pineapple was grown "to Kakipi Gulch and almost to Kailua", from around the mid 1920s to the mid 1930s (personal communication, S. DeCoite, April 16, 2001).

### Rubber Plantations in Nāhiku

In the early 1900s, Nāhiku became the site for several competing rubber plantations attempting to serve a growing demand for rubber used in automobile tires (Lindsay 1907:289-290). The *Hawaiian Gazette*, in a 1906 article, detailed the prospective changes to the region resulting from the introduction of rubber a year prior:

A little over a year ago a few homesteaders dwelt in Nahiku, living on their land chiefly because they hadn't money enough to go elsewhere. Wild bananas gathered in the jungles, mixed with guavas from the lower hillsides and washed down with milk from the cattle that wander in the forest, this was their means of subsistence. But the last year has demonstrated that rubber trees will grow in the district and the Nahiku of a year ago would scarcely be recognized now. (Hawaiian Gazette 1906:6)

Rubber planting was welcomed into the community by the residents as an avenue to bring income to the region after the closure of the nearby sugar plantation. With the local Nāhiku Sugar Company's difficulties in growing commercial sugar in the area, the Nāhiku region fell into a state of "innocuous desuetude...so the district has lain idle and the residents there have grown poorer and poorer until many families were on the verge of starvation" (Hawaiian Gazette 1906:6) Outlook for the profitability of rubber was good according to industry experts. R.H. Anderson, having studied rubber cultivation in Brazil, the West Indies, and Mexico, made a visit to Nāhiku in 1905 to survey the environmental conditions. During this visit Anderson planted a



handful of rubber trees to monitor their growth rate, and tapped several existing trees serving as shade near Nāhiku Landing to gauge latex output of local rubber. After witnessing good latex flow from the mature trees near the landing, and the several feet of growth of his experimental saplings in just a few short weeks following heavy rains, Anderson was convinced that “rubber trees would not only grow, but would produce rubber” (Hawaiian Gazette 1906:6). This visit by Anderson set the stage for the emergence of the rubber industry as attested by the *Hawaiian Gazette* nearly a year later:

That little grove of trees planted by Mr. Anderson in January, 1905, is now a thriving young orchard...so high that a man on horseback may ride beneath their lower branches without bending his head. And other orchards are being planted all along the nearby slopes of Haleakala, the primeval forest is falling before the axes of forces of laborers, and little rubber saplings from a foot to ten or eighteen feet in height are springing up everywhere to eventually clothe the mountain sides. (Hawaiian Gazette 1906:6)

Four chief rubber companies operated in the region by 1907, with all companies dedicating a combined total of 1,100 acres to the cultivation of cerea (*Manihot glaziovii*) and hevea (*Hevea brasiliensis*) rubber tree varieties, with the former being favored over the latter due to its high “first returns” (Pacific Commercial Advertiser 1910:9-12). The first plantations to open in the region were the Nahiku Rubber Company and the Koolau Rubber Company in 1905, followed a year later in 1906 by the opening of the Hawaiian-American Rubber Company and the Alexander & Baldwin-owned Nahiku Sugar Company, who began cultivating rubber trees on former cane land. When taken together, the combined plantings of the four major companies were more than 280,000 individual rubber trees, with the fields being tended by Japanese, Portuguese, and Hawaiian laborers living in the region as homesteaders or in plantation labor camps. Growing rubber was a difficult business to start in Nāhiku considering that the average maturity rate for a rubber tree is between three and five years, resulting in the first ‘experimental’ tapping of these crops in 1910 to determine quality, and not emerging onto the national market until a sizable crop could be harvested in 1911. Some companies, such as the American-Hawaiian Rubber Co., attempted to diversify their plantation by cropping corn in the spaces between the furrows of rubber trees in an effort to offset the costs associated with the long wait for the rubber trees to reach productive maturity (Pacific Commercial Advertiser 1910). Attempting commercial agricultural operations in a region as isolated as Nāhiku in the early 1900s proved to be an insurmountably difficult undertaking for the growing rubber enterprise on East Maui.

#### 4.3.1.1.1 *The Nahiku Rubber Company*

The Nahiku Rubber Company was in operation as early as 1905. As the first rubber plantation on Maui, the Nahiku Rubber Company sought to spearhead the new burgeoning demand for rubber on the international market. At the time of the company’s founding, automobile manufacturing was a booming industry and automobile tires cost the average consumer between \$25 and \$40 a piece “because rubber was scarce and expensive, most of the world supply being gathered from wild trees in the Amazon valleys of Brazil” (Smith 1943:10). Accompanying literature of the time regarding the cultivation of rubber in the tropical British Colonies of Malay and Ceylon was filled with highly optimistic accounts of the big profits to be made in the

industry. Expecting significant returns from the undertaking the Nahiku Rubber Company, promoters purchased approximately 900 acres of land and immediately started clearing fields and building roads, labor camps, and houses for the staff (Figure 29) (Smith 1943).

Expenditures on the Nahiku Rubber Company facilities were soon augmented by the difficulties encountered by the early growers once planting had started (Figure 30). The first crop had been comprised of 50,000 rubber tree seeds imported from Brazil, some of the seeds germinated while the rest had failed to sprout. In the wake of these losses the company decided to scout the island for established trees already growing in people's residences, and the company offered cash to acquire the domestic trees to their plantation. With the plantation being as remotely located as it was, the company would cut the trees down and transport the stumps to the fields for replanting, which the managers viewed as a shortcut to bypass the long wait for seedlings to reach maturity (Figure 31). Very soon the capital for the project was expended, and the company began selling stock to raise more money for the plantations day to day costs of operation. Economic forecasts for the rubber industry did not live up to their expectations, and by the time that the Nahiku Rubber Company had a fully planted and matured 250 acres ready for tapping, the price of rubber had bottomed out at 16 cents per pound. Depending heavily on an all-inclusive low of one dollar per pound for their product, the domestic rubber market in Hawai'i could not remain profitable. The Nahiku Rubber Company, Ltd., managed by David Colville Lindsay at that time, was closed on January 20, 1915 (Siddall 1917:175).

#### 4.3.1.1.2 Koolau Rubber Company

In June of 1905, William A. McKay organized the Koolau Rubber Company at Nāhiku, and served as managing director during its first year of operation (Nellist 1925). By 1906, a year after the Koolau Rubber Company was founded, the prospects for the rubber plantation looked promising. A *Maui News* article from 1906 echoed this optimism by stating that "It is confidently expected that the growing of rubber will be one of the most successful industries on the island and will make possible the utilization of many acres of land that are now useless" (The Maui News 1906:13). The optimism was partly justified because upon return from an inspection of the plantation, the company representatives R.A. Wadsworth and W.L. Decoto reported a fifteen foot growth of the previous year's crops that had been planted from seed. The luxuriant growth of the crop exceeded their expectations. The costs of cropping the rubber trees were also small for the time, costing the company only six dollars per acre to clear the dense vegetation and only about one cent per hole for planting saplings. At the time of this assessment, Koolau Rubber Company had only planted 25 acres of their 300 acre holdings and were expecting their next shipment of saplings later that year (The Maui News 1906).

By 1914, the Koolau Rubber Company had nearly its entire acreage planted and was poised to produce its maximum output, but the simultaneous fall of rubber prices on the world market forced the company into considerable financial hardship. Prices had dropped so drastically that the cost alone of tapping the trees on the plantation would have drained all the profit from the company's sales and would incur debt. The company had not been a profitable venture from the start and had been carried for some time by a small number of wealthy shareholders waiting patiently for the projected returns. In the end, rubber prices never rose to a profitable value for the Koolau Rubber Company and the prospect of severe economic atrophy had finally won out over the determination of the shareholders to keep the company in operation. In 1914, the

Koolau Rubber Company published its notice of intention to foreclose on the \$30,000 dollar mortgage from the First National Bank of Wailuku and begin winding down operations immediately (Honolulu Star Bulletin 1914).

#### 4.3.1.1.3 American-Hawaiian Rubber Company

As early as 1906, the American-Hawaiian Rubber Company was in operation in East Maui with over 65,000 juvenile trees in the ground (The Hawaiian Star 1906c). In 1908, American Hawaiian Rubber Company fields were evaluated by F.T.P. Waterhouse who was particularly well pleased with the growth of the rubber trees. The hevea variety of rubber tree was the primary crop at this plantation with higher year to year yield being cited as the reason this species was chosen over the more commonly planted cerea tree. The company also experimented with castilloa rubber trees from Mexico and with interstitial planting of select food crops between the widely spaced rubber trees. The use of hevea trees was initially not as beneficial as had been anticipated by the American-Hawaiian Rubber Company. Initially, the hevea trees were planted during the winter months as this was when the seed crops originating in the southern hemisphere were maturing and rife for shipment, the abundance of which made the cost of procurement less expensive. Even though the trees in the region were generally doing well, this error in planting times was cited as being the reason why timely maturation and first yields were lacking (The Honolulu Advertiser 1908). As with the neighboring plantations in the area, once the trees were planted and growing the enterprise became a waiting game until the trees were mature enough to harvest. An article in *The Honolulu Advertiser* (1910:13) relates the continued optimism as harvest approached:

The product is of prime quality, there is a keen demand for it as a result of samples sent out, and the price continues to rule high. Small wonder that the Nahiku rubber planters impatiently watch the growth of their trees and pray that the price of rubber may keep up. They have had a hard row to hoe, but have stuck manfully to their work...There seems to be no doubt as to the ultimate success of the rubber enterprise, which has been removed for beyond the experimental stage, as far as paying returns are concerned. (The Honolulu Advertiser 1910:13)

New techniques, cultivation of a variety of species, planting additional crops between rubber trees, and patience did not pan out for the American-Hawaiian Rubber Company, and in 1917 the company gave notice of foreclosure on their mortgage in local newspapers (Honolulu Star Bulletin 1917).





Figure 29. Nāhiku hillsides planted with rubber tree saplings; plantation manager's house visible on the ridge (Pacific Commercial Advertiser 1910)

CIA for the Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

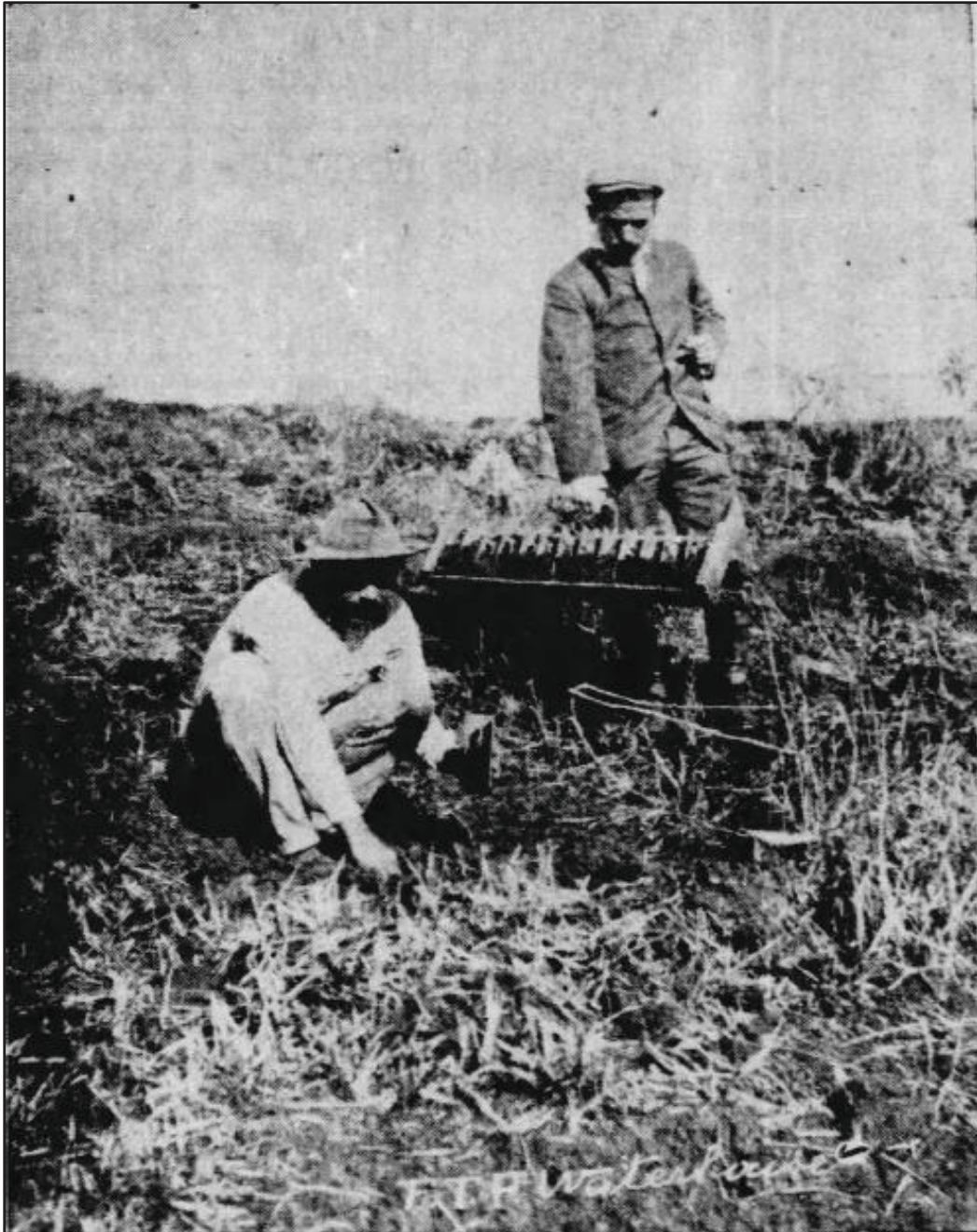


Figure 30. Seedlings being planted at the Nahiku Rubber Company (Pacific Commercial Advertiser 1910)





Figure 31. Nahiku Rubber Company Manager C. H. Anderson riding among his rubber tree saplings (The Honolulu Advertiser 1908)

#### 4.3.1.1.4 Nahiku Sugar Company

Unlike other rubber ventures in the region, the Nahiku Sugar Company approached the planting of rubber with a bit more caution and tempered enthusiasm than their neighboring competitors. Whether this approach was resulting from the failure of the plantation to successfully crop sugar a decade earlier is uncertain, but by the time that the rubber industry had begun to grow in the region the Nahiku Sugar Company lands were in a severe state of neglect (The Hawaiian Star 1907). Sometime between late 1905 and early 1906, Alexander & Baldwin hired a new manager for the former sugar plantation at Nāhiku by the name of J Sylvester from Portland Maine (The Hawaiian Gazette 1908). By late 1907 Sylvester had planted nearly 100 acres in cerea rubber trees mimicking the other local plantations with a rough planting of about 400 individual trees per acre under cultivation (The Hawaiian Gazette 1907). Details about rubber crops specific to Nahiku Sugar Company regarding the product quality and progress of growth are scarce, but in general, their rubber crops seem to have lacked the same profitability as the neighboring plantations. By the time that the manager of the Nahiku Rubber Plantation, W.A. Anderson, brought a group of potential investors through the region to evaluate the state of rubber growth in East Maui, The Nahiku Sugar Company manager had decided that the next years plantings would not be as close together and that he would be experimenting with hevea variety trees in the next plantings (The Hawaiian Gazette 1908). The new planting techniques either came too late or were of little profit to the company as under two years after first planting a portion of their land to rubber the plantation manager announced that no more rubber would go into the ground until the already developing downward trend in rubber's market value reached a more favorable standing (The Maui News 1907).

While rubber cultivation was in full swing, the plantation managers made it their business to regularly test the crop productivity to better gauge the long term financial viability and estimate future yields, especially W.A. Anderson who managed the Koolau Rubber Company and oversaw a government experimental station for the express purpose of evaluating the local rubber industry. Initial rubber tree tapping in 1912 yielded an "enormous quantity" of the valuable latex sap, and appeared to bode well for the profitability of the local plantations (The Maui News 1912:1). Although the sap was voluminous it was found to lack the elastic qualities that would have made it ideal for tire production, and instead the rubber produced in East Maui was only suitable for "machine belts and other articles which do not demand the elastic qualities" (The Maui News 1912:1). Just how profitable the non-elastic latex sales would be was unclear at the time of the published article, as the market for those goods was not in as much demand as the need for automobile tires.

Ultimately a decline in the price of rubber doomed the Maui rubber industry. After testing for several years, the rubber growers concluded that it would not be profitable to continue. It was found that the temperature was hardly warm enough for rubber to grow best and that labor was much more expensive than at Malaysian plantations (O. W. Freeman 1927:64).

#### Ke'anae

Ke'anae is located on the windward flank of Mauna Haleakalā in the Hāna District and traditional *moku* of Ko'olau within the *ahupua'a* of Ke'anae. Once a site of intensified Native Hawaiian agriculture and habitation, and later becoming a center for missionary and agricultural

activities during the 1800s, Keʻanae packed several hundred years of historical development into a single stream-fed coastal valley peninsula. Though the region experienced varying degrees of economic boom and bust over its storied history, that history would become the next major draw to the region and supply income to its residents where subsistence and industry fell short.

#### 4.3.1.1.5 Keʻanae Homesteads

Keʻanae has been an active agricultural community for many generations. Studies of the history of land use in Keʻanae indicate that the lands have been used intensively for wetland taro cultivation, or *loʻi* agriculture, historically and during pre-Contact times (Group 70 International et al. 1995:70; Handy et al. 1991). As Native Hawaiian populations of the islands declined with the arrival of Western disease, so too did the need for taro, resulting in unattended *loʻi* in the Keʻanae area. In the second half of the nineteenth century, the market for rice grew significantly with increasing demand from Chinese laborers on sugar plantations in Hāna. After successfully completing labor contracts, Chinese immigrants looking for independent pursuits took advantage of an opportunity to grow their own staple, rice (Wright 1974b). With a pond field irrigation system already in place in Keʻanae, the region was ripe for conversion from taro cultivation to rice. Chinese entrepreneurs commonly leased former *loʻi* lands from Hawaiian owners for rice cultivation (Group 70 International et al. 1995). Tax records for 1890 indicate that the rice lands in Keʻanae and Wailuanui comprised approximately 67.84 acres out of a total of 163.322 acres in pond-field agriculture. Two years later, this number rose to 75 acres in Keʻanae and Wailuanui while other lands on Maui (Honokowai, Waikapu, Wailuku, Waiehu, and Waiheʻe) registered a combined acreage of 175 (Group 70 International et al. 1995; Linnekin 1985).

The Chinese farming community flourished in Keʻanae, and with an increase in population came the construction of buildings necessary for production and housing related to the rice plantations, as well as the establishment of socially-related organizations. An article in *The Hawaiian Star* (1906b) reports of two saloons “run by Chinamen”. The Li Hing Society Building (SIHP # 50-50-07-1510), a two-story wooden structure with a second story front porch, was built in 1908 and served as a place for Chinese social, religious, and educational purposes until the early 1950s (Figure 32) (Wright 1974b). After falling into disuse, the building was subject to repeated vandalism until, in 1981, it was demolished (Group 70 International et al. 1995). Remnants are now stored at the Kwok Hing Society in Keokea, Kula (Wright 1974b).

In 1906, 14 applications were received out of the 16 Keʻanae homestead applications made available at that time to Hawaiians. Stipulations required occupants to build a residence and cultivate taro on the homestead parcels, which each averaged about two to three acres including from a half to a whole acre of taro land (*The Hawaiian Star* 1906a). Concerns regarding these homesteads were reported:

It is very probable that many of the applicants do not realize, or have not taken the time to consider the conditions under which the land is to be awarded to them, but fully expect to lease out their land to the Chinese there for planting rice, and let their kula land lie idle, and when the first two years are up a great many of them will doubtless forfeit their lots. The Hawaiians there have been asking for homestead for several years back and it is now up to them to make good. (*The Hawaiian Star* 1906a:5)

Hawaiians did grow taro on these early homesteads (Figure 33), mostly for home consumption. Rice farming declined sharply following 1910, and by 1935 ceased entirely (Group 70 International et al. 1995). Around 1920, many Hawaiians returned and began commercially cultivating taro on Ke'ānae Homesteads (Figure 34). Due to its important cultural and historical significance, the Ke'ānae Peninsula taro complex has been designated SIHP # 50-50-07-3933.

#### 4.3.1.1.6 Transportation Infrastructure

Prior to the construction of the Belt Road to Hāna, horse trails, developed when engineers constructed ditch systems between East Maui and the central Maui isthmus, were the only means of overland travel. Travelers leaving Ha'ikū on horseback for Ke'ānae descended and ascended 22 major valleys before arriving at Ke'ānae. Along the way, the traveler would have visited Native Hawaiian villages at Huelo, Kolia, Waiakamoi, Wahinepe'e, Puahokamoa and Honomanū. Inter-island steamships made regular stops at the Ke'ānae Landing, but were considered expensive (\$2.00 for deck passage) (The Maui News 1926).

Reports of an exceptional account of a Chinese merchant departing from Ke'ānae Landing to ship rice to Makawao was published in *The Honolulu Republican* (1901:9) newspapers:

On account of the refusal of the Wilder Steamship Co. to carry rice from Keanae to Maliko, T. Awana, one of the most enterprising Chinese in the Islands, has contrived another means by which he can convey his rice to Maliko, and from there to Makawao in carta. Awana has built a Chinse sampan, and rigged it with Chinese sails. The boat was built at Maliko of white pine, and it can carry about five tons of merchandise. It is manned by a crew of about ten Chinamen, whom Awana has selected from his number of workmen. These Chinese at first were not accustomed to the motion of the boat, and on this account it took some time before the boat reached Maliko from Keanae with its first load of five tons of rice. From Maliko the boat leaves for Keanae with small loads of food-stuff to supply Awana's customers on the other side. Awana owns large patches of rice in the Keanae District. All the riggings and gear for the sampan were made by Awana, even the rope which he uses to fasten the sampan to its moorings in Maliko. Mr. Awana also grinds his own coffee for sale in his store at Makawao, keeps cattle, and engages in several other enterprises, all of which he attends to personally. The rice which reaches Maliko from Keanae is carried to his store at Makawao in ox carts, where it is sold in large quantities (Honolulu Republican 1901:9)

An article in *The Honolulu Advertiser* (1901a:11) further describes the crew and trip:

...The crew consisted of ten sailors six Chinese and four Hawaiians. The trip over was a rough one, the six Chinese being sick from the motion of the waves not to mention the effort of rowing in a choppy sea. As the wind was contrary, the sampan had to be rowed over, eight oarsmen working at one time. They sailed back again in three hours with the assistance of one of their two square sails. Five tons of rice was the cargo brought from Keanae. The start was made on the 28<sup>th</sup> and the return during the 30<sup>th</sup>. (Honolulu Advertiser 1901a)





Figure 32. Historic Rice Mill (SIHP # 50-50-07-1510) in the Ke‘anae Historic District (The Honolulu Advertiser 1910)





Figure 33. Undated photograph of the irrigated fields of Ke'anae (CSH Archives)



Figure 34. Portraits of Ke'anae homesteaders and their residences (The Honolulu Advertiser 1910:13)

After 1927, use of the landing had discontinued. In 1992, remnants of Ke'anae Landing were assigned SIHP # 50-50-07-2957 (Group 70 International et al. 1995).

In 1912, a narrow road and bridges were completed that connected Kailua to Nua'ailua Bay near Ke'anae, and by 1915, other contractors had built a road connecting Hāna to Ke'anae. However, this Hāna connection ended in the Ko'olua forest instead of tying into the road to Kailua (Group 70 International et al. 1995). Two historic concrete tee beam bridges were constructed near the entrance of Ke'anae Peninsula in 1916, Pi'ina'au Stream Bridge and Palauhulu Stream Bridge (Group 70 International et al. 1995).

By 1922, the Hāna Belt Road had been completed between Kuiaha and Kakipi Gulch. In 1923, the County Board of Supervisors requested more prison labor for roadwork between Kailua and Ke'anae. While road work continued toward Ke'anae, survey work commenced between Ke'anae and Kopili'ula. In June 1925, the grand opening of the Kailua-to-Ke'anae portion of the Belt Road was celebrated by a procession of automobiles to Ke'anae. Territorial Governor Wallace Farrington dedicated the opening of the road with County Board of Supervisors Chairman Samuel Kalama and others (Figure 35) (The Maui News 1926). A highly anticipated *luau* was held on Kamehameha Day to celebrate the opening of Hāna Belt Road into Ke'anae:

The celebration will be the first time that the Keanae folk as a community have been brought into direct contact with those of the rest of the island, and all the district is determined to make the affair a rousing success. Hawaiian delicacies in fish and fruit are promised in lavish supply from the Hana and Keanae country, and June 11 has been written down a day of ill omen for the pigs and steers of Central Maui.” (Honolulu Star Bulletin 1925:21)

#### 4.3.1.1.7 Churches

The Ke'anae Protestant Church (SIHP # 50-50-07-1511), also referred to as Ke'anae Congregational Church or Ke'anae Church (Figure 36), is a stone structure with wooden doors and a single interior open space located near the ocean on the Ke'anae Peninsula. A small cemetery adjoins the north side of the church. While materials were being gathered as early as 1857, the church was not built and dedicated until 1860 (Group 70 International et al. 1995). Construction was not entirely completed until 1863. Painted on the east wall behind the pulpit is the church's given name, “Lanakila Ihiihi O Iehova Ona Kaua,” meaning “Sacredness, Success of Jehova, the Son of God” (Wright 1974a).

According to legend, and an article in the *Honolulu Star Bulletin* (1949:16), the coral used as a source of lime for the mortar to build the church washed ashore from divine intervention:

It seems that the Keanae people had no coral on their beach, and since coral is essential for making the lime to hold the stone structure together, the Hawaiians prayed for help.

A great storm arose which washed quantities of coral onto the beach, more than needed.



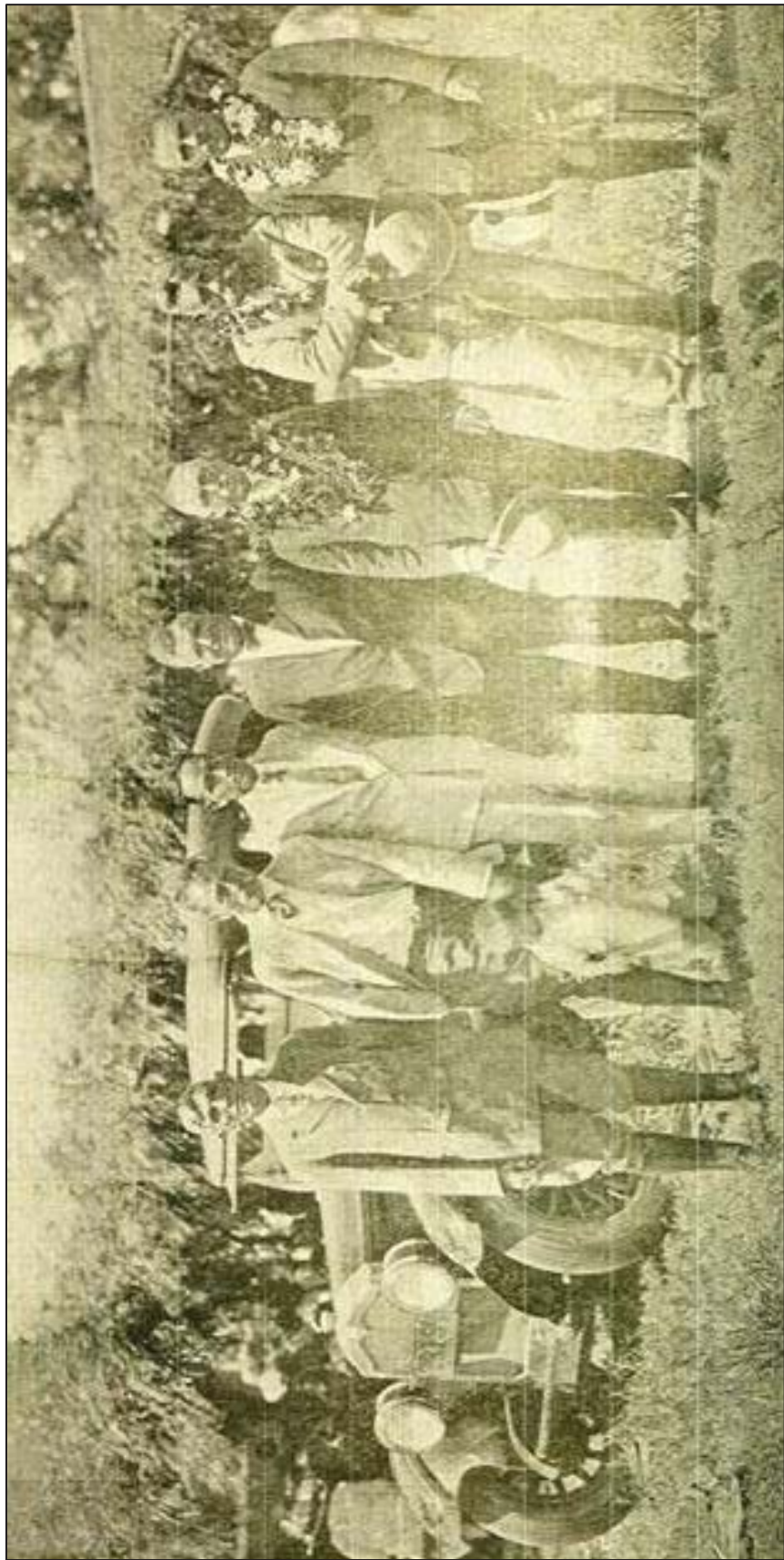


Figure 35. A group of Maui County Supervisors pose with Governor Farrington in Ke'anae; left to right: R.A. Drummond, W.F. Kaae, County Engineer P. Low, Sheriff C. Crowell, Governor W. Farrington, Chairman S. Kalama, and D.T. Fleming (The Maui News 1926)

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

The people believed God had answered their prayers. So, they set to work with a will to haul the great trees down from the mountain and to gather the stone needed for the building. (Honolulu Star Bulletin 1949:16)

The surveyor responsible for completing the NRHP form for Keʻanae Church, J. C. Wright (1974a:3), further describes the Keʻanae Church as an “excellent example of the early stone mission church erected in distant outposts with indigenous materials.” This large structure, which included an attached social hall, not only served the congregational needs of the local Keʻanae inhabitants, but also provided a gathering place for surrounding communities (Wright 1974a).

On 1 April 1946, a *tsunami* (Japanese for tidal wave) generated by an earthquake in the Aleutian Islands off the coast of Alaska, struck the Keʻanae Peninsula. The height of the *tsunami* runup over two separate spots at Wailua was measured at 4.8 m (15.7 ft) and at 5.1 m (16.7 ft) (World Data Center 1977). The Keʻanae Church was the only structure left standing when the *tsunami* receded (Bartholomew and Bailey 1994), although the assembly hall was destroyed (Group 70 International et al. 1995). The church sustained some damage from the 1946 *tsunami*, and by 1968, time had weathered the structure to a point of having a leaky roof, a near collapsing ceiling, and a saggy floor (Wright 1974a).

Mr. Harry K. Pahukoa, Jr., and his mother, Mrs. Nary Aima Pahukoa, with the assistance of the other four families of the church and a carpenter friend, began repairs on the church. Though slow at first, help from the community did materialize. Funds and chandeliers were donated, and volunteers helped refinish pews, paint the walls, and install electricity. The roof, windows, doors, and floors were all repaired. Through diligence, faith, and dedication, the Pahukoa's dreams of repairing the church were realized, and their efforts have helped secure this historic site for posterity. More than 350 people attended the rededication of Keʻanae Church on 27 July 1969 (Wright 1974a). In addition to Keʻanae Protestant Church, another historic church is also present in Keʻanae. Wailua Mormon Church (SIHP # 50-50-07-1514) is a one-story wooden building situated between Keʻanae School and Wailua Homesteads Road. It was built in 1934 and dedicated in 1935. It served a small Mormon community in the Keʻanae area before it was eventually abandoned and used mostly as a residence. In 1974, the church had only five members (Wright 1974c).





Figure 36. 1958 photo of Ke'anae Protestant Church (CSH Archives).



#### 4.3.1.1.8 Ke‘anae School

The first school in Ke‘anae was located on the peninsula near the Ke‘anae Congregational Church. The main portion of the present day Ke‘anae School was built in 1912 with subsequent additions. The school provided a common learning place for children in kindergarten through eighth grade, in which the older students commonly assisted the younger pupils (Lum 1969). Initial enrollment was for 63 students (Penkiunas 1992). This number fluctuated throughout the years, but the curriculum continued to include traditional Hawaiian values and practices, including Hawaiian language and the cultivation of and traditional uses for plants (Figure 37 and Figure 38) (Tanji 1978). According to the Penkiunas (1992:10), Ke‘anae School is a “surviving example of a small rural school” that “represents the small wooden vernacular building found in many rural areas” and is the “last remaining two-room schoolhouse on Maui” (Figure 39) (Penkiunas 1992:10) It has been designated SIHP # 50-50-07-1630. After much debate regarding the school’s closure, the last class was held at Ke‘anae School in 2005. It was officially closed in 2010 (The Honolulu Advertiser 2010).

#### 4.3.1.1.9 YMCA camp complex, Ke‘anae Arboretum, and Ke‘anae Quarry

The Ke‘anae Prison camp was used from about 1925 to 1939. In the 1920s, prisoners at the camp worked on the construction of the Hāna Belt Road. The prison camp was converted to a Civilian Conservation Corps (CCC) camp in 1934, where islanders were employed to plant thousands of eucalyptus and other tree species, such as *koa* and *wauke* in the region. In 1946, the camp again housed prisoners who renovated the *lo‘i* located at the nearby Ke‘anae Arboretum. The Ke‘anae Arboretum *lo‘i* complex (SIHP #50-50-07-3922) consists of 14 *lo‘i* on two to three acres west of Pi‘ina‘au. These *lo‘i* have existed much longer than the arboretum, which was started in 1942 but did not open to the public until around 1970. The prison camp was closed in 1950. YMCA received a lease for the camp in 1949. Today the site is a YMCA camp that can be rented by the public. The YMCA camp complex consists of a group of plantation style wooden buildings. The manager’s residence, constructed in 1934, is the oldest building in the complex. The YMCA camp site offers panoramic views above Ke‘anae Peninsula and overlooks Ke‘anae Landing and Ke‘anae Quarry (Group 70 International et al. 1995).

Ke‘anae Quarry (SIHP # 50-50-07-3943) is located on a hill beneath the YMCA camp. It was used during the 1920s by prisoners who helped build the Hāna Belt Road with the blue rock that was crushed at the quarry. Features encountered at the quarry indicate the site was also used during World War II (WWII). When the quarry was first documented by Group 70 International et al. (1995), old machinery, a WWII gun emplacement, and a rock platform were observed. The platform may be the grave site of a former worker who died during a blasting accident.

Today, Ke‘anae consists of taro fields, small residential areas, and parks. In addition to taro, residents now also grow bananas, yams and other wetland crops (James 2002). Though the landscape has undergone some changes, Ke‘anae, with its *lo‘i* and preserved historic infrastructure, offers a glimpse into the traditional and historic land use in East Maui.

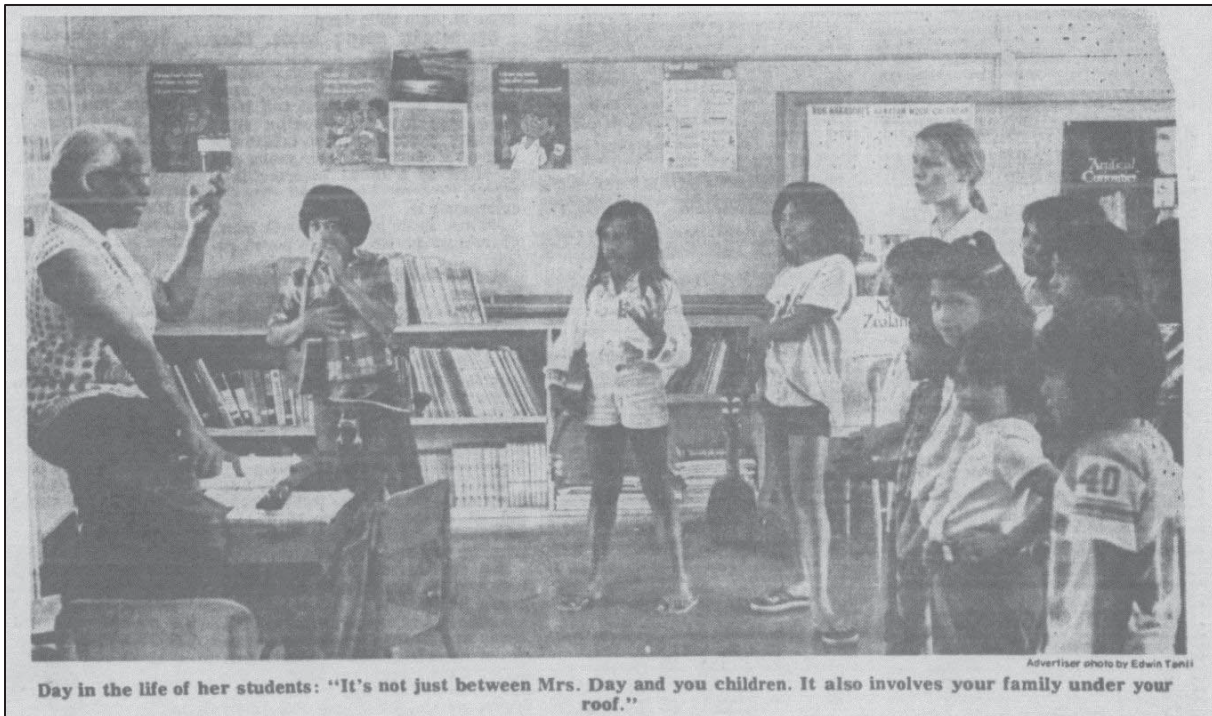


Figure 37. Mrs. Apolonia Day teaching her students at Keʻānae School in 1978 (Honolulu Advertiser 1978)



Figure 38. Keʻānae School students playing football (Honolulu Star Bulletin 1969)





Figure 39. 2013 Photograph of Ke'anae School (Wikimedia 2016)

### Hāna Highway Historic District

The Hāna Highway Historic District, which extends from Hoalua Bridge near Huelo in the Makawao District to Koukouai Bridge in the Kīpahulu District, includes 78 contributing feature components dating to over 50 years old. The Hāna Highway was also recognized as a Millennium Legacy Trail in 2000, and in 2001 was nominated to the National Register of Historic Places (NRHP). A total of 73 contributing resources of the Hāna Highway Historic District were documented within the district’s NRHP registration form (Duensing 2001). A Historic American Engineering Record (HAER) No. HI-75 for the Hāna Belt Road was published by the National Park Service in 2005 to provide descriptions of the historic architectural and engineering features of the Hāna Historic District (Duensing 2005). Of the 78 component features of the Historic District approximately 56 of the bridges/culverts exist between Hāna and the central isthmus of Maui along the north shore of the island (Figure 40).

The general path of the road is much older than the existing historic highway. It has predecessors as early as the time of the Maui King Pi‘ilani’s Alaloa (“long road”) and Kihapi‘ilani’s addition to the Alaloa known as “The Kings Trail” in the 1600s, to the time of the “Ditch Trail” that ran alongside the early water catchment and diversion ditches for agriculture in the early 1900s. The Hāna Highway was first built with the intent to circumscribe East Maui with a levelled road surface in 1900, complete with gulch spanning bridges. The initial roadwork of the early 20<sup>th</sup> century was piecemeal and incremental at best, sometimes making use of horse and foot trails connecting otherwise isolated sections of road (Duensing 2005). Dawn E. Duensing in Hāna Belt Road HAER HI-75 (2005:29) describes the difficulty of working on the early road as follows:

The work required in the Hana District was quite extensive due to the heavy rainstorms and freshets. At times flooding during the winter rainy season made it impossible to travel on the Hana Road...mail carriers were unable to complete their rounds, so the SPW [Superintendent of Public Works] ordered foot bridges built over deep gulches. Travelers were stuck with difficult overland travel on horseback or by steamers, which used what one resident called the “most impractical landings.” (Duensing 2005:29)]

Many of these problems were alleviated with the passing of the County Act of 1905 that established county government throughout the State of Hawai‘i, an important function of which was to appoint a county engineer by the name of Hugh Howell to oversee civic projects like the Hāna Belt Road. Replacement of the bridges was of utmost importance to the Hāna Belt Road project since “many of the [existing] bridges had deteriorated from rot and had trusses that were considered dangerous” (Duensing 2005:30). Howell’s program of replacing the truss type bridges with concrete pier-type bridges was first implemented across ‘Ohe‘o Gulch amounting to a 70 foot span. Although construction of these new type of bridge foundations were expensive, Howell argued that it represented an economic reconstruction since concrete piers required less maintenance than the trusses, which reduced necessary maintenance cost from an estimated \$50 per year to \$5 per year. Part of these savings in maintenance also originated in Howells use of crude oil and carbolineum to help protect the wooden superstructure against the moist tropical air and environment (Duensing 2005).

Construction of the road was slow for several years as the existing funding for the project was extremely limited and insufficient, having originated at that time from small amounts of money parceled out yearly by the government for the completion of consecutive sections of the road. This financial difficulty combined with the physical difficulty of building the road had the project approximately 10 years behind schedule by 1909. The formation of the Maui Loan Fund Commission (MLFC) in 1911 enabled the project to move forward with a more permanent capital improvement by replacing all timber bridges with concrete. The formation of the MLFC and the regularity of funding it provided enabled the construction of the first several concrete bridges enumerated among the Hāna Highway Historic District. The bridges constructed during the initial implementation of this funding were those named: Waikomai, Kōlea, Honomanū, Nuaʻailua, Moʻomonui, Waiakoi, Paʻihi, South Wailua (Honolewa), and Koukouʻai (Duensing 2005).

By 1920, the project saw the completion of many additional concrete bridges to the belt road, however, the belt road itself was far from complete as it still did not connect at several points. Also during 1920, the MLFC decided that it would suspend funding for the Hāna Belt Road for a few years to allocate funds to roads nearer the central isthmus that were seasonally inhibiting pineapple harvests due to poor conditions. The suspension of the belt road project would last until 1923 when Maui's business and civic leaders, along with the Hawai'i governor Wallace Farrington, became proponents of a resurgence of civic interest in the project. This revitalized interest fueled a massive organized effort to complete the section of the road from Kailua to Keʻanae, which was completed by its projected finish date in 1925 (Duensing 2005).

The construction of the next section of the Hāna Belt Road was begun shortly after the completion of the Kailua to Keʻanae section, and was boosted by a substantial bond from President Calvin Coolidge issued to the Territory of Hawai'i that included \$150,000 for completion of the proposed 3.5 mile stretch from Keʻanae to Wailua Iki. This stretch would prove to be the most difficult portion of road to create due to the many serried ridges of hard volcanic stone that had to be blasted through, and because of the occasional slipping of steam shovels into deep gorges and mechanical issues associated with their employment in the process of rock breaking. Occasional flooding and landslides were also a discouraging element of constructing the belt road, having been responsible for several instances of burying the steam shovels under their downslope aftermath. The final stretch of road was completed with the construction of Wailuanui Bridge in 1926, which had itself been setback by a landslide that sent 600 bags of concrete needed for its construction coursing down the adjacent gulch and out to sea (Duensing 2005).



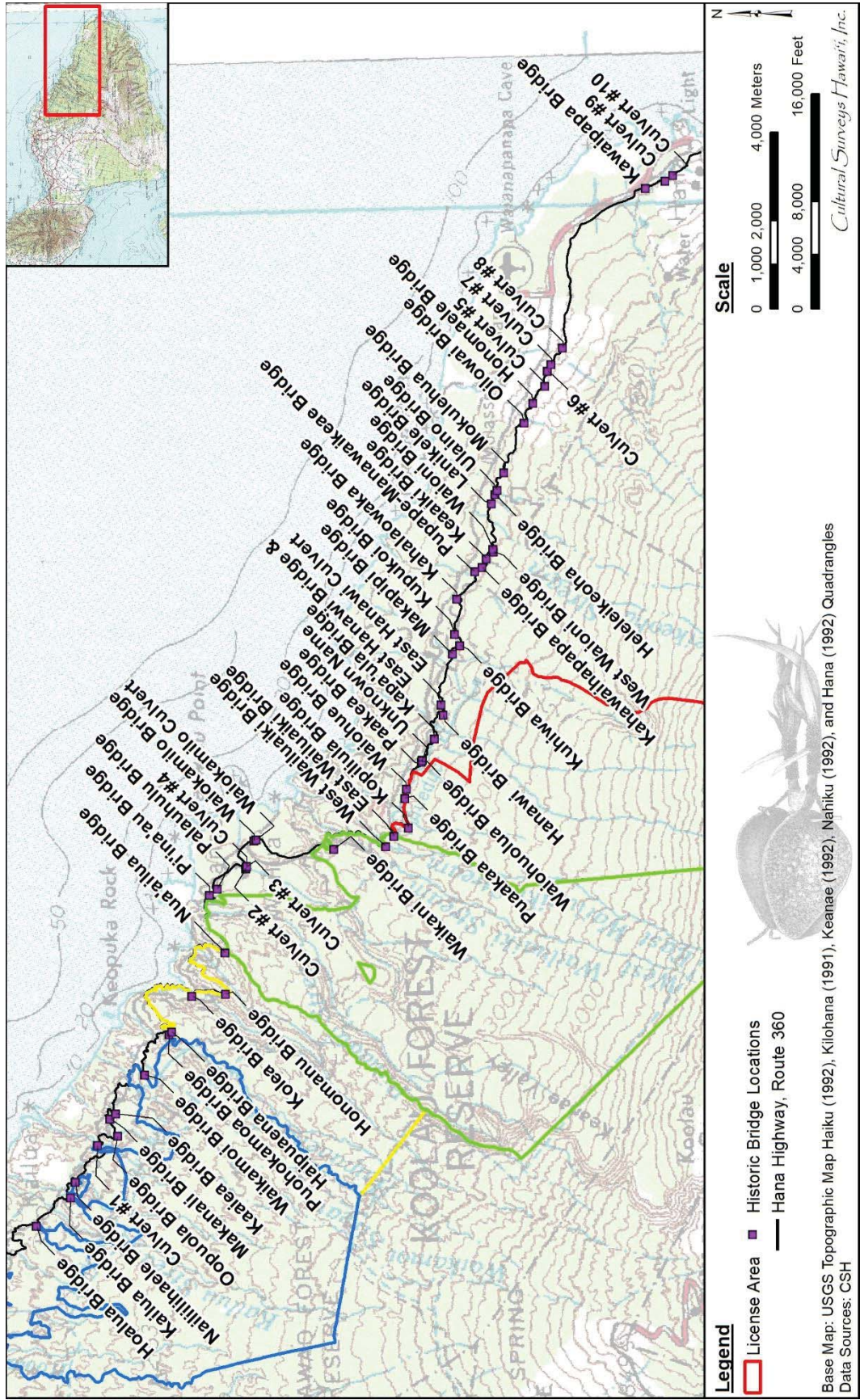


Figure 40. Portion of the 1992 Haiku, 1991 Kilohana, 1992 Keanae (U.S. Geological Survey 1991, 1992a, c)

CIA for the Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui

TMKs: Various

The Hāna Belt Road was completed and opened to the public in 1926 and effectively ended Hāna District's centuries of geographic isolation from the rest of the island. Although the public had begun travelling the road, several bridges were operational but incomplete. All the original bridges that comprise the historic road were not completed until 1947, and the road itself lacked a complete pavement up until the 1960s (Duensing 2005).

The type of component structures of the Hāna Historic District consist mostly of bridges and culverts, including: masonry arch bridges (Figure 41), concrete bridges (Figure 42), concrete arch bridges, and stone and concrete culverts. Since the road had been scarcely maintained since the final paving of the surface in 1962, it had been ravaged by the passing of time, showing few contemporary improvements aside from the addition of guardrails and pavement patch on the road surface.

In the 1990s, the State of Hawai'i responded to the need to repair the Hāna Belt Road and implemented a preservation plan for the entire length of state-owned road between Huelo and Hāna. The preservation plan called not for the preservation of the bridges themselves, but instead sought to retain the "character" of the road with its narrow bridges and winding cliffside roads. This proved to be a challenge as the funds offered by the Federal Highway Administration (FHWA) required the roads to be widened to their standard widths of 36 feet, with some of the existing roads only being about 16 feet wide. Ultimately the historic width of the bridges was allowed to remain narrow (Figure 43), conditional upon approval by the FHWA on a case by case basis. As a result of this ongoing maintenance work the historic district has been thoroughly researched and described in detail by multiple studies (Duensing 2001, 2005; McCurdy et al. 2014; MKE Associates LLC and Fung Associates 2013; Nagamine Okawa Engineers Inc. and Fung Associates 2015; Oceanit 2000; Wilson Okamoto & Associates 2001)

Ultimately, the Hāna Belt Road was deemed a historic property of significance due to the efforts and achievements surrounding its construction. Duensing (2005:55-56) clarifies the roads effect on the region:

The Hana Belt Road was a substantial public works achievement...during an era when Maui, especially Hana, was quite isolated from the rest of the world... the Hana Belt Road also involved the expertise of highly trained engineers and designers...Although some of the construction work was contracted out, county employees did nearly all the design and engineering work. (Duensing 2005:55-56)

In that the Hāna Belt Road still serves its original function of connecting isolated Hāna to the central plains, and that it has undergone very little cosmetic changes in the ensuing 70 years since its construction, it has a preserved character and function that has changed very little since its construction. Although the Hāna Belt Road was constructed to more sufficiently connect and develop the remote eastern side of the island, the opposite effect has been documented because of the narrow winding nature of the historic highway. Duensing (2005:59) clearly illustrates this point as follows:

The lack of easily-travelled, high-speed traffic artery has served to impede substantial development...There are no fast food chain restaurants, chain stores, strip malls or sprawling subdivisions along the Hana Belt Road. Travelers...are served by the occasional roadside stand and must drive all the way to Hana for



limited conveniences such as groceries, gas, and restaurants. With a sizeable population of residents of Hawaiian ancestry, Hana is often cited as Maui's "most Hawaiian community". [(Duensing 2005:59)

By way of reduced efficiency of travel to the Hāna region, a problem the Hāna Belt Road was originally constructed to rectify, the east side of the island has developed at a significantly slower pace than the vacation communities located on the southern and western shores of Maui. The novel architectural features of an early 20th century road combined with an awe inspiring slow drive through densely vegetated jungle and deep gulches have afforded the Hāna Belt Road a character uncommon in most civic projects of the early 20th century. This is the reason why the Hāna Belt Road was later deemed the Hāna Historic District and afforded protection on behalf of the United States Government and placed on the National Register of Historic Places in 2001 (Yucha and Hammatt 2017a).



Figure 41. Hāhālawe Bridge, a characteristic masonry arch style bridge (Wilson Okamoto & Associates 2001)



Figure 42. Papahawahawa Stream Bridge, a concrete beam and slab style bridge (Wilson Okamoto & Associates 2001)



Figure 43. Hāna Belt Road near Waiele Bridge, illustrating the narrow roadway tightly encroached upon by bedrock ridges and jungle vegetation (Wilson Okamoto & Associates 2001)



#### 4.3.2 Modern Land Use

When the sugar industry in the Hawaiian Islands began to decline, tourism emerged as one of the largest economic sectors across the state. Prior to the 1970s, the region of East Maui remained a collection of communities isolated by a 50 mile long road legendary for its twisting turns and landslides. Recent improvements to the bridges and roads now allow over 700,000 visitors yearly to tour East Maui (Wood 2003). Tourism through East Maui was augmented by the burial of Charles Lindberg at Kīpahulu in 1974 at the Palapala Ho‘omau Congregational Church graveyard, and has since continued at an ever-increasing pace, with the purchase of large tracts of land in Hāna by celebrities such as Steven Tyler, George Harrison, Jim Nabors, Kris Kristofferson, and Oprah Winfrey.

After leaving Pā‘ia and Ha‘ikū toward the east, the Hāna Highway crosses the Huelo region and enters the beginning of the rain belt that feeds the dense north-shore jungles of East Maui. In addition to containing many small groupings of isolated residences, the Huelo region has many points of environmental interest. Chief among these is the popular Twin Falls Fruit Stand that contains many gardens of edible flora and a network of trails leading visitors through the forest to small pools and the waterfalls that feed them. The Huelo region also offers many hiking trails (including the Bamboo Forest trails), Huelo Point Lookout, Jungle Zipline, and several smaller lodgings and eco-retreats. Kaulanapueo Church, built in 1853, is among one of the more prominent historic features of the area. These attractions are in addition to the numerous small beaches and waterfalls that can be observed proximate to the Highway, in addition to the residence of American singer/songwriter Steven Tyler.

As the Hāna highway passes through the Ke‘anae region it skirts the edge of the large Ko‘olau Forest Reserve that spans the highlands between Huelo and Hāna. The Ko‘olau Forest Reserve, Hāna Forest Reserve, Haleakalā National Park, and Kīpahulu Forest Reserve form a continuous band of adjoined conservation lands that comprise a significant portion of East Maui. The conservation lands of Ko‘olau and Hāna, spanning the entire northeast portion of East Maui, also make a significant portion of their land holdings available as a game reserve for licensed hunters (State of Hawaii 2015a, b). In these lands, hunters are allowed to hunt feral pigs and goats by means of rifle, handgun, shotgun, archery, and dogs year round with limited vehicle access (State of Hawaii 2018). These conservation lands also contain a number of smaller hiking trails into the tropical hinterlands of East Maui, as well as Pua‘a Ka‘a State Wayside Park, Wailua Valley State Wayside Park, Honomanū Park, Kaumahina State Wayside Park, Ke‘anae Valley Lookout Park, Waikamoi Nature Trailhead, Garden of Eden Arboretum, and Ke‘anae Arboretum. This stretch of Hāna Highway also crosses the historic regions of Ke‘anae Peninsula, Ke‘anae Valley, Honomanū Valley, and Nāhiku that are home to small rural communities and various small roadside shops and food/fruit stands that service weary travelers seeking a respite from the winding roads. Another notable visitor attraction on this stretch of the Hāna Highway is the Saint Gabriels Mission Coral Miracle Church built in 1860 out of locally sourced stone and coral mortar (Hana Picnic Lunch Co. 2018).

The Nāhiku region of East Maui, located east of Ke‘anae, houses a small community separated from other residential areas by dense forests on its east and west flanks. Attractions for the traveler in this area include the Nahiku Viewpoint and Wayside Park, the Nahiku Church (built in 1867), and the private estate of the late George Harrison of the early rock group The

Beatles (Google Maps 2018; Yucha and Hammatt 2017b). The community in this region consists largely of multi-generational family homes connected by a single lane road that winds alongside the residences down to the coast, the state of which provides little incentive for all but the most adventurous of travelers.

The scenic city of Hāna in East Maui has been known for some time as a place left aside by the vagaries of commercial development that has changed the cultural landscape of distant towns such as Lahaina and Kīhei. Many travelers to the island seek to visit the Hāna coast for a view of the “Real Hawaii” that has since lapsed in the towns and cities of the busier central and western portions of the island (Hawaii Web Group 2017). Visitors soon discover that beyond the road to Hāna, with its beautiful vistas and lush forests punctuated by streaming waterfalls, there are not many activities or amenities commonly available to them in resort areas. Hāna town today is marked by an abundance of domestic residences, relatively uncrowded beaches, hiking trails, campgrounds, cultural attractions and festivals, historic sites, and offers a host of guided tours to visitors.

Located on the eastern tip of Maui on the windward side of the Island, Hāna is both very lush in foliage and cool in temperature. Hāna Town contains its own fire station, county council office, community center, three churches, two general stores, and a single gas station serving the residents. Domestic amenities aside, there are also two smaller inns, the slightly larger Travaasa Hotel (With its plantation style accommodations and pool/spa), the Luana Spa Retreat, Hāna Treasures gift shop, and a small host of restaurants and food trucks largely servicing the visitors who find their way out to this remote town. A noteworthy addition is the residence of singer/songwriter/actor/rogue scholar Kris Kristofferson just within the south side of Hāna town on a sizable piece of property off the main Highway (Real Geeks 2013). American TV icon, Jim Nabors also used to have a few hundred acres of macadamia nut fields in the region, before selling the land to the National Tropical Botanical Garden in 2002 (Pignataro 2017). Hāna is also home to the Hāna Ranch and the famous lava-stone constructed Fagan’s Cross, erected by Paul Fagan on the Ranch lands he had purchased in the 1940s (Hawaii Web Group 2017).

Hāna hosts a collection of tours that appeal to the naturalist, those interested in Hawaiian culture and history, and for those just seeking an afternoon of natural beauty. This sector is perhaps the largest economic draw to the region. In addition to being allowed to take rented vehicles down the scenic 50 mile Hāna Highway over historic bridges and through state park recreation areas, there are also five major providers of Road and Air tours of the region (TripAdvisor LLC 2018). Most of these tours take a few hours (by air) to a whole day (by road) and shuttle visitors to a variety of local attractions of the region such as various volcanic and coral sand beaches, Ka‘eleku cavern lava tubes, Haleakalā National Park hiking trails and campground, Wainapanapa State Park and campground, Ono Organic Farm, local farmers markets, snorkeling reefs, various art galleries, and Hāna museum and cultural center among many smaller attractions.

Being one of the remote vestiges of old Hawai‘i, Hāna offers much in the way of cultural and historic activities for those interested in the Hawaiian culture. Most notable is the Hāna Cultural Center and Museum that houses a variety of physical artifacts and photographic displays of the history of the town. The Cultural Center also has on its grounds the federally recognized monument of the Historic Hāna Courthouse in addition to a replica of a traditional pre-Contact

chiefly residence named Kauhale Village (Hana Cultural Center and Museum 2017). Another notable site is the Kahanu Garden which is part of the National Tropical Botanical Garden, a Hawai'i based non-profit institution. In addition to housing a large pandanus forest among other plants of ethnobotanical significance to the Hawaiian People, the grounds also contain one of the largest ceremonial *heiau* in the state, Piilanihale Heiau. Additionally, one can see the fortress hill of Ka'uiki on the coast of Hāna town, the site of a historic battles between Maui and Big Island chiefs prior to Western contact and the birthplace of Queen Ka'ahumanu, a notable figure in the Hawaii's transition to modernity following Western contact (Hawaii Web Group 2017; Sterling 1998). The Hāna Taro Festival is also a notable attraction to visitors to the region. The festival, held annually between the spring months of March and May, displays many aspects of Hawaiian culture both past and present including traditional arts and crafts, live poi pounding, hula performances, Hawaiian music, farmer's market, and food and drink booths.

## 4.4 Previous Archaeological Research

### 4.4.1 Early Maui Island Surveys

The earliest archaeological studies on the island of Maui were a part of island-wide surveys conducted in the early 1900s (Stokes 1916; Thrum 1909b; Walker 1931b). These studies tended to focus on the compiling of descriptive lists of large scale architecture or traditional ceremonial *heiau* sites. The *heiau* sites in the vicinity of the current License Area have been described in the context of the historic background of East Maui (see Section 3.2.2).

Between 1931 and 1976, only sporadic archaeological studies were undertaken in the area. Following the passage of the National Historic Preservation Act in 1966 and HRS Chapter 6E, which established the Historic Preservation Program in 1976, archaeological studies occurred as a condition of development on a more frequent basis. In this vein, the lands surrounding the current License Area have been subject to a variety of studies including archaeological assessments, reconnaissance surveys, field inspections, archaeological inventory surveys (AIS), archaeological literature reviews and field inspections (LFRI), monitoring, cultural landscape studies, and preservation plans. The previous studies conducted within and around the current License Area are described in the following subsections.

### 4.4.2 Hāna Highway Archaeological Studies

The previous archaeological studies conducted for the Hāna Highway Historic District area summarized in Table 8 and depicted extending throughout multiple license areas.

#### S. D. M. Freeman et al. (2004)

Between June and August 2004, CSH completed archaeological monitoring for the Hāna Highway Improvements Huelo to Hāna Project at mileposts (MPs) 4.2, 19.1, and 23.7, which included TMKs: [2] 2-1-001; 2-1-002; 2-1-004;001-005; 2-2-009:005, 006, 009, 010, 012, and 013 (S. D. M. Freeman et al. 2004). No historic properties were identified.

Table 8. Previous Archaeological Studies with Hāna Highway Historic District

| Reference                      | Type of Study                          | Location  | Results  |
|--------------------------------|--|---|--|
| S. D. M. Freeman et al. (2004) | Archaeological monitoring              | Hāna Hwy mileposts 4.2, 19.1, and 23.7 (TMKs: [2] 2-1-001; 2-1-002; 2-1-004; 001-005; 2-2-009:005, 006, 009, 010, 012, and 013)   | No significant findings  |
| McCurdy et al. (2014)          | Literature review and field inspection | Eleven areas along the Hāna Hwy from Huelo to Hāna, including MPs 8.1, 11.2, 13.0, 14.7, 14.9, 15.7, 16.3, 17.7, 19.0, and 21.5 (TMKs: [2] 1-1-001:999; 1-1-002:999; 1-1-007:999; 1-1-008:999; and 1-2-001:999 pors.) | Identified and assigned temporary feature designations to five additional features of the Hāna Hwy Historic District (SIHP # 50-50-07-1638), including an example of the cut and fill method employed during the construction of the Hāna Belt Rd (Feature MP 8.1), five concrete guide posts (Feature MP 8.2), a retaining wall and culvert (Feature MP 15.7), a retaining wall (Feature MP 17.7), and a rock culvert and headwall (Feature 21.5) |
| Madeus and Hammatt (2017)      | Archaeological monitoring              | Hāna Hwy MPs 10.4, 14.0, and 16.0 (TMKs: [2] 1-1-001:022, 023 por., 044, 999 por., and 1-1-002:002, 012 por.)   | No significant findings  |

McCurdy et al. (2014)

Between 12 July and 15 August 2013, CSH completed the fieldwork component of a literature review and field inspection report for the proposed Hāna Highway Improvements, Huelo to Hāna Phase II Project (McCurdy et al. 2014). Eleven areas were investigated during the field inspection (pedestrian survey), including MPs 8.1, 11.2, 13.0, 14.7, 14.9, 15.7, 16.3, 17.7, 19.0, and 21.5 (TMKs: [2] 1-1-001:999; 1-1-002:999; 1-1-007:999; 1-1-008:999; and 1-2-001:999 por. Five additional contributing features of the Hāna Highway Historic District (SIHP # 50-50-07-1638) were identified and documented. These features, likely components of Hāna Highway construction ca. 1923, include an example of the cut and fill method employed during the construction of the Hāna Belt Road (Feature MP 8.1), five concrete guide posts (Feature MP 8.2), a retaining wall and culvert (Feature MP 15.7), a retaining wall (Feature MP 17.7), and a rock culvert and headwall (Feature 21.5).

Madeus and Hammatt (2017)

Between 23 July and 31 October 2012, CSH monitored ground disturbing activities associated with Hāna Highway emergency road repairs at MPs 10.4, 14.0, and 16.0 (TMKs: [2] 1-1-001:022, 023 por., 044, 999 por., and 1-1-002:002, 012 por.) (Madeus and Hammatt 2017). No historic properties were identified.



#### 4.4.3 Huelo License Area Archaeological Studies

Previous archaeological studies conducted within or near the Huelo License Area are depicted in Figure 44 and summarized in Table 9.

##### Sinoto and Pantaleo (1992)

Intermittently between 17 June and 3 September 1992, Aki Sinoto Consulting conducted an AIS of the East Maui Waterline Project (TMKs: [2] 2-5-003, 004, 005; 2-7-003, 007-011, 013, 016-020; 3-8-051, 059, 061, 070, and 071), consisting of surveys of gulches and pedestrian surveys, mostly along existing paved roads and cane roads (Sinoto and Pantaleo 1992). Easternmost parcels surveyed in this study are located near the current License Area. No cultural materials were observed during this AIS.

##### Kennedy et al. (1992)

From the end of July to the beginning of August 1992, Archaeological Consultants of Hawaii, Inc. carried out an AIS with subsurface testing at a parcel located about one mile inland from the ocean, near Hanawana Stream, and adjacent to the *mauka* side of the Hāna Highway in West Hanawana Ahupua'a, (TMK: [2] 2-9-010:003) (Kennedy et al. 1992). Three historic properties were recorded, including a set of five mounds associated with post-Contact agriculture (SIHP # 50-50-06-3132), six agricultural terraces with two 'auwai and three walls associated with both pre- and post-Contact agriculture (SIHP # -3133), and a complex of two irrigated terraces with one 'auwai and five wall segments associated with both pre- and post-Contact agriculture (SIHP # -3134). In addition, a ceramic and concrete scatter was discussed but was only addressed as Temporary site # T-1.

##### D. L. Fredericksen (1996)

In April 1996, Xamanek Researches conducted a limited AIS on a 25.12 acre Ho'olawa Point parcel in Ho'olawa Bay, Huelo (TMK: [2] 2-9-02:014 por.) (D. L. Fredericksen 1996). The following pre-Contact artifacts were encountered during this pedestrian survey: an adze blank, three utilized basalt flakes, a large piece of red ochre, a piece of volcanic glass, and several water-worn stones. SIHP # 50-50-06-4167, an old roadway, was identified on the surveyed parcel. Historic cultural materials associated with SIHP # -4167 encountered near the roadway include glass and porcelain sherds, one piece of *Conus* shell, broken Maui Soda bottles from the 1920s/30s, a possible old wagon wheel rim, and pieces of rusting metal track. SIHP # -4196, a historic grave with inscription "JHO Nokaupu Make Feb 14 1918" was also observed on the property. Ho'olawa Landing, SIHP # -2956 was identified to the east of Ho'olawa Stream, beyond the property borders but within close proximity to the surveyed area; brick and concrete footings, four large pieces of rusting machinery, and a set of railroad car wheels were observed in association with SIHP # -2956. Both SIHP # -4167 and # -2956 comprise part of a historical complex associated with the sugarcane industry. Also, a rock shelter that was likely used historically and during the pre-Contact era was observed near but beyond the property boundary.

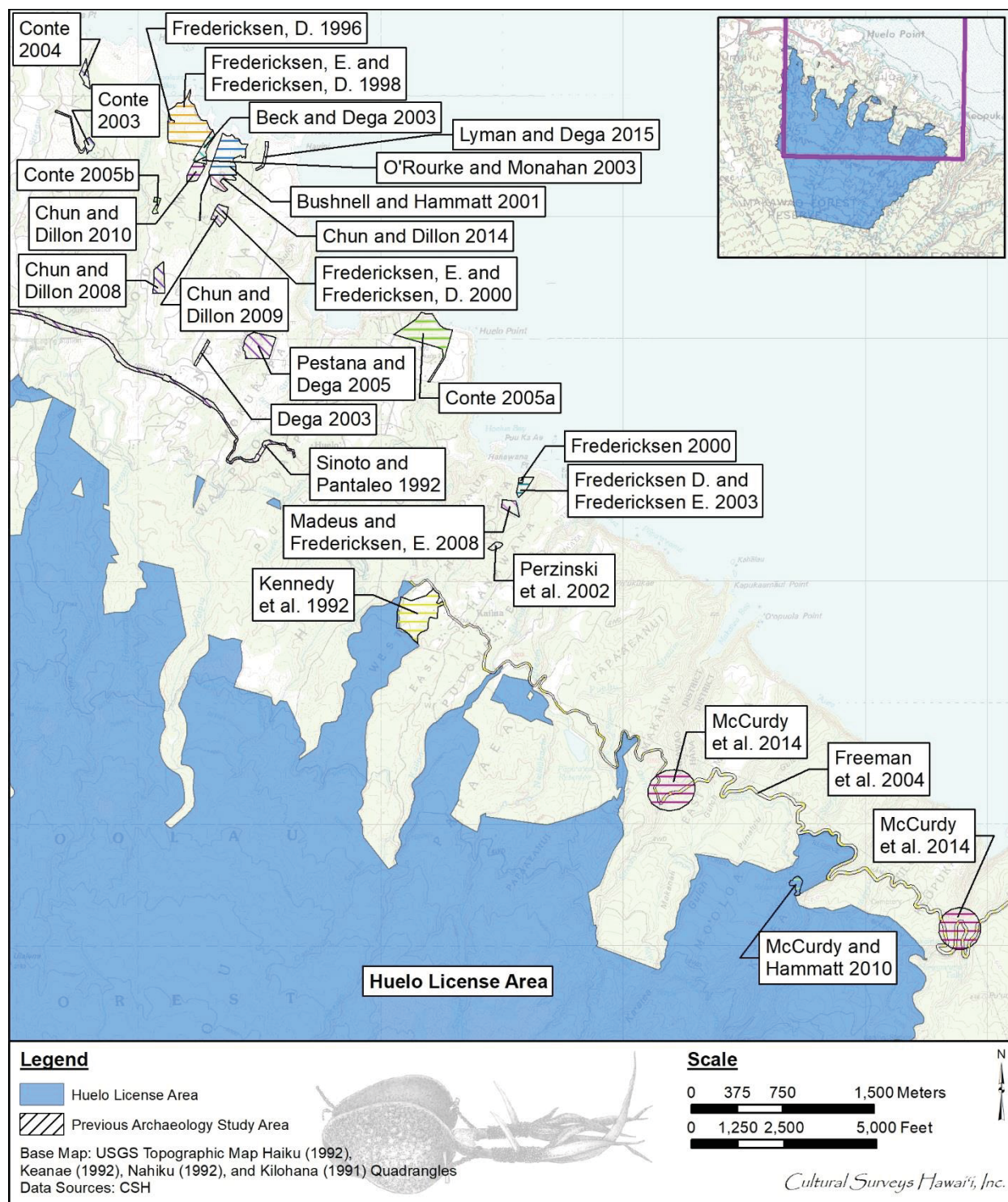


Figure 44. Previous Archaeological Studies within or near the Huelo License Area (U.S. Geological Survey 1991, 1992a, c, d)

Table 9. Previous Archaeological Studies within the Huelo License Area

| Reference                  | Type of Study | Location   | Results   |
|----------------------------|---------------|--|---|
| Sinoto and Pantaleo (1992) | AIS           | East Maui Waterline Project (TMKs: [2] 2-5-003, 004, 005; 2-7-003, 007-011, 013, 016-020; 3-8-051, 059, 061, 070, and 071)                             | No significant findings   |
| Kennedy et al. (1992)      | AIS           | Parcel located about a mile inland from the ocean, near Hanawana Stream, and adjacent to the Hāna Hwy in West Hanawana Ahupua'a (TMK: [2] 2-9-010:003) | Documented three sites, including a set of five mounds (SIHP # 50-50-06-3132), six agricultural terraces with two 'auwai and three walls (SIHP # -3133), and a complex of two irrigated terraces with one 'auwai and five wall segments (SIHP # -3134); assigned temporary site #T-1 to a ceramic and concrete scatter  |
| D. L. Fredericksen (1996)  | Limited AIS   | 25.12-acre Ho'olawa Point parcel in Ho'olawa Bay, Huelo (TMK: [2] 2-9-002:014 por.)  | Documented SIHP # -4196, a historic grave and SIHP # 50-50-06-4167, an old roadway with associated artifacts; noted SIHP # 50-50-06-2956 (Hoolawa Landing) with associated brick and concrete footings, four large pieces of rusting machinery, and a set of railroad car wheels to the east of Ho'olawa Stream near the surveyed area; noted a rock shelter near, but beyond the property boundaries |

| Reference                                   | Type of Study | Location   | Results  |
|---|---------------|--|--|
| E. M. Fredericksen and Fredericksen (1998a) | AIS           | 25.12-acre Ho'olawa Ranch Property at Ho'olawa Point (TMK: [2] 2-9-002:014)  | Reidentified SIHP # 50-50-06-4167 (Ho'olawa Landing Road) and SIHP # -2956 (historic grave). Documented five additional sites: SIHP #s 50-50-06-4234 (historic grave); # -4235 and -4236 (surface scatters); -4237 (subsurface pre-Contact fire pit with a 14C date range from AD 1435 to 1660); and -4238 (stone feature with a possible burial; observed SIHP # 50-50-06-2956 (Hoolawa Landing) and a rock shelter/temporary habitation site (SIHP # -4239) outside property borders |
| E. Fredericksen (2000)                      | AIS Phase I   | Northwestern terraced area on a parcel of land near the mouth of Hanawana Stream in Hanawana Valley, Hanawana Ahupua'a (TMK: [2] 2-9-011:018)                                      | Documented two terraced features of agricultural and habitation complex SIHP # -4153; reported 14C date range from AD 1425 to 1665 for a charcoal sample; noted three small terraces, a cobble and boulder platform, an enclosure, a rock cupboard, a possible canoe landing area, and a depression for ground salt water evaporation on state lands beyond the property borders   |
| E. M. Fredericksen and Fredericksen (2000)  | AIS           | 2-acre Lot 7-B of Huelo Hui Partition Subdivision located within 400 meters of the ocean crossed by Honokala Stream, and bordered by North Honokala Rd (TMK: [2] 2-9-002:005 por.) | Documented two historic properties: a pre-Contact wetland agricultural site (SIHP # 50-50-06-4084) and a leveled area associated with post-Contact ranching or agriculture (SIHP # -4816)  |



| Reference                   | Type of Study             | Location   | Results   |
|-----------------------------|---------------------------|--|---|
| Bushnell and Hammatt (2001) | AIS                       | Roadway access easement and 15-acre parcel in coastal Ho'olawa, bordered by Honokala Stream and Waikakulu Gulch (TMKs: [2] 2-9-02:017, 021, and 035) | No significant findings   |
| Perzinski et al. (2002)     | AIS                       | West Hanawana, between Hāna Hwy and the coast (TMKs: [2] 2-9-011:004 and 005)  | Documented an agricultural complex consisting of fifteen terraces (SIHP # 50-50-06-5206), and an 'auwai (SIHP # 50-50-06-5205); reported a 14C date range from AD 990 to 1220 obtained from sediments underlying a terrace retaining wall |
| Dega (2003)                 | Archaeological assessment | 5 acres at Ho'olawa Point (TMKs: [2] 2-9-001:071, 072 and 075)   | No significant findings   |
| Beck and Dega (2003)        | AIS                       | Approximately 3.5 acres in coastal Ho'olawa, transected by Waikakulu Gulch and Stream (TMK: [2] 2-9-012:016)   | No significant findings   |
| O'Rourke and Monahan (2003) | AIS                       | Approximately 0.75 acres in Ho'olawa (TMK: [2] 2-9-002:042)  | Described two historic properties: SIHP # 50-50-06-5459, a human burial, and SIHP # -5460, a lithic reduction center  |
| Conte (2003)                | Limited AIS               | 0.371-acre access easement corridor in coastal Honopou Ahupua'a (TMKs: [2] 2-9-001:004, 018, and 019)  | No significant findings   |



| Reference                                  | Type of Study             | Location   | Results   |
|--|---------------------------|--|---|
| D. L. Fredericksen and Fredericksen (2003) | AIS Phase II              | 3.094 acres in Hanawana Gulch in Hanawana Ahupua'a (TMK: [2] 2-9-011:018)  | Documented 52 previously unreported features from SIHP # -4153, including a leveled area, pavement, a cupboard, 47 terraces, an alignment, and a possible terrace remnant; identified numerous artifacts; reported date ranges for five charcoal samples: AD 1520 to 1590, AD 1620 to 1680 and AD 1730 to 1810 (Sample 1), AD 1640 to 1960 (Sample 2), AD 1460 to 1640 (Sample 4), AD 1670 to 1950 (Sample 5), and AD 1420 to 1520 and AD 1580 to 1630 (Sample 6) |
| Conte (2004)                               | AIS and preservation plan | 2.541-acre Souza Property (TMK: [2] 2-9-001:009) at coastal Honopou Point, Honopou Ahupua'a                        | Documented three features of SIHP # 50-50-06-5638, including two terraces and an alignment, interpreted as <i>māla'ai</i>   |
| Conte (2005b)                              | AIS                       | 1.095-acre parcel located a half a mile from Ho'olawa Bay bordered north by Ho'olawa Stream (TMK: [2] 2-9-001:075) | Documented Features A-E ( <i>lo'i</i> terrace remnants) of SIHP # 50-50-04-5720   |
| Conte (2005a)                              | AIS                       | Bolles Property, a 20-acre parcel located on the coast between Waipi'o Bay and Huelo Point (TMK: [2] 2-9-07:052)   | Identified SIHP #s: 50-50-06-5746, -5747, -5748, -5749, 5750, and -5751, which included terraces, walls, and a possible trail alignment   |
| Pestana and Dega (2005)                    | Archaeological assessment | 11.15 acres near Waipi'o Bay, Huelo (TMK: [2] 2-9-005:023)   | No significant findings   |
| Chun and Dillon (2008)                     | AIS                       | 5.128-acre lot in Ha'iku, Ho'olawa Ahupua'a (TMK: [2] 2-9-003:028)   | Documented SIHP # 50-50-06-6438, a stacked rock wall interpreted as remnants of an <i>'auwai</i>  |

| Reference                      | Type of Study             | Location   | Results  |
|--------------------------------|---------------------------|--|--|
| Madeus and Fredericksen (2008) | AIS                       | 3.136-acre parcel in Hanawana Ahupua'a (TMK: [2] 2-9-011:017)  | Reported one historic property: SIHP # 50-50-06-6362 a pre-Contact agricultural complex with 19 stepped agricultural terrace features                  |
| Chun and Dillon (2009)         | AIS                       | 2.0-acre lot in Huelo, coastal Honokalā (TMK: [2] 2-9-002:041)   | Identified five <i>lo'i</i> and three terraces in pre-Contact agricultural complex SIHP # 50-50-06-4084; documented SIHP # -6627, a historic trash pit |
| McCurdy and Hammatt (2010)     | AIS                       | 4.0-acre parcel in Kōlea Ahupua'a (TMK: [2] 1-1-001:050)   | Identified one plantation era reservoir/water control system SIHP # 50-50-13-6682; with six associated features  |
| Chun and Dillon (2010)         | AIS                       | 3.75-acre Lot in Ha'iku, coastal Ho'olawa on an easement of Ho'olawa Road (TMK: [2] 2-9-002:011)       | Reported one site documented previously by O'Rourke and Monahan (2003): SIHP # 50-50-06-5460, a lithic reduction center                                |
| Chun and Dillon (2014)         | Archaeological assessment | 3.65-acre lot in Ha'iku on a Ho'olawa Road easement bordered by Honokala Stream (TMK: [2] 2-9-002:020) | No significant findings  |
| Lyman and Dega (2015)          | AIS                       | Rohr Family access road at Honokalā Point in Honopou Ahupua'a, (TMK: [2] 2-89-002:019 por.)            | Documented two new sites: SIHP # 50-50-06-8254, a terrace retaining wall, and SIHP # -8255, a pre-Contact to historic ditch for <i>'auwai</i>          |

E. M. Fredericksen and Fredericksen (1998a)

In 1996, Xamanek Researches continued an AIS of a 25.12-acre Ho'olawa Ranch Property at Ho'olawa Point (TMK: [2] 2-9-02:014) (E. M. Fredericksen and Fredericksen 1998a). An earlier survey of this property was limited to the western portion where Ho'olawa Landing Road (SIHP # -4167) with associated artifacts and a historic grave (SIHP # -2956) were reported (D. L. Fredericksen 1996); these two sites were reidentified during this more thorough subsequent AIS, which included both pedestrian surface survey throughout the property and subsurface testing. Five additional archaeological sites were also documented: a historic grave (SIHP # 50-50-06-4234), two surface scatter remnants (SIHP #s -4235 and -4236), a pre-Contact fire pit (SIHP # -4237) and a rock alignment including a possible burial (SIHP # -4238). Artifacts observed at the surface associated with the surface scatter remnant SIHP # -4235 include a basalt adze blank, utilized basalt flakes, a utilized volcanic glass flake, and red ochre, and water-worn pebbles; subsurface artifacts include a volcanic glass flake, two basalt flakes (one fire-cracked), charcoal, rusted metal, a possible fishing hook tab and pig bone. No artifacts were encountered during subsurface testing at surface scatter remnant SIHP # -4236; however, a volcanic glass flake, two pieces of volcanic glass shatter, and a basalt flake were observed at the surface. The fire pit (SIHP # -4237) was encountered below the surface at a level area overlooking Ho'olawa Bay and the Hāna Coast; associated subsurface cultural materials include rusted metal water-worn pebbles, fire-cracked rocks, charcoal, basalt flakes, volcanic glass debitage, and a pecking stone. Analyzed charcoal collected from the fire pit (SIHP # -4237) returned a calibrated (2 sigma, 95% probability) 14C date range of AD 1435 to 1660. A possible basalt pecking stone was observed at the surface in association with the stone feature with a possible burial (SIHP # -4238), while subsurface testing revealed modern bottle glass, utilized basalt and water-worn pebbles. Also, Ho'olawa Landing (SIHP # -2956) and a rock shelter were again observed outside the property boundary, as they had been in the D. L. Fredericksen (1996) AIS. The rock shelter, interpreted as a temporary habitation site, not formerly assigned a SIHP # was designated SIHP # -4239.

E. Fredericksen (2000)

In February 2000, Xamanek Researches, conducted Phase 1 of an AIS of a northwestern terraced area on a parcel of land near the mouth of Hanawana Stream in Hanawana Valley, Hanawana Ahupua'a (TMK: [2] 2-9-011:018), consisting of a visual inspection with mapping of the area and two test unit excavations (E. Fredericksen 2000). Two terraced features were documented: an approximately 15 m x 6 m leveled area with a partially intact retaining wall (Feature A), and a narrow approximately 14 m long terrace (Feature B) located upslope from Feature A. Only one artifact was observed on the surface, a grindstone located near Feature A. During subsurface testing, charcoal deposits, a red ochre manuport, four basalt flakes, and a piece of *kukui* nut shell were encountered. A charcoal sample yielded radiocarbon dates from AD 1425 to 1665. The features documented in this study appeared to be part of the SIHP # -4153, likely an agricultural and habitation complex, which was noted as extending both downstream and upstream on adjacent parcels of state-owned land. SIHP # -4153 features observed from the surveyed parcel, but located on these bordering state lands included three small terraces, a cobble and boulder platform, an enclosure, a rock cupboard, a possible canoe landing area, and a depression for ground salt water evaporation.

E. M. Fredericksen and Fredericksen (2000)

From December 1999 through February 2000, Xamanek Researches conducted an AIS on 2-acre Lot 7-B of Huelo Hui Partition Subdivision located within 400 m of the ocean shore, crossed in the west by Honokala Stream, and bordered north and west by North Honokala Rd (TMK: [2] 2-9-002:005 por.) (E. M. Fredericksen and Fredericksen 2000). Two historic properties are reported: SIHP # 50-50-06-4084, a pre-Contact wetland agricultural site, and SIHP # -4816, a leveled area associated with post-Contact ranching or agriculture.

Bushnell and Hammatt (2001)

On 29 March 2001, CSH conducted an AIS for a proposed Kahui Pono L.L.C. Roadway Access Easement and 15-acre parcel (TMKs: [2] 2-9-02:017, 021, and 035) in coastal Ho'olawa, bounded to the north by the Pacific Ocean, bordered east by Honokala Stream, and partially bordered on the west by Waikakulu Gulch (Bushnell and Hammatt 2001). During this pedestrian survey, no cultural resources were observed.

Perzinski et al. (2002)

On 22 February 2002, CSH conducted an AIS of a proposed approximate 800 foot easement and 1-acre lot in West Hanawana (TMKs: [2] 2-9-011:004 and 005) (Perzinski et al. 2002). The survey identified an agricultural complex consisting of fifteen terraces (SIHP # 50-50-06-5206), and an *auwai* (SIHP # 50-50-06-5205) supplying the complex of *lo'i*. Several of the terraced *lo'i* still support feral taro plants; two large stands of *'awa* were also observed in the area. Remnants of a recent squatters' sheds were also present on the property. A 14C date of AD 990-1220 was obtained from sediments underlying a terrace retaining wall.

Dega (2003)

On 4 April 2003, Scientific Consultant Services, Inc. (SCS) conducted a surface survey for 5 acres at Ho'olawa Point (TMKs: [2] 2-9-001:071, 072, and 074) (Dega 2003). No cultural materials were observed; therefore, the report was submitted as an archaeological assessment.

Beck and Dega (2003)

On 6-7 April 2003, SCS conducted an AIS of approximately 3.5 acres in coastal Ho'olawa with Waikakulu Gulch and Stream transecting the east end of the property (TMK: [2] 2-9-002:016) (Beck and Dega 2003). The AIS consisted of pedestrian survey and two shovel test probes. No significant findings were reported.

O'Rourke and Monahan (2003)

Between 7 May and 11 June 2003, SCS conducted an AIS of approximately 0.75 acres of land located in coastal Ho'olawa (TMK: [2] 2-9-002:042), which consisted of pedestrian survey and subsurface testing (O'Rourke and Monahan 2003). The study describes two historic properties: SIHP # 50-50-06-5459, a human burial, and SIHP # 50-50-06-5460, a lithic reduction center.

Conte (2003)

On 8 July 2002, CRM Solutions Hawai'i, Inc. conducted an AIS of a designated access easement corridor through the Huelo Hui Partition on 0.371 acres at coastal Honopou Ahupua'a,

(TMKs: [2] 2-9-001:004, 018 and 019) (Conte 2003). No cultural materials were observed during this pedestrian survey.

D. L. Fredericksen and Fredericksen (2003)

In 2002, Xamanek Researches carried out Phase 2 of an AIS of 3.094 acres in Hanawana Gulch in Hanawana Ahupua'a (TMK: [2] 2-9-011:018), consisting of pedestrian survey and five manual test excavations (D. L. Fredericksen and Fredericksen 2003). Phase I had been limited to a northwestern terraced area, in which two features and a few pre-Contact artifacts were identified as being constituents of agricultural complex SIHP # -4153 (E. Fredericksen 2000). During Phase 2, 52 previously unreported features were documented as part of SIHP # -4153: a leveled area, pavement, a cupboard, an alignment, 47 terraces, and a possible terrace remnant. A polishing stone and lithic debitage were found on the surface. Numerous artifacts were encountered during subsurface testing, including polished basalt flakes, utilized basalt flakes, a basalt hammerstone/chopper, a worked urchin spine tip, a utilized volcanic glass flake, an adze fragment, and Lead printer's type. Mammal and fish bone, *kukui* nut shell, charcoal, lithic debitage, unworked coral pieces, waterworn pebbles, fire-cracked rocks, metal pieces, coal and a lead fishing weight were also documented cultural materials. Five charcoal samples (Samples 1-2; 4-6) returned the following radiocarbon dates (calendrical date 2 Sigma 95%): AD 1520 to 1590, AD 1620 to 1680 and AD 1730 to 1810 (Sample 1), AD 1640 to 1960 (Sample 2), AD 1460 to 1640 (Sample 4), AD 1670 to 1950 (Sample 5), and AD 1420 to 1520 and AD 1580 to 1630 (Sample 6).

Conte (2004)

On 4 September 2004, CRM Solutions Hawai'i conducted an AIS for the 2.541-acre Souza Property (TMK: [2] 2-9-001:009) at coastal Honopou Point, bisected by Honopou Stream in Honopou Ahupua'a (Conte 2004). The AIS consisted of pedestrian survey and the backhoe excavation of three test trenches. No cultural materials were encountered during subsurface testing. During pedestrian survey, three features were observed above the east side of Honopou Stream. These features were reported as one site, SIHP # 50-50-06-5638, which included two terraces (Features A and C) and an alignment (Feature B), collectively interpreted as a *māla'ai*. A passive preservation plan was submitted as part of this study.

Conte (2005b)

On 15 and 18 July 2005, CRM Solutions Hawai'i, Inc. (Conte 2005b) carried out an AIS of a 1.095 acre parcel located a half a mile from Ho'olawa Bay bordered north by Ho'olawa Stream (TMK: [2] 2-9-001:075). During this pedestrian survey, five *lo'i* terrace remnants (Features A-E) comprising SIHP # 50-50-04-5720 were observed along the northern slope of the property.

(Conte 2005a)

Intermittently between July and October 2005, CRM Solutions Hawai'i, Inc. conducted an AIS of the Bolles Property (TMK: [2] 2-9-007:052), a 20-acre parcel located on the coast between Waipi'o Bay and Huelo Point (Conte 2005a). Six SIHPs were identified during this survey: a double linear terrace (SIHP # 50-50-06-5746), a walled terrace with lower terraces (SIHP # -5747), a walled terrace with lower terraces and possible trail alignment (SIHP # -5748),



a remnant wall (SIHP # -5749), a small, historic-era terrace (SIHP # -5750), and a discontinuous rock wall (SIHP # -5751).

Pestana and Dega (2005)

In June 2005, SCS conducted an AIS for 11.15 acres of land near Waipi'o Bay (TMK: [2] 2-9-005:023), consisting of a pedestrian surface survey and mechanical and manual subsurface testing (Pestana and Dega 2005). No cultural materials were observed; therefore, this study was deemed an archaeological assessment.

Chun and Dillon (2008)

On 18 February 2008, Affordable Cultural & Ecological Services, LLC (ACES) carried out an AIS for a 5.128 acres in Ha'iku, Ho'olawa (TMK: [2] 2-9-003:028) (Chun and Dillon 2008). During this 100% pedestrian survey, one historic property was documented: SIHP # 50-50-06-6438, a stacked rock wall on the west and east sides of a stream interpreted as remnants of an *'auwai*.

Madeus and Fredericksen (2008)

In October 2007, Xamanek Researches, LLC conducted an AIS for a 3.136-acre parcel near the coast in Hanawana Valley bordered by Hanawana Stream, in Hanawana Ahupua'a, (TMK: [2] 2-9-011:017), consisting of pedestrian survey and the excavation of five shovel test units (Madeus and Fredericksen 2008). One historic property was reported: SIHP # 50-50-06-6362, a pre-Contact agricultural complex with 19 component features consisting of stepped agricultural terraces.

Chun and Dillon (2009)

In December 2008 and January 2009, ACES conducted an AIS for a 2.0-acre lot located approximately 650 m from the shore in Honokalā (TMK: [2] 2-9-002:041) (Chun and Dillon 2009). The surveyed parcel is bound by N. Honokalā Road to the west and contains a stream gully from Honokalā Stream oriented from south to north through the western third portion of the property. Fieldwork consisted of a pedestrian survey and subsurface testing, including six shovel test probes, four test units, one shovel excavated stratigraphic trench, and five backhoe trenches. Eight features, comprising a portion of previously identified SIHP # 50-50-06-4084, a pre-Contact agricultural complex, were documented in this AIS: a remnant *lo'i* (Feature 1), a 11.5 m by 7.6 m rectangular *lo'i* (Feature 2), a 7.6 m by 6.6 m *lo'i* (Feature 3), an 11.8 m by 8.4 m *lo'i* (Feature 4), a 12.2 m by 5-8 m *lo'i* (Feature 5), a terrace measuring approximately 12 m by 5 m (Feature 6), a narrow terrace at least 30 m long (Feature 7), and a terrace at least 4 m long retained by a 4 m long wall (Feature 8). SIHP # -6627, an historic trash pit, was also identified during this study. The only historic cultural materials encountered during subsurface testing were metal, glass, and porcelain associated with SIHP # -6627.

McCurdy and Hammatt (2010)

On 23 and 24 February 2010, CSH conducted an AIS of 4.0 acres located approximately 430 m southwest of the Waikamoi Ridge trailhead for the Kolea Reservoir Decommissioning Project (TMK: [2] 1-1-001:050) (McCurdy and Hammatt 2010). The project is located within the northeast portion of the Huelo License Area of the current project. One historic property was

identified during this survey: SIHP # 50-50-13-6682, a plantation-era reservoir/water control system constructed in 1901 with six associated features. These features include the spillway (Feature A), reservoir (Feature B), a catwalk (Feature C), the dam (Feature D), the reservoir outlet (Feature E), and a water diversion structure (Feature F).

#### Chun and Dillon (2010)

On 14 and 19 March and 19 April 2010, ACES carried out an AIS for a 3.75-acre lot in Ha'iku approximately 1.8 km *makai* of Hāna Highway on a Ho'olawa Road easement (TMK: [2] 2-9-002:011), consisting of a pedestrian survey and three backhoe excavated test trenches (Chun and Dillon 2010). During the surface survey, SIHP # 50-50-06-5460, a lithic reduction center previously documented by O'Rourke and Monahan (2003) was observed with a few associated basalt flakes and a hammerstone. Light scatters of waterworn cobble manuports were encountered in the first stratum of all three test excavations.

#### Chun and Dillon (2014)

During four days in June 2014, ACES conducted an archaeological assessment for a 3.65-acre lot in Ha'iku on an easement off Ho'olawa Road along the western bank of Honokala Stream (TMK: [2] 2-9-002:020), which included a 100% pedestrian survey and nine backhoe excavated trenches (Chun and Dillon 2014). No cultural materials were encountered during surface survey nor within any of the test excavations.

#### Lyman and Dega (2015)

In March 2015, SCS conducted an AIS of a Rohr Family access road at Honokalā Point in Honopou Ahupua'a (TMK: [2] 2-9-002:019 por.) (Lyman and Dega 2015). During this 100% pedestrian survey, two new sites were reported: SIHP # 50-50-06-8254, a terrace retaining wall for slope stabilization, and SIHP # -8255, a pre-Contact to historic ditch for *'auwai*.

### **4.4.4 Honomanū License Area Archaeological Studies**

Previous archaeological studies conducted in the vicinity of the Honomanū License Area have been addressed elsewhere in this report, since the studies associated with this license area either occurred near all license areas (S. D. M. Freeman et al. 2004; Madeus and Hammatt 2017; McCurdy et al. 2014) or were located closer to adjacent license areas (Group 70 International et al. 1995; A. Haun and Henry 2003; Hill et al. 2008; Kennedy 1990; McCurdy and Hammatt 2010; Palama 1981; Soehren 1963). The portions of these previous archaeological study areas within the Honomanū License Area are depicted in Figure 45.

### **4.4.5 Ke'anae License Area Archaeological Studies**

Previous archaeological studies conducted within or near the Ke'anae License Area are depicted in Figure 46 and summarized in Table 10.

#### Soehren (1963)

In 1963, Bernice P. Bishop Museum conducted an archaeological survey of portions of East Maui, which included Ke'anae and Wailua (Soehren 1963). Two *heiau*, Kukuiaupun Heiau and Makehau Heiau, previously documented by Walker (1931a), were located; both *heiau* were densely overgrown with vegetation and in poor condition. Additionally, several coastal

Wailuanui sites were documented including, Pu'u Olu Pond bordered north by a stone wall, a small house platform overlooking Pu'u Olu Pond, a house platform near Paepaemoana Point, a possible post-Contact cemetery consisting of a cluster of 14 graves and several scattered probable graves with rough stone outlines (many with sunken centers) in an approximately 3,000 ft<sup>2</sup> area, remnants of stone walls forming adjoining enclosures interpreted as either a house site or shrine, and a stone wall enclosure with a doorway and associated nearby possible grave and collapsed stone wall.

#### Palama (1981)

On 27 October 1981, Stephen Palama (1981), Pacific Association of Professional Archaeologists member, conducted a field inspection of State Land, Wailua, Hāna, Maui (TMK: [2] 1-1-005:001). His results were reported in a short letter dated 28 October 1981 to Mr. Elden K. Liu, in which no archaeological sites were documented on the inspected parcel, though some stone alignments were noted outside the property boundaries.

#### Kennedy (1986)

During two days in early June 1986, Archaeological Consultants of Hawaii, Inc. conducted an archaeological land inspection for proposed East and West Wailuaiki Hydroelectric Project, consisting of pedestrian survey along a Civilian Conservation Corps (CCC) trail constructed in the 1930s (TMKs: [2] 1-1-002:001 and 002; 1-2-004:003, 005, 006, 009, and 010; 1-2-001:002) (Kennedy 1986). No archaeological sites were encountered during the survey. However, the entire License Area grounds were not surveyed due to dense vegetation causing limited visibility. As a result, consultations with local residents supplemented the investigation. Informants provided mixed accounts regarding the presence or absence of cultural sites in the area. While some residents said that no archaeological sites existed on the project lands, others disagreed.



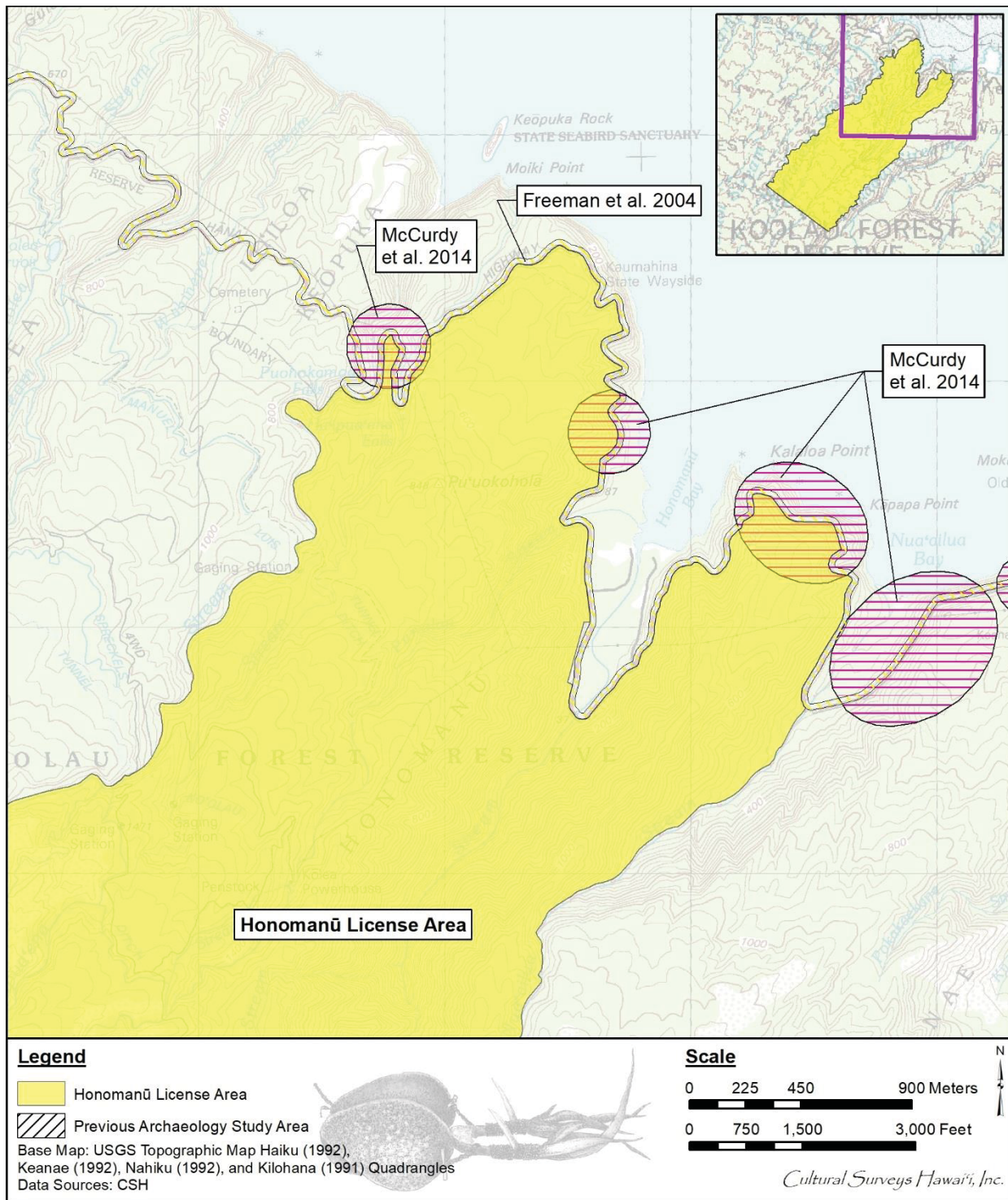


Figure 45. Previous archaeological studies within or near the Honomanū License Area (U.S. Geological Survey 1991, 1992a, c, d)



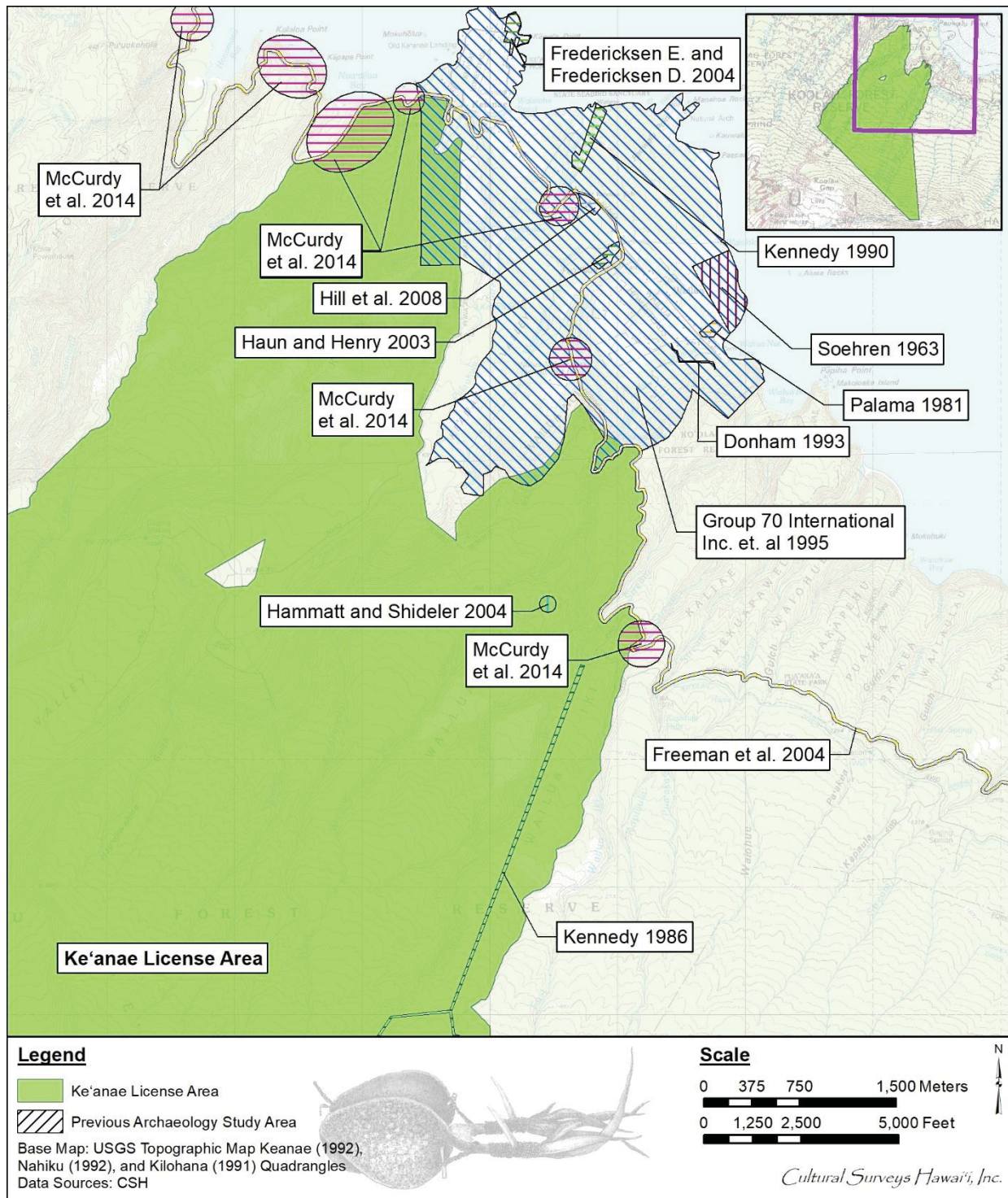


Figure 46. Previous archaeological studies within or near the Ke'anae License Area (U.S. Geological Survey 1991, 1992a, c, d)



Table 10. Previous archaeological studies within the Keʻanae License Area

| Reference      | Type of Study                   | Location  | Results   |
|----------------|---------------------------------|---|---|
| Soehren (1963) | Archaeological survey           | Portions of east Maui, including Keʻanae and Wailua   | Documented Puʻu Olu Pond bordered north by a stone wall, a small house platform overlooking Puʻu Olu Pond, a house platform near Paepaemoana Point, a possible post-Contact cemetery consisting of a cluster of 14 graves and several scattered probable rough stone outlined graves, remnants of stone walls forming adjoining enclosures (either house or shrine site), and a stone wall enclosure with a doorway and associated nearby possible grave and collapsed stone wall; confirmed Kukuiaupun Heiau and Makehau Heiau   |
| Palama (1981)  | Archaeological field inspection | Parcel of Wailua State Land (TMK: [2] 1-1-005:001)  | No significant findings on inspected parcel; noted stone alignments outside the property boundaries   |
| Kennedy (1986) | Archaeological land inspection  | Land along a 1930s Civilian Conservation Corps (CCC) trail in East and West Wailuaiki (TMKs: [2] 1-1-002:001 and 002; 1-2-004:003, 005, 006, 009, and 010; 1-2-001:002) | No archaeological sites observed during survey; possible sites reported from interviews with locals include two contemporary hunting or gathering sites, a shrine near West Wailuaiki Stream destroyed in a 1975 flood, a shrine in a nonspecific location where <i>wauke</i> and <i>Olona</i> grow, and a canoe builders shrine where a <i>koa</i> tree was removed to construct a Hawaiian canoe in the 1950s; one resident also reported the nearby presence of a cave containing a feathered cloak, but another local informant provided a contrary location near Haleakala Volcano summit for the cave |
| Kennedy (1990) | Archeological reconnaissance    | Parcel near Kainalimu Bay (TMK: [2] 1-3-007:016)  | Identified Site 79, Kauleiula Heiau, previously documented by Walker (1931a)  |

| Reference                                  | Type of Study   | Location  | Results  |
|--|---|---|--|
| Donham (1993)                              | Field inspection  | Revised route for a road easement beginning at Makehau Road and partially oriented along Wailuanui Stream (TMKs: [2] 1-1-006:071 and 1-1-008:001) | Documented structural remnants of an old wooden slaughterhouse with a likely associated well or cistern; rock terraces; an old roadbed with retaining wall (SIHP # 50-50-07-43); part of terrace complex SIHP # -2942; a ditch-like feature; an agricultural terrace wall (SIHP # -2945); and a terraced-walled late 19th/early 20th century habitation site with associated cultural materials  |
| Group 70 International et al. (1995)       | Cultural landscape study that included an archaeological field survey | Ke'anae and Wailuanui   | Documented SIHP # -3940, a habitation complex in Kilo consisting of terraces and an enclosure; eight taro complexes (SIHP #s -3932 thru -3938, and -3941), and SIHP # -3943, Ke'anae Quarry with associated machinery, World War II gun emplacement, and possible stone platformed grave of a former quarry; confirmed Kukuioipuni Heiau (SIHP # -0096); Makehau Heiau (SIHP # -0097); Pu'u Olu Pond, a fishpond with an associated house platforms (SIHP # -0538); Wailua Stone Church Ruins (SIHP # -1513); and Ke'anae Landing (SHIP # -2957) |
| A. Haun and Henry (2003)                   | AIS   | 4.0-acres bordered north by Hanau Stream in the Pauwalu area of Hāna District (TMKs: [2] 1-1-008:015 and 023)                                     | Documented two features from SIHP # -5237: a pre-Contact temporary habitation shelter (Feature A) and a 63.0-m trail section; reported a charcoal sample with a C14 date range from AD 1420 to 1650  |
| E. M. Fredericksen and Fredericksen (2004) | Archaeological monitoring   | Ke'anae Park restrooms (TMK: [2] 1-1-003:001)   | Documented SIHP # 50-50-07-5534, a late pre-Contact agricultural site with associated subsurface deposits; reported a charcoal sample with 14C date ranges of AD 1410 to 1530 and AD 1560 to 1630; noted a possible 'auwai at northwestern edge of SIHP # -5534  |

| Reference                   | Type of Study             | Location  | Results   |
|-----------------------------|---------------------------|---|---|
| Hammatt and Shideler (2004) | Archaeological assessment | Along Wailuaiki Stream, about 1 km west of 1923 Wailuaiki Bridge on the East Maui Irrigation access road (TMK: [2] 1-1-02:001 por.) | No significant findings   |
| Hill et al. (2008)          | Archaeological monitoring | Ke'anae Elementary School grounds (TMK: [2] 1-1-008:020)  | No significant findings during monitoring; noted Ke'anae Elementary School was previously designated SIHP # 50-50-07-1630 and National Register of Historic Places Building # -00000665; observed SIHP # -0096, Kukui o Puni Heiau, located within approximately 450 feet from monitored land |

Possible cultural sites reported by residents included two contemporary hunting or gathering sites, a shrine near West Wailuaiki Stream that was destroyed in a 1975 flood, a shrine in a nonspecific location where *wauke* (*Broussonetia papyrifera*) and *Olona* (*Touchardia latifolia*) grow, and a canoe builders shrine. Additionally, one resident reported the nearby presence of a cave containing a feathered cloak, but another local informant provided a contrary location of near Haleakala Volcano summit for the cave. Two residents agreed that the canoe builders shrine referred to the site where a *koa* tree was removed to build a Hawaiian canoe in the mid-1950s. Archaeological monitoring was recommended for the License Area.

#### Kennedy (1990)

In a letter dated 7 March 1990, Joseph Kennedy (1990) discusses an archaeological reconnaissance of a land parcel located near Kainalimu Bay (TMK: [2] 1-3-007:016). Only one site was identified, Site 79 (Kauleiula Heiau) previously documented by Walker (1931a).

#### Donham (1993)

On 9 December 1992 and 6 January 1993, a field inspection of a revised route for a road easement beginning at Makehau Road and partially oriented along Wailuanui Stream (TMKs: [2] 1-1-006:071 and 1-1-008:001) was conducted (Donham 1993). Twenty meters from Makehau Street near a standing wooden shed, a fallen wooden structure was observed, which appeared to be an old slaughterhouse. Structural remnants included intact beams, corrugated metal roofing, meal cooking pans, glass, and wooden shelving. Age of the site was indeterminate, but observed artifacts were modern. An abandoned well or cistern constructed from dry-laid stones and covered with corrugated metal roofing was located nearby (50 m from Makehau St.) and is probably associated with the wooden structure since water pipes were observed between the two features. The route's closest point to Makehau Heiau is 19 m east from centerline and small terraces were observed within 9 m of centerline between the route and Makehau Heiau. Further along the route, rock terraces attributed to the terrace complex SIHP # 50-50-07-2942, were observed. Along the southern section of the route, three SIHPs were observed: an intact retaining wall for an old roadbed (SIHP # -0043), and two terrace walls (SIHP #s -2944 and -2945). SIHP # -2944, comprised of natural outcrop boulders and stacked cobbles and small boulders, is interpreted as a possible late nineteenth/early twentieth century habitation site due to the associated cultural materials encountered at the site, which include 'opihi shells, kukui nuts, dark-brown bottle glass, clear glass, whiteware bowl sherds (some hand-painted), three sizes of clear bottles with applied glass manufacturer stamps, embossed proprietary panel bottles, dark-brown bottles with kick-up bases, gallon-size glass jugs, English transfer print whiteware plate sherds, and impressed yellowware bowl sherds. SIHP # -2945 is interpreted as an agricultural terrace wall. A ditch-like feature, which may have derived naturally, was also observed along the southern portion of the route.

#### Group 70 International et al. (1995)

In May 1995, Group 70 International, Inc., Dr. Davianna McGregor, and CSH prepared a multidisciplinary cultural landscape study of Ke'anae and Wailuanui, reporting information obtained from literature and document searches, field surveys, and personal interviews (Group 70 International et al. 1995). Archaeological field surveys were conducted during September and October 1994, which also included interviewing local residents and mapping and describing taro

cultivation areas. In total, 41 sites are discussed in this study including 14 *heiau*, a shrine, eight taro complexes, two habitation complexes, three rock terrace sites, an old roadbed wall, a fishpond, and 11 post-Contact historic places. The 14 *heiau* (SIHP #s 50-50-07-82 thru -84, -88, -90 through -97, Kanekauo Lono Heiau, and Paliuli Heiau) and the shrine (Leleiwi) were previously documented by Walker (1931a), and of these, only two, Kukuipuni Heiau (SIHP # -96) and Makehau Heiau (SIHP # -97), were investigated during the study. Both confirmed *heiau* were noted as being densely overgrown and in conditions similar to previous reports. Pu'u Olu Pond, a fishpond with an associated small house platform overlooking the pond and a historic to modern foundation platform of grass house near Paepaemoana point (SIHP # -538), was another previously recorded site confirmed during the study. Nine complexes were first documented during this study: SIHP #s 50-50-07-3932, -3933, -3934, -3935, -3936, -3937, -3938, -3940, and -3941. All of these sites are taro complexes with the exception of SIHP # -3940, a habitation complex in Kilo consisting of terraces and an enclosure. The other habitation complex discussed in the study (though not investigated) is previously documented SIHP # -539 (Wailua-nui Complex), which consists of 15 graves, two possible house sites, a wall, a terrace, and three modified outcrops. While noted in the report as being documented in previous studies, none of the terrace sites (SIHP #s -2942, -2944, and -2945) nor the wall for a roadbed (SIHP #s -2943) were confirmed. Although not included as an archaeological site, the traditional Pi'ilani Trail in the Ko'olau region is listed as an important cultural resource (Group 70 International et al. 1995:145). Post-Contact historic places mentioned, but not investigated during this study, include Puohokamoa Bridge (SIHP # -1509), Lin Hing Society Building (SIHP # -1510), Lanakila Ihiihi o Iehova Ona Kau/ Lanakila Ihiihi o Iehova Ona Kauwa (Congregational church, SIHP # -1511), St. Gabriel Shrine (SIHP # -1512), Wailua Mormon Church (SIHP # -1514), Ramos House (SIHP # -1515), and Waikani Bridge (SIHP # -1516). Wailua Stone Church Ruins (SIHP # -1513) and Ke'anae Landing (SHIP # -2957) were both confirmed, and SIHP # -3943 (Ke'anae Quarry) was first reported during this study. At the quarry, old machinery, a World War II gun emplacement, and a possible stone platformed grave of a former quarry worker who died in a blasting accident were observed.

#### A. Haun and Henry (2003)

On 3 August 2002, Haun & Associates conducted an AIS of 4 acres bordered north by Hanau Stream in the Pauwalu area of Hāna District (TMKs: [2] 1-1-008:015 and 023) (A. Haun and Henry 2003). During a surface survey, two features from SIHP # -5237 were documented: a pre-Contact temporary habitation shelter in the form of a linear overhang with an associated exterior narrow, level ledge (Feature A) and a 63 m trail section (Feature B). Only one 'opihi shell fragment was observed at the surface in Feature A, while five *kukui* nut shells, eight basalt flakes, and 77 charcoal fragments were encountered during subsurface testing at Feature A. A charcoal sample yielded a calibrated (2 sigma, 95% probability) 14C date range from AD 1420 to 1650.

#### E. M. Fredericksen and Fredericksen (2004)

During January and February 2004, Xamanek Researches, LLC monitored ground disturbing activities for Ke'anae Park restroom improvements (TMK: [2] 1-1-003:001) (E. M. Fredericksen and Fredericksen 2004). While monitoring excavation for the septic leach field, SIHP # 50-50-07-5534, a late pre-Contact agricultural site, was encountered with associated subsurface



deposits, including two bivalve shell fragments (*Isognoman* spp.), charcoal flecks, and pieces of angular and waterworn coral. A charcoal sample returned calibrated (2 sigma, 95% probability) 14C date ranges of AD 1410 to 1530 and AD 1560 to 1630. A possible 'auwai or stream meander was observed at the northwestern edge of SIHP # -5534.

Hammatt and Shideler (2004)

On 2 July 2003, CSH conducted a field inspection (accepted as an archaeological assessment) of the Wailuaiki and Waihe'e proposed stream gage relocation License Areas (TMKs: [2] 1-1-02:001 por. and 3-2-014:001 por.) (Hammatt and Shideler 2004). For purposes related to the current proposed project, only the Wailuaiki License Area inspection (TMK: [2] 1-1-02:001 por.) part of this field study is relevant. The Wailuaiki field inspection occurred on lands located along Wailua-iki Stream approximately one kilometer west of the 1923 Wailuaiki Bridge on the East Maui Irrigation access road. The field check found no archaeological sites or historic preservation concerns, with the exception of the Ko'olau Ditch infrastructure that would not be affected by the proposed undertaking.

Hill et al. (2008)

In June and July 2007, CSH (Hill et al. 2008) monitored the excavation of trenches for cesspool conversion at Ke'anae Elementary School (TMK: [2] 1-1-008:020). The single room classroom at Ke'anae Elementary School was previously designated SIHP # 50-50-07-1630 and National Register of Historic Places Building # -00000665. Within approximately 450 feet and visible from the school campus is Kukui o Puni Heiau. No subsurface cultural deposits were revealed during excavations.

#### **4.4.6 Nāhiku License Area Archaeological Studies**

Previous archaeological studies conducted within or near the Nāhiku License Area are depicted in Figure 47 and summarized in Table 11.

W. M. Fredericksen and Fredericksen (1978)

On 14 July 1978, Xamanek Researches (W. M. Fredericksen and Fredericksen 1978) conducted an archaeological survey of six power pole sites in a Conservation District in Upper Nāhiku for East Maui Irrigation Company Kuhiwa Well (TMK: [2] 1-2-004:007). No historic properties or archaeological materials were reported.

W. M. Fredericksen and Fredericksen (1980)

On 6 April 1980, Xamanek Researches conducted the field component of research aimed at determining the degree of prehistoric indigenous Hawaiian activities at Hanawī Stream (TMK: [2] 1-2-001:001) (W. M. Fredericksen and Fredericksen 1980). The stream and adjacent land was surveyed from a horse and/or foot trail that roughly followed "the old Government Road" (W. M. Fredericksen and Fredericksen 1980:3). The study concludes that Hanawī Stream area would not have been a substantial site for prehistoric activities due to its remoteness, surrounding

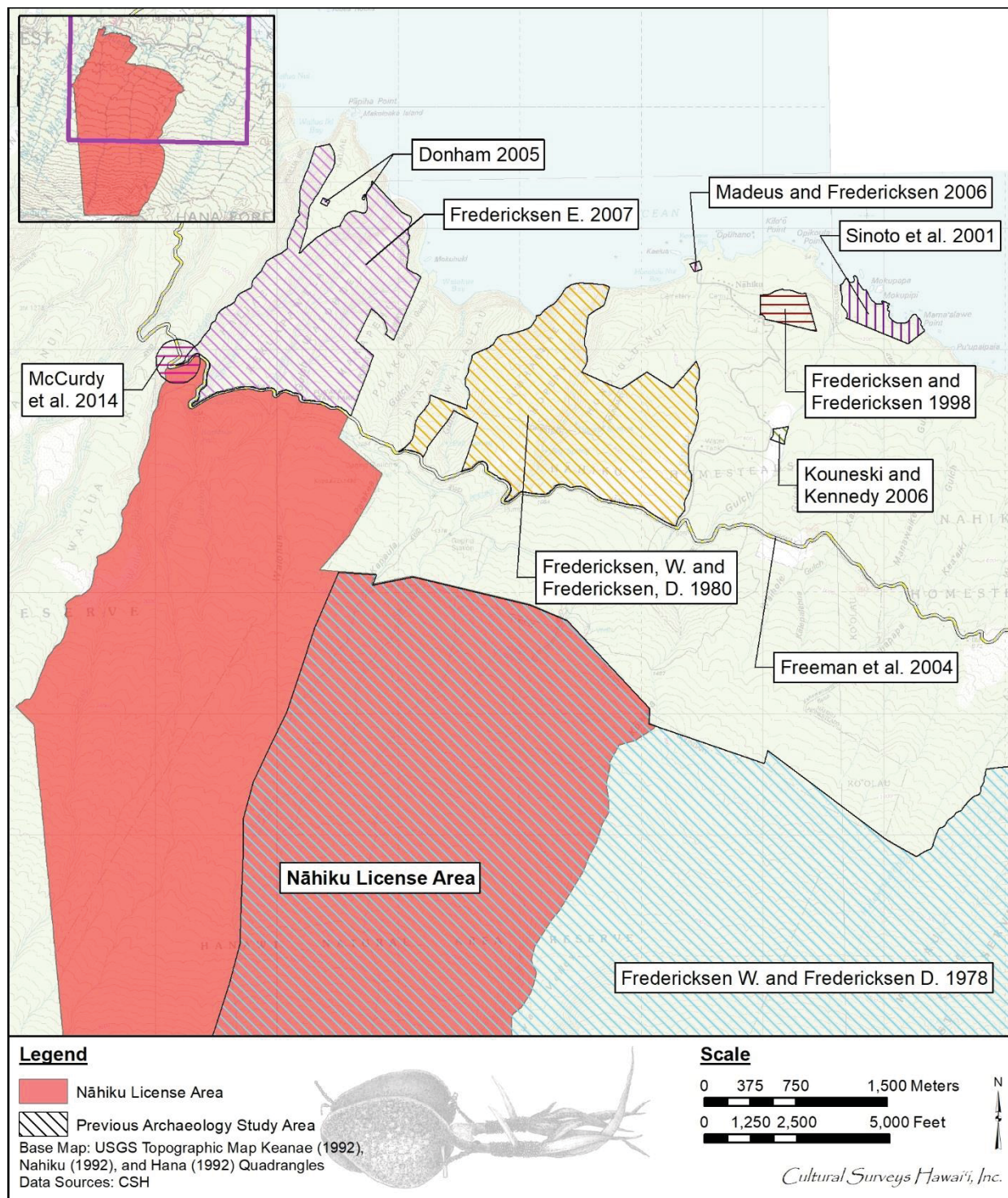


Figure 47. Previous archaeological studies within or near the Nāhiku License Area (U.S. Geological Survey 1991, 1992a, c, d)

Table 11. Previous Archaeological Studies in the Vicinity of the Nāhiku License Area

| Reference                                   | Type of Study         | Location  | Results  |
|---|-----------------------|---|--|
| W. M. Fredericksen and Fredericksen (1978)  | Archaeological survey | Six power pole sites in a Conservation District in Upper Nāhiku for East Maui Irrigation Company Kuhiwa Well (TMK: [2] 1-2-004:007) | No significant findings  |
| W. M. Fredericksen and Fredericksen (1980)  | Report of research    | Hanawā Stream (TMK: [2] 1-2-001:001)  | Concluded an absence of archaeological features but noted a horse or foot trail, a paved area interpreted as a place for modern temporary gatherings and structural-size stones and <i>'ili'ili</i> stones observed along the old Government Road that may or may not have been part of a <i>heiau</i>   |
| E. M. Fredericksen and Fredericksen (1998b) | AIS                   | 26.97 acres in Ko'olau, Hāna District (TMK: [2] 1-2-002:026)  | Documented 11 cultural sites including five agriculture and possible habitation sites (SIHP #s 50-50-12-4516 thru -4518, -4522, and -4523); a temporary habitation and agricultural site with burial caves and possible shrine (SIHP # -4514); a site with a boundary wall, burial cave and two probable burial mounds (SIHP # -4515); an agricultural complex with terraces and walls (SIHP # -4519); clear piles (SIHP # -4520); a boundary wall and temporary habitation overhang (SIHP # -4521); and a boundary wall and habitation terraces (SIHP # -4548); confirmed SIHP# 50-50-12-99, Poho'ula Heiau |



| Reference                      | Type of Study             | Location  | Results   |
|--------------------------------|---------------------------|---|---|
| Sinoto et al. (2001)           | AIS                       | 26-acre ocean front parcel (TMK: [2] 1-2-003:021) located between Kūhiwa Gulch and Kahakapuaa Gulch in Nāhiku | Documented SIHP # 50-50-12-5057, a surface scatter of lithics, and two features of SIHP # -5056: a notched heiau (Feature 1) and a small rectangular depression (Feature 2); reported a possible subsurface pit feature containing rocks, boulders, charcoal flecking, and <i>opihi</i> shell fragments |
| Donham (2005)                  | Archaeological assessment | 3.2 acres within TMK: [2] 1-2-001:004, located within Ko'olau Forest Reserve                                  | No significant findings   |
| Kouneski and Kennedy (2006)    | Archaeological assessment | 2.628-acre parcel in Nahiku Homesteads (TMK: [2] 1-2-002:050)   | No significant findings   |
| Madeus and Fredericksen (2006) | AIS                       | 0.84-acre parcel in Nāhiku (TMK: [2] 1-2-001:026)   | Documented two features of SIHP # 50-50-12-5961: a small pre-and post-Contact habitation platform (Feature A) and a retaining wall (Feature B)  |
| E. M. Fredericksen (2007)      | Archaeological monitoring | Approximately .5 acre at Pua'a Ka'a State Wayside Park (TMK: [2] 1-2-001:003)                                 | No significant findings   |

rugged terrain, and lack of significant archaeological features observed. Structural-size stones and 'ili'ili stones observed along the old Government Road were the only indication of a possible pre-Contact archaeological site; these stones may or may not have been part of a *heiau* that was reported to exist on the east rise of Hanawā Stream. A small paved area, interpreted as a modern temporary pavement for fishing/gathering parties, was observed east of the mouth of Hanawā Stream. A heavy walled pot and rusty iron grating were associated with this paved area.

E. M. Fredericksen and Fredericksen (1998b)

From January through March 1998, Xamanek Researches conducted an AIS for a 26.967-acre parcel located in Ko'olau (TMK: [2] 1-2-002:026), consisting of pedestrian survey and subsurface testing (E. M. Fredericksen and Fredericksen 1998b). Poho'ula Heiau (SIHP # 50-50-12-0099), previously identified by Walker (1931a), was encountered, and 11 archaeological properties (SIHP #s 50-50-12-4514 through -4523 and -4548) were documented during this AIS. SIHP # -4514 is a pre-Contact agricultural and habitation complex, consisting of 24 features including four rock walls (Features A, D, E, and H), five lava tube caves (Features B, F, G, L, and T), five possible temporary habitation rock overhangs (Features C, M, N, K, and R), a modified outcrop interpreted as a possible agricultural shrine (Feature I), a natural enclosure (Feature J), seven terraces (Features O, P, S, U, V, W, and X), and a retaining wall (Feature Q). Two of the lava tubes (Features G and L) are interpreted as burial caves, since they contain human skeletal remains. Artifacts encountered at SIHP # -4514 include two hand axes or hammerstones, two choppers, volcanic glass debitage, and utilized basalt flakes. SIHP # -4515 has four documented features: boundary wall (Feature A), two probable burial mounds (Features B and C), and a burial cave with visible human remains and a ground stone (Feature D). The burials were first addressed on 2 March 1998, in a letter report (E. M. Fredericksen 1998) noting the discovery of additional human remains located in a 7 m long lava tube in a small gully that also contained two probable post-Contact burials. SIHP # -4516 is interpreted as a pre-Contact agricultural site with five features: a rock wall (Feature A), two terraces (Features B and C), a rock enclosure interpreted as a possible habitation/activity area (Feature D), and a rock alignment (Feature E). Utilized basalt flakes, volcanic glass flakes, and possible quartz flake were encountered at SIHP #- 4516. At SIHP # -4517, three features were documented: large rock enclosure (Feature A), a terrace (Feature B), and a rock mound and small terrace (Feature C). Several artifacts were observed at this site, including basalt flakes, a basalt core, a utilized possible quartz flake, an adze tip fragment, metal pieces, green glass, clear glass, and ceramic sherds. SIHP # -4518 is a small agricultural site with three components: two terraces (Features A and B) and a rock clear pile (Feature C). A basalt core and utilized basalt flakes were observed SIHP # -4518. At SIHP # -4519, a pre-Contact agricultural site, five components were recorded, including two terraces (Features A and B), a pair of parallel rock wall sections (Feature C), a partial rock wall enclosure (Feature D), and a clear pile (Feature E). Two hammerstones, a hand axe, utilized basalt and volcanic glass flakes, an adze fragment, and a pecking stone were encountered at this site. SIHP # -4520 consists of three rock mound agricultural clear piles (Features A through C). SIHP # -4521 is comprised of a historic boundary wall (Feature A) and a rock overhang used as a temporary shelter during pre- and post-Contact times (Feature B). Cultural materials observed at this site include early 20<sup>th</sup> century bottles and ceramics, two basalt cores, a possible hammerstone, and several *opihi* shells. SIHP # -4522 is a pre-Contact agricultural site also utilized post-Contact that contains three features: a large terrace with



associated retaining wall interpreted as a possible temporary habitation area (Feature A) and two smaller terraces (Features B and C). Artifacts encountered include clear glass, green glass, brown glass, ceramic sherds, a white button fragment, a glass bead, a slate fragment, utilized polished basalt flakes, a retouched adze fragment, and a hammerstone/chopper. SIHP # -4523 is a small agricultural terrace with a poorly constructed retaining wall and associated volcanic glass debitage, unworked basalt flakes, waterworn pebbles; and a waterworn boulder. SIHP # -4548 is comprised of a terrace with a retaining wall interpreted as a pre-Contact habitation area also utilized post-Contact (Feature A) and a likely historic, boundary wall (Feature B). Both pre- and post-Contact artifacts were encountered, including utilized basalt flakes and volcanic glass flakes, three pecking stones, three hammerstones, a ground stone, four adze fragments, polished basalt flakes, four slate fragments, a copper button fragment, and a blue glass bead. An 'ili 'ili pavement, a mammal tooth, and shell (*Cellana* sp.) were also encountered subsurface at this site.

Sinoto et al. (2001)

On 6 December and 8 December 2000, Archaeological Services Hawaii, LLC in association with Aki Sinoto Consulting conducted an AIS for a 26 acre ocean front parcel (TMK: [2] 1-2-003:021) located between Kūhiwa Gulch and Kahakapuaa Gulch in Nāhiku 'ili, Ko'olau Moku, Hāna District, which included surface inspection and subsurface testing consisting of seven backhoe trenches (Sinoto et al. 2001). At the surface, two historic properties (SIHP #s 50-50-12-5056 and -5057) were documented, consisting of a notched *heiau* (SIHP # -5056 Feature 1), a small rectangular depression (SIHP # -5056 Feature 2), and a surface scatter of lithics (SIHP # -5057). A possible subsurface pit feature containing rocks, boulders, charcoal flecking, and 'opihi shell fragments was observed in Trench 5.

Donham (2005)

On 24 August 2005, Akahale Archaeology conducted an AIS of two proposed areas totaling 3.2 acres within TMK: [2] 1-2-001:004, located in Ko'olau Forest Reserve (Donham 2005). No historic properties or cultural materials were identified; therefore, the study was termed an archaeological assessment.

Kouneski and Kennedy (2006)

On 25 January 2006, Archaeological Consultants of the Pacific, Inc. carried out an AIS of a 2.628 acre parcel in Nahiku Homesteads (TMK: [2] 1-2-002:050) (Kouneski and Kennedy 2006). No historic properties were identified during this 100% pedestrian survey, so the study was accepted as an archaeological assessment.

Madeus and Fredericksen (2006)

Intermittently from November 2005 through March 2006, Xamanek Researches, LLC conducted an AIS for a 0.84 acre parcel in Nāhiku (TMK: [2] 1-2-001:026), consisting of subsurface testing and 100% surface survey (Madeus and Fredericksen 2006). This AIS documented one historic property (SIHP # 50-50-12-5961), which included a small habitation platform (Feature A) and a retaining wall paralleling an access road to Nahiku Landing (Feature B). During subsurface testing, cultural materials were only encountered in the two test excavations near Feature A. The following pre- and post-Contact materials were observed:

volcanic glass flakes, basalt flakes, a probable hammerstone, *'opihi* shell fragments, an unidentified shell, charcoal, pieces of porcelain, clear glass fragments, and a white glass button.

E. M. Fredericksen (2007)

In May 2007, Xamanek Researches, LLC monitored excavations for wastewater improvements on approximately 0.5-acre at Pua'a Ka'a State Wayside Park (TMK: [2] 1-2-001:003) (E. M. Fredericksen 2007). No cultural materials were encountered.

## Section 5 Community Consultation

---

### 5.1 Introduction

Throughout the course of this assessment, an effort was made to contact and consult with Native Hawaiian Organizations (NHO), agencies, and community members including descendants of the area, in order to identify individuals with cultural expertise/and or knowledge of the *ahupua'a* where the License Area is located. CSH initiated its outreach effort in November 2017 through letters, email, telephone calls, and in-person contact.

### 5.2 Challenges in Outreach

CSH began the consultation process in late 2017. Some of the challenges that CSH faced during the consultation process included the following:

1. Due to the history and sensitivity of the Proposed Action, cultural researchers encountered community members who were hesitant to talk and/or participate in the process. In a few instances, community members who participated in the interview process later declined approval to be included in the study. During informal conversations, participants shared that they were apprehensive about how their information would be utilized; they questioned “who” it would benefit; and that it was a family or community decision to decline to participate.
2. The cultural researchers who completed the consultation process were primarily located on neighboring islands to Maui and had no prior community connection to East Maui. This created additional challenges for the outreach process, which required additional time and dialogue to develop introductions.

### 5.3 Community Contact Letter

Letters (Figure 48 and Figure 49) along with a map and an aerial photograph of the License Area were mailed with the following text:

At the request of Wilson Okamoto Corporation, on behalf of Alexander & Baldwin, Inc. (A&B) and East Maui Irrigation Company, Ltd. (EMI), Cultural Surveys Hawai‘i, Inc. (CSH) is conducting a Cultural Impact Assessment (CIA) for the proposed Water Lease for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas. The proposed project area includes the following *ahupua‘a* (traditional land division spanning from the mountain to the sea): Honopou, Huelo, Mokupapa, Waipioiki, Waipionui, Hanehoi, West Hanawana, East Hanawana, Pu‘uomaile, Pāpa‘a‘ea, West Makaīwa, East Makaīwa, Honomanū, Ke‘anae, Wailua Nui, Wailua Iki, Ko‘olau, Pa‘akea, Nāhiku, and Ko‘olau. Districts of Makawao and Hana, Maui Island. Tax Map Keys (TMK): Various. Land area is approximately 33,000 acres.

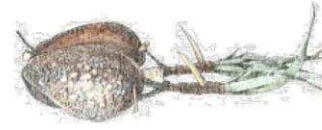
#### Brief History

For more than a century, a surface-water diversion system has been used to transport water from the wet, northeastern part of Maui, to the drier, central part of the island, mainly for large-scale sugarcane cultivation. The collection system referred to as the “EMI Aqueduct System,” spans the Nāhiku, Ke‘anae, Honomanū, and Huelo watersheds, and consists of approximately 388 separate intakes, 24 miles of ditches, and 50 miles of tunnels, as well as numerous dams, intakes, pipes, and flumes. The EMI Aqueduct System collects water from approximately 50,000 acres of land. Approximately 33,000 acres are owned by the State of Hawai‘i and approximately 17,000 acres are owned by EMI.

#### Purpose of Project

The proposed project request is the issuance of one long term (30 years) Water Lease from the Board of Land and Natural Resources (BLNR) for continued use of the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas through the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease will enable the lessee to continue to access lands owned by the State in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System, and will allow continued operation of the EMI Aqueduct System to deliver water to the Maui County Department of Water Supply (DWS) in Upcountry Maui and for the Nāhiku community, which draws up to 20,000 gallons of water per day directly from the EMI Aqueduct System. The Water Lease will not allow the lessee to use more water than the amount that will be available for diversion under the Interim Instream Flow Standards (IIFS) issued by the Department of Land and Natural Resources (DLNR), Commission on Water Resources Management (CWRM).

**Cultural Surveys Hawai'i, Inc.**  
Archaeological and Cultural Impact Studies  
Hallett H. Hammatt, Ph.D., President



1860 Main Street

Wailuku, Hawai'i 96793

Ph: (808) 242-9882

Fax: (808) 244-1994

Job code: MAUI 27

[emi@culturalsurveys.com](mailto:emi@culturalsurveys.com)

[www.culturalsurveys.com](http://www.culturalsurveys.com)

Aloha,

At the request of Wilson Okamoto Corporation, on behalf of Alexander & Baldwin, Inc. (A&B) and East Maui Irrigation Company, Ltd. (EMI), Cultural Surveys Hawai'i, Inc. (CSH) is conducting a Cultural Impact Assessment (CIA) for the proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. The proposed project area includes the following *ahupua'a* (traditional land division spanning from the mountain to the sea): Honopou, Huelo, Mokupapa, Waipioiki, Waipionui, Hanehoi, West Hanawana, East Hanawana, Pu'uomaile, Pāpa'a'ea, West Makaiwa, East Makaiwa, Honomanū, Ke'anae, Wailua Nui, Wailua Iki, Ko'olau, Pa'akea, Nāhiku, and Ko'olau. Districts of Makawao and Hana, Maui Island. Tax Map Keys (TMK): Various. Land area is approximately 33,000 acres.

#### **Brief History**

For more than a century, a surface-water diversion system has been used to transport water from the wet, northeastern part of Maui, to the drier, central part of the island, mainly for large-scale sugarcane cultivation. The collection system referred to as the "EMI Aqueduct System," spans the Nāhiku, Ke'anae, Honomanū, and Huelo watersheds, and consists of approximately 388 separate intakes, 24 miles of ditches, and 50 miles of tunnels, as well as numerous dams, intakes, pipes, and flumes. The EMI Aqueduct System collects water from approximately 50,000 acres of land. Approximately 33,000 acres are owned by the State of Hawai'i and approximately 17,000 acres are owned by EMI.

#### **Purpose of Project**

The proposed project request is the issuance of one long term (30 years) Water Lease from the Board of Land and Natural Resources (BLNR) for continued use of the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas through the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease will enable the lessee to continue to access lands owned by the State in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System, and will allow continued operation of the EMI Aqueduct System to deliver water to the Maui County Department of Water Supply (DWS) in Upcountry Maui and for the Nāhiku community, which draws up to 20,000 gallons of water per day directly from the EMI Aqueduct System. The Water Lease will not allow the lessee to use more water than the amount that will be available for diversion under the Interim Instream Flow Standards (IIFS) issued by the Department of Land and Natural Resources (DLNR), Commission on Water Resources Management (CWRM).

Objectives of the issuance of the proposed Water Lease are:

- Preserve and maintain the EMI Aqueduct System
- Continue to meet domestic and agricultural water demands in Upcountry Maui
- Continue to provide water for diversified agricultural purposes in Central Maui

Figure 48. Page 1 of the community contact letter



## MAUI 27 – CIA for Proposed Water Lease for East Maui

Page 2

- Continue to serve community water demands in Nāhiku

For more information regarding the Proposed Water Lease for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas, please refer to the Environmental Impact Statement Preparation Notice, which can be found on the Office of Environmental Quality Control's website: [http://oeqc.doh.hawaii.gov/Shared%20Documents/EA\\_and\\_EIS\\_Online\\_Library/Maui/2010s/2017-02-08-MA-5E-EISPN-East-Maui-Water-Lease.pdf](http://oeqc.doh.hawaii.gov/Shared%20Documents/EA_and_EIS_Online_Library/Maui/2010s/2017-02-08-MA-5E-EISPN-East-Maui-Water-Lease.pdf)

The purpose of the CIA is to gather information about the project area and its surroundings through research and interviews with individuals that are knowledgeable about this area. The research and interviews assist us when assessing potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the planned project. We are seeking your *kōkua* (assistance) and guidance regarding the following aspects of our study:

- **General history and present and past land use of the project area.**
- **Knowledge of cultural sites –for example, historic sites, archaeological sites, and burials.**
- **Knowledge of traditional gathering practices in the project area, both past and ongoing.**
- **Cultural associations of the project area, such as legends and traditional uses.**
- **Referrals of *kūpuna* or elders and *kamaʻāina* (Native-born) who might be willing to share their cultural knowledge of the project area and the surrounding *ahupuaʻa* (traditional land division extending from the mountains to the sea) lands.**
- **Any other cultural concerns the community might have related to cultural practices within or in the vicinity of the project area.**

Please contact [emi@culturalsurveys.com](mailto:emi@culturalsurveys.com) if you have any questions or would like to participate in the CIA process.

Me ka haʻahaʻa,

Cultural Impact Studies Department  
Cultural Surveys Hawai'i

Figure 49. Page 2 of the community contact letter

**Objectives of the issuance of the proposed Water Lease are:**

- Preserve and maintain the EMI Aqueduct System
- Continue to meet domestic and agricultural water demands in Upcountry Maui
- Continue to provide water for diversified agricultural purposes in Central Maui
- Continue to serve community water demands in Nāhiku

For more information regarding the Proposed Water Lease for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas, please refer to the Environmental Impact Statement Preparation Notice, which can be found on the Office of Environmental Quality Control’s website: [http://oeqc.doh.hawaii.gov/Shared%20Documents/EA\\_and\\_EIS\\_Online\\_Library/Maui/2010s/2017-02-08-MA-5E-EISPN-East-Maui-Water-Lease.pdf](http://oeqc.doh.hawaii.gov/Shared%20Documents/EA_and_EIS_Online_Library/Maui/2010s/2017-02-08-MA-5E-EISPN-East-Maui-Water-Lease.pdf)

The purpose of the CIA is to gather information about the project area and its surroundings through research and interviews with individuals that are knowledgeable about this area. The research and interviews assist us when assessing potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the planned project. We are seeking your *kōkua* (assistance) and guidance regarding the following aspects of our study:

- General history and present and past land use of the project area.
- Knowledge of cultural sites –for example, historic sites, archaeological sites, and burials.
- Knowledge of traditional gathering practices in the project area, both past and ongoing.
- Cultural associations of the project area, such as legends and traditional uses.
- Referrals of *kūpuna* or elders and *kama‘āina* (Native-born) who might be willing to share their cultural knowledge of the project area and the surrounding *ahupua‘a* (traditional land division extending from the mountains to the sea) lands.
- Any other cultural concerns the community might have related to cultural practices within or in the vicinity of the project area.

**5.4 Community Contact Table**

Below in Table 12 are names, affiliations, dates of contact, and comments from NHOs, individuals, organizations, and agencies contacted for this project. Results are presented below in alphabetical order.

Table 12. Community Contact Table

| Name                    | Affiliation   | Comments   |
|-------------------------|---|--|
| Aarona, Francine        | <i>Kama'āina Kupuna</i>   | Letter and figures sent via USPS 27 December 2017, returned to CSH 31 December 2017  |
| Ainsworth, Gail         | Author and historian  | Letter and figures sent via USPS 22 December 2017<br>Second letter and figures sent via USPS 2 March 2018, returned to CSH on 10 March 2018  |
| Akoi, Liloa and Waipahe | <i>Kama'āina</i>  | Letter and figures sent via USPS 22 December 2017<br>Second letter and figures sent via USPS 2 March 2018  |
| Akuna, Aja              | <i>Kama'āina</i> , cultural practitioner<br>Nā Moku Aupuni o Ko'olau Hui          | Referred by Mahealani Wendt<br>Letter and figures sent via USPS 22 December 2017, returned to CSH on 28 December 2017<br>CSH called on 4 February 2019, no answer, voicemail not available<br>CSH called on 5 February 2019, no answer, voicemail not available<br>CSH called on 6 February 2019, no answer, voicemail not available |
| Akuna, Terrance         | <i>Kama'āina</i> , cultural practitioner<br>Nā Moku Aupuni o Ko'olau Hui          | CSH called on 5 February 2019, no answer, voicemail not available<br>CSH called on 6 February 2019, no answer, voicemail not available   |
| Alu Like, Inc.          | Ke Ola Pono No Nā Kūpuna Program  | Letter and figures sent via email 13 June 2018   |
| Ampong, Foster          | <i>Kama'āina</i>  | Letter and figures sent via USPS 13 June 2018  |
| Antonio, Kapulani       | Maui/Lana'i Island Burial Council and History Teacher, Kamehameha Schools         | Letter and figures sent via email 2 March 2018   |
| Aquino, Darrell         | Maui Invasive Species Committee (MISC), <i>kama'āina</i> , and <i>kalo</i> farmer | Referred by Mahealani Wendt<br>Letter and figures sent via USPS 22 December 2017<br>Second letter and figures sent via USPS 2 March 2017<br>CSH called on 8 February 2019, called and left a message   |

| Name                        | Affiliation                  | Comments   |
|-----------------------------|------------------------------|--|
| Arrow One Ranch             | Located in Central Maui      | Letter and figures sent via USPS 13 June 2018  |
| Barclay, Charles            | Nā Moku Aupuni o Ko'olau Hui | <p>CSH called on 7 February 2019, no answer, left a message</p> <p>CSH called on 8 February 2019, no answer, left a message</p> <p>Mr. Barclay called and left a message for CSH on 14 February 2019</p> <p>CSH returned Mr. Barclay's call on 15 February 2019, no answer</p>   |
| Baisa, Gladys               | County Council, Central Maui | Letter and figures sent via email 2 March 2018   |
| Bergau, Moses<br>"Moke Boy" | <i>Kama'āina</i> of Nāhiku   | <p>Referred to CSH by Mavis Olivera-Medeiros and Dawn Lono</p> <p>CSH met with Moke Boy on 20 February 2019 at Makapīpī Bridge in Nāhiku; briefed him on the CIA process; we walked on the bridge; CSH would follow up later on confirming a date for consultation</p> <p>CSH called on 15 March 2019; no answer, voicemail unavailable; CSH followed up with an email asking if we were still confirmed to meet on Sunday morning (17 March 2019); Moke Boy replied via email on the same day stating that phone lines were down; tentative time of 10AM at the church at the bottom of Nāhiku Road</p> <p>CSH responded to Moke Boy's email on 16 March 2019 confirming the 10AM time</p> <p>Interview with Moke Boy at the bottom of Nāhiku Road on 17 March 2019.</p> <p>CSH sent copies of draft transcription to Moke Boy via USPS on 5 April 2019 with a follow up email</p> <p>CSH followed up with Moke Boy via email on 16 April 2019</p> <p>Moke Boy replied via email to CSH on 18 April 2019 with the following response:</p> <p><i>I did receive a packet from you and reviewed it</i></p> |

| Name                    | Affiliation   | Comments   |
|-------------------------|---|--|
|                         |   | <p><i>with others feeling very uncomfortable seeing our results as we reviewed it, (you and I) on hard copy, and knowingly the information it contains to be made public, even so. In respect with my ohana wishes I Must decline moving forward with CSH interview, it is a hard decision on my part.(Main concern, to much Detailed information)</i></p> <p><i>I apologize for the inconvenience I have caused.</i></p> <p>CSH responded to Moke Boy via email the same day thanking him for sharing his <i>mana 'o</i> and time</p> <p>Moke Boy declined any further participation in the CIA process. The interview with Moke Boy will not be included in the CIA.</p> |
| Biga, Marie             | Cultural practitioner, Maui Waena Hawaiian Club           | <p>Letter and figures sent via email 13 June 2018</p> <p>CSH called Ms. Biga on 10 July 2018, no answer, voicemail not available</p>   |
| Bisgard, Billy and Judy | Former engineer, Hawaiian Commercial Sugar Company (HC&S) | <p>Letter and figures sent via USPS 22 December 2017</p> <p>Second round of letter and figures sent via USPS 2 March 2018</p>  |
| Bissen, Kehau           | Hawaiian crafts teacher, resides in Central Maui          | <p>CSH called Ms. Bissen on 10 July 2018, said the following day is a better time to be contacted</p> <p>CSH called Ms. Bissen on 11 July 2018; no answer, voicemail unavailable</p>   |
| Broadhurst, Phillip     | Former CSH employee, parents are the Wendts               | <p>Mr. Broadhurst visited the CSH O'ahu office on 8 March 2018</p> <p>CSH administrative staff emailed CSH CIA staff with contact information for Mr. Broadhurst</p> <p>CSH called Mr. Broadhurst on 9 March 2018 who stated Dr. Hallett Hammatt contacted his mother (Mahealani Wendt) to set up an informal meeting to talk story about the project</p> <p>CSH contacted Mahelani Wendt</p>  |



| Name                | Affiliation  | Comments  |
|---------------------|--|---|
| Canto, Doreen       | DHHL Homesteader,<br>Central Maui  | Letter and figures sent via email 13 June 2018<br><br>CSH called on 10 July 2018, phone number disconnected<br><br>CSH called on 8 December 2018 three times; no answer, voicemail box is full<br><br>CSH called on 15 December 2018; no answer, left a message<br><br>CSH called Ms. Canto on 17 December 2018; discussed the project and the CIA process; CSH emailed Ms. Canto the consultation package<br><br>CSH followed up via email with Ms. Canto on 21 December 2018<br><br>Ms. Canto did not respond |
| Carmichael, Healoha | Cultural practitioner<br>(fisherman, <i>mālama</i><br><i>‘āina</i> , gatherer of<br>aquaculture)<br><br>Nā Moku Aupuni o<br>Ko‘olau Hui<br><br><i>Kama ‘āina</i> of East<br>Maui | Referred by Mahealani Wendt<br><br>Letter and figures sent via USPS 21 November 2017<br><br>Second letter and figures sent via USPS 2 March 2018  |
| Carroll, Robert     | County Council<br>Member, East Maui<br>Chair, Land Use<br>Committee  | Letter and figures sent via USPS 22 December 2017<br><br>Second letter and figures sent via USPS 2 March 2018   |
| Cho, John           | Retired from the<br>College of Tropical<br>Agriculture and<br>Human Resources  | Letter and figures sent via email 13 June 2018<br>CSH Called on 10 July 2018 and left a message   |
| Clark, Dan          | Nā Moku Aupuni o<br>Ko‘olau Hui  | CSH called on 7 February 2019, no answer, left a message<br><br>CSH called on 8 February 2019, no answer, left a message<br><br>Mr. Clark returned CSH's call on 8 February 2019 and approved use of his CWRM declaration in this study; see Section 5.6.1  |
| Costa, Joclyn       |  | Letter and figures sent via email 2 March 2018, returned  |

| Name                    | Affiliation   | Comments  |
|-------------------------|---|---|
| Crabbe,<br>Kamana'opono | Ka Pouhana, OHA   | <p>Letter and figures sent via USPS on 27 December 2017</p> <p>Second letter and figures sent via USPS 2 March 2018</p> <p>CSH received a letter from OHA on 9 March 2018</p> <p>See Appendix D for response</p>  |
| Crozier,<br>Pomaika'i   | Conservation<br>Manager, Pu'u Kukui<br>Watershed Preserve | <p>Letter and figures sent via email 22 December 2017</p> <p>Second letter and figures sent via USPS 2 March 2018</p> <p>Letter was returned to CSH on 6 March 2018</p> <p>Mr. Crozier called the CSH Maui office on 8 March 2018 stating he wanted to participate in the study</p> <p>CSH contacted Mr. Crozier on 9 March 2018; voice mail was full; CSH called Pu'u Kukui Watershed Preserve office and left a message</p> <p>CSH called Mr. Crozier's cell phone on 19 March 2018; left voice mail</p> <p>Mr. Crozier returned CSH's call on the same day but stated he would be off-island and is still interested in participating; CSH would contact him upon him returning on 10 April 2018</p> <p>CSH called Mr. Crozier on 19 April 2018; he stated he was on the road and to call back in 15 minutes; CSH called Mr. Crozier back and he said he was busy and to call back on 26 April 2018 to coordinate for an interview</p> <p>CSH called Mr. Crozier on 26 April 2018; left a message</p> <p>CSH called Mr. Crozier on 10 July 2018; voice mail full; CSH emailed Mr. Crozier the same day to see if he is still interested in participating; he replied the same day stating he would be on Hawai'i Island and is available to meet</p> <p>CSH emailed Mr. Crozier on 11 July 2018 seeing</p> |

| Name            | Affiliation  | Comments  |
|-----------------|--|---|
|                 |  | <p>if he was available on 13 July 2018</p> <p>CSH met with Mr. Crozier at the Naniloa Hotel in Hilo on 13 July 2018; did not conduct interview; CSH got acquainted with Mr. Crozier—his position and background. He stated that he is willing to help put together a group interview for CSH with East Maui residents.</p> <p>CSH followed up with an email to Mr. Crozier on 27 July 2018 for a list of contacts</p> <p>CSH called Mr. Crozier on 9 August 2018; left a message</p> <p>CSH called on 28 September 2018; left a message; Mr. Crozier contacted CSH the same day and set a tentative date for a group interview for 9-11 October 2018</p> <p>CSH called Mr. Crozier on 3 October 2018 and left a message to confirm a date</p> <p>CSH called Mr. Crozier on 4 October 2018; voice mail full; Mr. Crozier called back the same day and cancelled all interviews; tentatively rescheduled for 23-25 October 2018</p> <p>CSH called Mr. Crozier on 19 October 2018; left a message to follow up on the group interviews scheduled for the following week</p> <p>Mr. Crozier did not respond</p> |
| Cuffe, Susie    | Director, Maui County Soil & Water Conservation Districts (SWCD) | <p>Letter and figures sent via email 22 December 2017</p> <p>Second letter and figures sent via USPS 2 March 2018</p>   |
| Daniels, Ronald | <i>Kama'āina</i> and <i>Lei hulu</i> (feather lei) specialist    | <p>Letter and figures sent via USPS 22 December 2017</p> <p>Second letter and figures sent via USPS 2 March 2018</p>  |
| Day, Joseph J.  | Nā Moku Aupuni o Ko'olau Hui                                     | <p>Referred by Mahealani Wendt</p> <p>Letter and figures sent via USPS 21 November 2017</p> <p>Second letter and figures sent via USPS 2 March 2018</p>   |

| Name                  | Affiliation  | Comments   |
|-----------------------|--|--|
| Day, Virgil           | Nā Moku Aupuni o Ko'olau Hui   | Letter and figures sent via USPS 21 November 2017; letter returned 27 November 2018<br><br>Second letter and figures sent via USPS 2 March 2018 to new address; letter returned 6 March 2018, insufficient address   |
| De Naie, Lucienne     | Chairwoman of Hawai'i Chapter, Sierra Club Corporation                           | Letter and figures sent via USPS 22 December 2017<br><br>Second letter and figures sent via USPS 2 March 2018  |
| Denecke, Ellen P.     | Nā Moku Aupuni o Ko'olau Hui   | Letter and figures sent via USPS 21 November 2017; letter returned on 1 December 2017, contact moved<br><br>Second letter and figures sent via USPS 2 March 2018 to forwarding address; letter returned 10 March 2018  |
| Duey, John V.         | President, Hui Nā Wai 'Ehā   | Letter and figures sent via USPS 13 June 2018  |
| East Maui Water Study | <i>Hui</i>   | Letter and figures sent via email 2 March 2018   |
| Fasi, Paul            | Upcountry Maui resident  | Letter and figures sent via email 13 June 2018<br><br>Mr. Fasi replied to CSH via email on 14 June 2018 stating he was interesting in participating in the discussion<br><br>CSH replied via email on 19 June 2018 to set up a date and time for consultation<br><br>CSH called Mr. Fasi on 26 June 2018; no answer, left a voice mail<br><br>Mr. Fasi did not respond |
| Finkle, Laura         | Maui Program Coordinator, Hawai'i Nature Center                                  | Letter and figures sent via USPS 13 June 2018  |
| Fisher, Scott         | Associate Executive Director of Conservation, Hawaiian Islands Land Trust (HILT) | Letter and figures sent via email 22 December 2017<br><br>Second letter and figures sent via USPS 2 March 2018   |
| Flamer, Gina          | President, Kula Community Association  | Letter and figures sent via USPS 13 June 2018  |

| Name                    | Affiliation  | Comments  |
|-------------------------|--|---|
| Franco, Alex            | Rancher, Maui Cattle Company   | Letter and figures sent via email 22 December 2017<br><br>Second letter and figures sent via USPS 2 March 2018<br><br>Third letter and figures sent via email 13 June 2018  |
| Garcia Jr., William     | Royal Order of Kamehameha I, Office of Ku'auhau Nui  | Letter and figures sent via USPS 13 June 2018   |
| Guzman, Don S.          | Kahului County Council; Chair, Parks, Recreation, Energy and Legal Affairs Committee       | Letter and figures sent via USPS 13 June 2018   |
| Haines, Geoff           | Upcountry Maui farmer  | Letter and figures sent via email 13 June 2018<br><br>CSH called and left a message on 11 July 2018   |
| Haleakalā Ranch Company |  | Letter and figures sent via USPS 13 June 2018   |
| Haller, Alex            |  | Letter and figures sent via email 2 March 2018  |
| Hau, Skippy             | <i>Kama'āina</i><br>Aquatic Biologist,<br>Division of Aquatic Resources – State of Hawai'i | Letter and figures sent via USPS 22 December 2017<br><br>Mr. Hau replied via email on 18 January 2018 with the following:<br><br><i>(1-4) Assumption length of “water lease for 30 years.” The proposal does not address the lack of information on the amount of water flowing through the EMI Aqueduct System and the actual amounts collected at each diversion or ditch. Without understanding the future changes in the climate, I'd recommend a five-year lease with constant updates.</i><br><br><i>Is the 20,000 gallons per day for Nahiku and Kula Agricultural Park a minimum?</i><br><br><i>Isn't the interim instream flow suppose to maintain a minimum flow for each stream?</i><br><br><i>(1-6) Will EMI property be clearly identified along with boundaries of State land?</i><br><br><i>Please identify “Settlements” along Hana</i> |



| Name | Affiliation | Comments   |
|------|-------------|--|
|      |             | <p><i>Highway.</i></p> <p><i>(1-7) Please clarify “diversified agricultural uses as is economically feasible.” The term is used but not clearly identified or the need for water.</i></p> <p><i>(1-8) The three DWS water treatment facilities water use should be clearly identified. Please identify actual use not maximum capacity. The reservoir capacities does not clarify actual water use.</i></p> <p><i>(1-9) Please clarify abandoned diversion. Is the diversion and other structures to collect water removed and natural stream restored? Historically, structures including old tractors, drilling rigs, old gates, and rusted pipes have been abandoned throughout East Maui. Although some of these structures are over fifty years old, these debris and abandoned structures, etc. should be completely removed from the land or buried on the mountain.</i></p> <p><i>(Table 1-2) Notes: Planned for full and permanent restoration. This does not mean just the removal of “metal control gates.” Concrete walls and control structures should be completely removed and streams restored to their natural conditions.</i></p> <p><i>(3-9) Native gathering rights should be addressed. The gathering of opae, ‘o’opu and hihiwai continues in many of the East Maui Streams being diverted.</i></p> <p><i>(3-16) These State lands should be open to public hunting and gathering. The general public should have access to hike up mountains, visit waterfalls, scenic lookouts by streams, shorelines, and beaches.</i></p> <p><i>Not all lands belong to the State so “private lands” should and need to be identified by signs and safe parking areas. Many visitors and tour groups assume most lands belong to the State resulting in illegal trespassing on private property. Many rental cars block the road and</i></p> |

| Name | Affiliation | Comments   |
|------|-------------|--|
|      |             | <p><i>park on Hana Highway blocking traffic.</i></p> <p><i>(3-17) The EMI Aqueduct System requires mapping that shows the 388 separate intakes, ditch, dams, intakes, pipes and flumes used to collect water. Each diversion's location should be identified with accurate GPS coordinates along with elevation. The amount of water moving through the system should be measured and monitored at specific locations in the system.</i></p> <p><i>Stream research has shown diverted streams have impacted aquatic ecosystems. The minimum flow established by interim-instream flows should be strictly enforced. The past hundred years has shown rough estimates on the amount of water being diverted.</i></p> <p><i>Should the 62 miles of roads maintained for the EMI Aqueduct System require a lease for easement on State lands? When was the EMI system consolidated into one lease? The blanket water lease may pertain to the diversion and transport of water. The structures including tunnels, walls, intakes being used should be distinguished from abandoned facilities. Abandoned pipes, tractors, drilling rigs should be removed. A&amp;B and EMI have a responsibility to restore areas that were used in the past.</i></p> <p>CSH interviewed Mr. Hau on 16 February 2018 on Maui</p> <p>CSH attempted to send Mr. Hau his draft transcript and photos on 2 July 2018; file was too big</p> <p>CSH resent a reduced file size of his draft transcript and photos on 3 July 2018 via SharePoint; the same day Mr. Hau replied acknowledging receipt of email and link</p> <p>Mr. Hau replied 4 July 2018 via email with photo captions</p> <p>CSH replied 5 July 2018 acknowledging receipt of photo captions</p> |

| Name               | Affiliation   | Comments  |
|--------------------|---|---|
|                    |   | <p>CSH followed up with Mr. Hau 24 July 2018 via email regarding editing his transcript; Mr. Hau replied the same day stating he has been off-island but will work on his edits soon</p> <p>Mr. Hau emailed CSH his transcription edits 26 July 2018 with a presentation, additional photos, and various articles (i.e., water rights, freshwater animals, Wailuku River discharge, and Commission on Water Resources Management [CWRM]); CSH replied the same day acknowledging receipt of email and attachments</p> <p>CSH followed up with Mr. Hau via email 31 July 2018 regarding next steps of consultation process and draft interview summary for review; Mr. Hau replied the same day with edits to his summary; CSH replied the same day acknowledging receipt of edits</p> <p>Mr. Hau forwarded photos via email 15 August 2018</p> <p>CSH emailed Mr. Hau 16 August 2018 asking permission to use his photos for his interview summary</p> <p>Mr. Hau forwarded YouTube links via email 16 September 2018</p> <p>CSH replied to Mr. Hau via email 17 September 2018 acknowledging receipt of email; Mr. Hau replied the same day with captions to photos</p> <p>Mr. Hau's interview summary can be found in Section 5.5.2</p> |
| Hegele, Paula      | President, Maui Wine  | Letter and figures sent via USPS 13 June 2018   |
| Hemming, Christina | Ha'ikū/Kuiaha Stream  | <p>Letters and figures sent via USPS 21 November 2017</p> <p>Second letter and figures sent via USPS 2 March 2018</p>   |
| Hew, Garret        | <i>Kama'āina</i> , Upcountry Maui farmer, former EMI employee | Letter and figures sent via email 13 June 2018; Mr. Hew contacted CSH the same day expressing interest in participating in the study; CSH shared the process with Mr. Hew and set up a tentative  |

| Name       | Affiliation                   | Comments   |
|------------|-------------------------------|--|
|            |                               | <p>date to be interviewed and visit his farm in Kula</p> <p>CSH interviewed Mr. Hew at his home in Kula, Maui on 26 June 2018</p> <p>Draft transcription sent to Mr. Hew for review 5 November 2018</p> <p>CSH followed up with Mr. Hew via email on the progress of his review of his transcription 27 November 2018; Mr. Hew responded the same day via email that he was still reviewing</p> <p>CSH responded to Mr. Hew via email on 28 November 2019 acknowledging receipt of his email</p> <p>Mr. Hew sent his revised transcription to CSH via email 29 November 2018</p> <p>Mr. Hew followed up via email 2 December 2018 if CSH received his revised transcription</p> <p>CSH responded to Mr. Hew via email 3 December 2018 acknowledging receipt of his revised transcription; Mr. Hew responded the same day thanking CSH for acknowledgment</p> <p>CSH sent Mr. Hew a revised final transcription for review via email 21 December 2018</p> <p>Mr. Hew responded to CSH via email 24 December 2018 approving his revised final transcription</p> <p>CSH sent Mr. Hew a draft interview summary for review via email 5 February 2019</p> <p>Mr. Hew sent a revised interview summary to CSH via email 7 February 2019</p> <p>CSH sent Mr. Hew a final interview summary via email on 11 February 2019 for his review</p> <p>Mr. Hew approved his interview summary via email 12 February 2019</p> <p>Mr. Hew's interview summary can be found in Section 5.5.3</p> |
| Hew, Jason | Conservation Specialist, SWCD | Letter and figures sent via USPS 13 June 2018  |

| Name           | Affiliation                     | Comments  |
|----------------|---------------------------------|---|
| Hilananda, Nik |                                 | Letter and figures sent via email 22 December 2017<br><br>Second letter and figures sent 2 March 2018 via USPS  |
| Hobdy, Robert  | Retired naturalist and forester | Letter and figures sent via email 22 December 2017<br><br>Mr. Hobdy sent a letter with the following statement on 16 January 2018:<br><br><i>Aloha,</i><br><br><i>My name is Robert Hobdy. I am a retired Forester with the State Division of Forestry and Wildlife, DLNR with 37 years of service, 32 years of which have been on Maui. I worked extensively in the subject area and am familiar with the land, resources and people who live in the Hamakualoa, Ko'olau and Hana moku and who farm, hunt and gather resources from these lands.</i><br><br><i>Much of the information you seek regarding this project is well documented in a 2006 study "A Cultural-Historical Study of East Maui—the uplands of Kalialinui, and the Lands That Lie Below, Island of Maui" by Kumu Pono Associates LLC authored by Kepa and Onaona Maly. This document includes information on general history, cultural sites, traditional gathering practices and cultural associations. It also includes oral history interviews with a number of kupuna and other kama'aina including myself who have connections to this 'aina. It is a very thorough and informative document and it suffices for my input on these cultural associations.</i><br><br><i>In addition I would like to say that there should be two more objectives verbalized that need to be added to the four "bullets" shown:</i><br><br><i>1. Provide adequate stream flow to support diversified agriculture in the Hamakualoa and Ko'olau region.</i> |



| Name   | Affiliation                                 | Comments  |
|--|---|---|
|  |   | <p><i>2. Provide adequate stream flow to support indigenous fish, shrimp and mollusk species in the Hamakualoa and Ko'olau region.</i></p> <p><i>I am not interested in participating in the CIA process beyond this involvement.</i></p> |
| Hokoana, Lui                                   | President, Central Maui Hawaiian Civic Club | <p>Letter and figures sent via USPS 21 November 2017</p> <p>Second letter and figures sent via USPS 2 March 2018</p>  |
| Holt-Padilla, Hōkūlani                         | <i>Kumu Hula</i>                            | <p>Letter and figures sent via email 2 March 2018</p> <p>Ms. Holt-Padilla emailed CSH on 7 March 2018 stating that this is not her area of expertise</p>  |
| Ho'okano, Steven                               | Nā Moku Aupuni o Ko'olau Hui                | CSH called on 11 February 2019, no answer, voicemail not available  |
| Jacintho, Jonah                                | Nā Moku Aupuni o Ko'olau Hui                | CSH called his sister, Lezley Jacintho, on 8 February 2019; gave approval to use his declaration in this study; see Section 5.6.2   |
| Jacintho, Juliana                              | Nā Moku Aupuni o Ko'olau Hui                | <p>CSH called on 8 February 2019; no answer, left a message</p> <p>CSH called on 11 February 2019; mailbox full, unable to leave a message</p>  |
| Jacintho, Lezley                               | Nā Moku Aupuni o Ko'olau Hui                | CSH called on 8 February 2019 and she approved use of her CWRM declaration in this study; see Section 5.6.3   |
| Ka'auamo, Mary                                 | Nā Moku Aupuni o Ko'olau Hui                | Letter and figures sent via USPS 22 December 2017   |
| Ka'auamo, Noelani                              |   | Letter and figures sent via USPS 22 December 2017; letter returned to CSH 31 December 2017  |
| Ka'auamo, Solomon                              | Nā Moku Aupuni o Ko'olau Hui                | <p>Referred by Mahealani Wendt</p> <p>Letter and figures sent via USPS 22 December 2017</p> <p>Second letter and figures sent via USPS 2 March 2018</p>   |
| Kaho'okele, Dorothy "Aunty Dottie/Kumu Kamalu" | President, Nahiku Community Association     | <p>Referred by Mavis Oliveira-Medeiros and Dawn Lono</p> <p>Letters and figures sent via USPS 21 November 2017</p> <p>Second letter and figures sent via USPS 2 March</p>   |

| Name | Affiliation | Comments   |
|------|-------------|--|
|      |             | <p>2018</p> <p>Referred by Mavis Oliveira-Medeiros and Dawn Lono at our interview on 19 February 2019</p> <p>Spoke to Aunty Dottie on 20 February 2019 via phone; explained the project and the CIA process; said she is interested in participating but can only be interviewed on the weekend</p> <p>Phone call to Aunty Dottie on 15 March 2019 to confirm interview; confirmed and will call when en route to Nāhiku</p> <p>Called Aunty Dottie on 16 March 2019 en route to Nāhiku; interviewed</p> <p>Aunty Dottie texted on 17 March 2019 thanking us for the interview; CSH thanked Aunty Dottie for her time, <i>'ike</i>, and <i>mana'o</i></p> <p>CSH texted Aunty Dottie on 10 April 2019 giving her an update on her transcription and that it would be sent out soon</p> <p>CSH texted Aunty Dottie on 12 April 2019 asking for confirmation of address; draft transcription sent via USPS</p> <p>Aunty Dottie texted CSH on 15 April 2019 acknowledging she received the draft transcription and would proofread and return</p> <p>CSH followed up with Aunty Dottie on 18 April 2019 via text on the edits of the transcription; she replied she is still working on it</p> <p>CSH followed up with Aunty Dottie on 27 April 2019 via text on the status of her draft transcription edits</p> <p>Aunty Dottie replied via text 28 April 2019 that she would work on it tomorrow; currently sick; Aunty Dottie called CSH on the same day asking about the CIA process (What is the project purpose? Who is it for? Who will it benefit from this?); CSH answered her questions and she decided to withdraw from the consultation process</p> |

| Name                | Affiliation   | Comments  |
|---------------------|---|---|
| Kailila'au, Henry   | Nā Moku Aupuni o Ko'olau Hui  | Letter and figures sent via USPS 21 November 2017; letter returned to CSH 5 December 2017, contact has moved<br><br>Second letter and figures sent to forwarding address via USPS 2 March 2018; letter returned to CSH 10 March 2018, wrong address   |
| Kalanikau, Vernon   | Kula Moku Representative, Aha Moku o Maui   | Letter and figures sent via USPS 22 December 2017<br><br>Second letter and figures sent via USPS 2 March 2018   |
| Kamaunu, Johanna    | Wailuku Moku Representative, Maui-Lana'i Island Burial Council  | Letter and figures sent via email 2 March 2018  |
| Kamaunu, Kaniloa    | Wailuku Moku Representative, Aha Moku o Maui  | Letter and figures sent via email 2 March 2018  |
| Kanaka'ole, Kaui L. | <i>Kumu Hula</i> , Hālau o Kekuhi and Hālau o Nakaulakuhikuhi<br><br>Member, Edith Kanaka'ole Foundation<br><br>Cultural Practitioner<br><br>Nā Moku Aupuni o Ko'olau Hui | Referred by Mahealani Wendt<br><br>Letter and figures sent via USPS 21 November 2017<br><br>Second letter and figures sent via USPS 2 March 2018<br><br>CSH called on 4 February 2019; number disconnected<br><br>CSH called on 5 February 2019; Ms. Kanaka'ole approved use of her CWRM declaration in this study and it can be found in Section 5.6.4 |
| Kanoa, Gladys       | Nā Moku Aupuni o Ko'olau Hui  | Referred by Mahealani Wendt<br><br>Letter and figures sent via USPS 22 December 2017<br><br>Second letter and figures sent via USPS 2 March 2018<br><br>CSH called on 4 February 2019; Mr. Kanoa said to call the following day<br><br>CSH called on 6 February 2019; asked if it was OK to use CWRM declaration even if in public domain; not approved |

| Name                               | Affiliation  | Comments   |
|------------------------------------|--|--|
| Kanoa, Isaac                       | Nā Moku Aupuni o Ko'olau Hui<br><i>Kalo</i> Farmer, gatherer, fisherman, diver, <i>mālama 'āina</i> practitioner | Referred by Mahealani Wendt<br>Letter and figures sent via USPS 22 December 2017<br>Second letter and figures sent via USPS 2 March 2018<br>CSH called on 4 February 2019; approved use of declaration<br>CSH called for Mrs. Kanoa's approval of CWRM declaration on 6 February 2019; Mr. Kanoa rescinded use of his CWRM declaration in this study; not approved |
| Kapu, Kea'aumoku                   | CEO, Aha Moku o Maui and Koani Foundation  | Letter and figures sent via email 21 November 2017<br>Second letter and figures sent via USPS 2 March 2018   |
| Kapu, Kekai                        | Aha Moku o Maui Cultural Director, Maui Ocean Center   | Letter and figures sent via USPS 21 November 2017<br>Second letter and figures sent via USPS 2 March 2018  |
| Kapu, Uilani                       | Treasurer, Nā 'Aikāne 'o Maui  | Letter and figures sent via email 21 November 2017<br>Second letter and figures sent via USPS 2 March 2018   |
| Kaupalolo, Carl                    | Royal Order of Kamehameha  | Letter and figures sent via email 13 June 2018<br>CSH called Mr. Kaupalolo on 11 July 2018; wrong number   |
| Kekahuna, Cheryl (Pohe) Ka'ohelani | Nahiku Community Association   | Letters and figures sent via USPS 21 November 2017<br>Second letter and figures sent via USPS 2 March 2018   |
| Kekahuna, Ivan                     | <i>Kama'āina</i>   | Letter and figures sent via USPS 2 March 2018; letter returned to CSH 14 March 2018  |
| Kekahuna, Mapu                     | <i>Kama'āina</i> , Nahiku Community Association  | Letters and figures sent via USPS 21 November 2017<br>Second letter and figures sent via USPS 2 March 2018   |
| Kapahulehua, Leonard Kimokeo       | Founder, Kimokeo Foundation  | Letter and figures sent via email 21 November 2018   |

| Name | Affiliation | Comments   |
|------|-------------|--|
|      |             | <p>Second letter and figures sent via USPS 2 March 2018</p> <p>Third letter and figures sent via email 13 June 2018</p> <p>Mr. Kapahulehua replied to CSH via email on 14 June 2018 with the following:</p> <p><i>Aloha</i></p> <p><i>I received email, now in London due back on Maui June 21<sup>st</sup> and will call and make contact</i></p> <p>CSH followed up with Mr. Kapahulehua via email on 19 June 2018 stating we will wait for his call upon his return</p> <p>CSH called Mr. Kapahulehua 6 August 2018; no answer</p> <p>CSH emailed Mr. Kapahulehua on 6 August 2018 asking his dates of availability for an interview</p> <p>Mr. Kapahulehua replied via email on 7 August 2018 with his dates of availability; CSH responded the same day with options and availability</p> <p>Mr. Kapahulehua emailed CSH 8 August 2018 with a tentative interview date of 23 August 2018</p> <p>CSH emailed Mr. Kapahulehua 10 August 2018 confirming the 23 August 2018 for an interview on Maui</p> <p>CSH called and emailed Mr. Kapahulehua on 22 August 2018 and left a voice mail cancelling the interview due to Hurricane Lane</p> <p>Mr. Kapahulehua emailed on 23 August 2018 stating he understood the circumstances</p> <p>CSH emailed Mr. Kapahulehua on 28 August 2018 to reschedule consultation</p> <p>Mr. Kapahulehua stated via email 29 August 2018 that he was in Kona and could meet for consultation; CSH responded the same day confirming consultation for the 30 August 2018</p> |



| Name             | Affiliation  | Comments   |
|------------------|--|--|
|                  |  | <p>in Kona</p> <p>CSH emailed and called Mr. Kapahulehua on 30 August 2018 when a good time to meet would be; CSH met with Mr. Kapahulehua that day to discuss two projects including EMI; CSH was unable to cover EMI with Mr. Kapahulehua and would contact him later to set up another consultation date</p> <p>CSH emailed Mr. Kapahulehua to secure a time and date for consultation 6 September 2018</p> <p>CSH called to follow up with Mr. Kapahulehua 4 October 2018 to schedule an interview; unable to leave message, mailbox full</p> <p>Mr. Kapahulehua did not respond</p> |
| Kekiwi, James    | Nā Moku Aupuni o Ko'olau Hui   | <p>CSH called on 8 February 2019; said to call back because he was driving</p> <p>CSH called on 11 February 2019; no answer, voicemail full, unable to leave message</p>   |
| Keyser, Harold   | Retired from College of Tropical Agriculture and Human Resources (CTAHR) | Letter and figures sent via email 13 June 2018   |
| Kimokeo, Pualani | Nā Moku Aupuni o Ko'olau Hui   | <p>Referred by Mahealani Wendt</p> <p>Letter and figures sent via USPS 21 November 2017</p> <p>Second letter and figures sent via USPS 2 March 2018</p> <p>CSH called on 4 February 2018; approved CWRM declaration to be in the report; see Section 5.6.5</p>   |
| Kubota, Gaylord  | Retired Director/Founder, Alexander & Baldwin Sugar Museum               | <p>Letter and figures sent via USPS 22 December 2017</p> <p>Second letter and figures sent via USPS 2 March 2018</p>   |
| Kuloloio, Leslie | <i>Kupunakāne</i>  | <p>Letter and figures sent via email 27 December 2017</p> <p>Second letter and figures sent via USPS 2 March 2018</p>  |

| Name                          | Affiliation   | Comments  |
|-------------------------------|---|---|
| Lake-Farm, Sissy              | Executive Director,<br>Maui Museum<br><br><i>Kumu Hula</i> , Nā<br>Hanona Kūlike 'o<br>Pi'ilani | Letter and figures sent via email 21 November 2017<br><br>Second letter and figures sent via USPS 2 March 2018  |
| Lawrence, Tiare               | Cultural Practitioner   | Letter and figures sent via email 2 March 2018  |
| Lay, Ivan                     | Chair, Maui County<br>Cultural Resources<br>Commission  | Letter and figures sent via USPS 13 June 2018   |
| Lee, Jeeyun                   | Executive Director,<br>Hawai'i Nature Center  | Letter and figures sent via USPS 13 June 2018   |
| Lester, Sean                  | East Maui resident  | Letter and figures sent via USPS 21 November 2017, letter returned to CSH on 31 December 2017   |
| Lightfoot, Roslyn             | Director, Alexander &<br>Baldwin Sugar<br>Museum  | Letter and figures sent via email 21 November 2017<br><br>Ms. Lightfoot responded via email on 28 November 2018 with the following:<br><br><i>Aloha,</i><br><br><i>We received your letter about the EMI Project. We would like to participate in the CIA process anyway that we can.</i><br><br><i>Resources that might be helpful:</i><br><br>• <i>Our archives hold two maps that might be helpful to your research. The first one is a map of Nahiku Coffee Plantation, and the second map is an irrigation map from Nahiku to Keanae.</i><br><br>• <i>Kepa Maly cultural survey for EMI. A copy was donated to the Maui Historical Society and is available for researchers.</i><br><br>CSH reviewed these recommended resources as part of the traditional and historic background research conducted for the CIA |
| Lindsey III,<br>Edwin "Ekolu" | President, Maui<br>Cultural Lands   | Letter and figures sent via USPS 13 June 2018   |
| Lutgen, Hannah                | Conservation<br>Specialist, Natural<br>Resources<br>Conservation Service                        | Letter and figures sent via USPS 13 June 2018   |

| Name                              | Affiliation   | Comments  |
|-----------------------------------|---|---|
| Makena Stables                    |   | Letter and figures sent via USPS 13 June 2018   |
| Martin, Koa                       | Former HC&S Employee  | Letter and figures sent via USPS 13 June 2018   |
| Martin, Bob                       | Central Maui farmer   | Letter and figures sent via email 2 March 2018  |
| Maui/Lana'i Island Burial Council |   | Letter and figures sent via USPS (C/O SHPD) 13 June 2018  |
| Maxwell, Dane                     | Maui/Lana'i Island Burial Council   | Letter and figures sent via USPS 22 December 2017; letter returned to CSH 28 December 2017  |
| Mayer, Dick                       | Retired Professor, author, and political analyst  | Letters and figures sent via USPS 21 November 2017<br>Second letter and figures sent via USPS 2 March 2018  |
| McGregor, Davianna P.             | Expert testimony; specializes in Hawaiian subsistence, cultural, and religious customs and practices (research); research for East Maui; author<br><br>Professor, Department of Ethnic Studies – University of Hawai'i at Mānoa | Referred by Mahealani Wendt<br>Letter and figures sent via USPS 21 November 2017<br>Second letter and figures sent via USPS 2 March 2018  |
| Molitau, Kaponoa'i                | Cultural Practitioner, <i>Kumu Hula</i>   | Letter and figures sent via USPS 13 June 2018   |
| Nahiku Community Association      |   | Letter and figures sent via email 2 March 2018; returned to CSH the same day  |
| Nakahashi, Ikaika                 | Cultural Historian, SHPD  | Letter and figures sent via email 2 March 2018  |
| Nakanelua, Kyle                   | <i>Kama'āina</i> , Aha Moku o Maui, and <i>kalo</i> farmer  | Letter and figures sent via email 2 March 2018<br>Mr. Nakanelua emailed CSH on 6 March 2018 with the following:<br><br><i>Good Morning to you Cultural Survey Hawai'i, I am very pleased to meet you. Your email has found me well, and I wish you the same also. I would like to participate in this survey can you direct me as to what task you need for me to</i> |

| Name | Affiliation | Comments   |
|------|-------------|--|
|      |             | <p><i>accomplish, as well as inform me as to what the time frame is I need to complete these tasks. I look forward to hearing from you. I will call you today.</i></p> <p><i>Mahalo and have a good day.</i></p> <p>CSH responded via email to Mr. Nakanelua 6 March 2018 explaining the CIA process</p> <p>Mr. Nakanelua responded to CSH via email 7 March 2018 with the following:</p> <p><i>Mahalo for getting back to me and letting me know I still have time to contribute. I noticed the bullet statements that are listed below. I am aware of a previous work done by Kepa Maly that addresses</i></p> <ul style="list-style-type: none"> <li>•<i>General history and present and past land use of the project area.</i></li> <li>•<i>Knowledge of cultural sites (i.e. heiau, burials, historic sites, etc.).</i></li> <li>•<i>Knowledge of traditional gathering practices (such as fishing, limu picking, la'au lapa'au, etc.).</i></li> <li>•<i>Mo'olelo (stories)</i></li> <li>•<i>Referrals</i></li> </ul> <p><i>Also the book sites of Maui has a lot of mo'olelo and diagrams as well. Will those documents be include as well?</i></p> <p><i>When do you think you will be conducting the interview? I will be off Island several time during this month and beginning April.</i></p> <p>CSH responded to Mr. Nakanelua via email 19 March 2019, follow up to see if he is still interested in participating</p> <p>Mr. Nakanelua emailed on 20 March 2018 with the following:</p> <p><i>Aloha Nicole, Yes I am still interested in participating, with certain interest. It is important to me for you to know that I need the</i></p> |

| Name | Affiliation | Comments  |
|------|-------------|---|
|      |             | <p><i>communication regarding the process, to be completely transparent between the two of us. I would like to know how this process is going to be conducted. So what are the next steps that will occur. What are your expectations of me in this interview as well as what will my testimony be used for. I have given testimony before only to have it used against the cause that I support. I am NOT in Favor of any stream diversions from Nahiku to Waikamoi. I am aware that EMI A&amp;B has enough properties and wells to support upcountry water needs as well as any upcoming and planned Agricultural projects. There is also enough water for Mayor Arakawa's plan to take Kihei off of the Wailuku aquifer and replace their water consumption needs with water that use to go to the cane fields out in Pu'unene. I think 10 million gallons a day was the number he spoke of. Also, anything I share regarding the land, it's resources, and the work that I do, I consider Intellectual and Cultural Property of myself and my Ohana. I am halfway through a House painting project. I have time in the morning on April 4th and 11th. If not those Mid-April is better.</i></p> <p><i>Malama pono ia oe kekahi.</i></p> <p>CSH called Mr. Nakanelua on 20 March 2018 then followed up with an email stating:</p> <p><i>Aloha,</i></p> <p><i>Tried to call you (I think it's your number) and left a message. I think it would be easier if we hopped on the phone and talk story a little bit. We can talk about the process and transparency (which I fully believe in when it comes to project details and expectations--for the both of us). I am not ma'a to Maui. I spent some time in Makawao, Kula, and Hana every year when I was a little girl to visit family friends but its been some time. I want to get a better understanding of the landscape, the changes, and how those changes (and the possible changes that may ensue from</i></p> |



| Name | Affiliation | Comments   |
|------|-------------|--|
|      |             | <p><i>this project) will affect you and others.</i></p> <p><i>When you have time, give me a call at the office: (808) 965-6478. I'll be here in the office all day today, Thursday, and Friday. We talk story and we go from there. I want to make sure that everything is pa'a first.</i></p> <p>Mr. Nakanelua emailed CSH on 20 March 2018:</p> <p><i>Aloha Nicole,</i></p> <p><i>I got your call I just got in. I am headed out to the farm tomorrow, and then I have class at night. I will steal some time to call you at least touch base ear to ear.</i></p> <p><i>According to your email it sounds like a good thing for us to do. I will make every effort to call tomorrow.</i></p> <p>CSH responded to Mr. Nakanelua via email 22 March 2018:</p> <p><i>Aloha,</i></p> <p><i>E kala mai, I was in school all day yesterday. I am here in the office today and I'll be in all day tomorrow as well. Give me a call when you're free.</i></p> <p>Mr. Nakanelua called on 27 March 2018 wanting to know the CIA process; CSH let him know about the authorization form, recording, transcripts, approval, public record, etc. and he was fine with it; tentative date to meet is 13 April 2018 at Pauwela Coffee Shop; CSH to email questions to Mr. Nakanelua for him to review prior to interview</p> <p>Mr. Nakanelua called CSH on 11 April 2018 to confirm interview and change location of interview</p> <p>CSH called Mr. Nakanelua on 12 April 2018 to confirm interview and that we would call him when we landed on Maui the following day</p> <p>CSH interviewed Mr. Nakanelua on 13 April</p> |

| Name | Affiliation | Comments  |
|------|-------------|---|
|      |             | <p>2018 at Starbucks Kahului</p> <p>CSH sent a follow up email on 16 April 2018 thanking Mr. Nakanelua for sharing his <i>'ike</i> and <i>mana 'o</i></p> <p>CSH emailed Mr. Nakanelua his draft transcription for review 20 June 2018</p> <p>Mr. Nakanelua emailed edits in text 25 June 2018; CSH responded the same day via email to Mr. Nakanelua to give options to go through the transcript together by phone or if he would like to provide a write up</p> <p>CSH followed up with Mr. Nakanelua via phone 4 September 2018 on transcription edits</p> <p>Mr. Nakanelua emailed 5 September 2018 stating that he is available for a call today; CSH called, no answer</p> <p>CSH called Mr. Nakanelua 6 September 2018, no answer; Mr. Nakanelua emailed that he received the message and is available the following day</p> <p>CSH called and emailed a follow up 11 September 2018 stating we would contact him the following day</p> <p>Mr. Nakanelua emailed CSH 12 September 2018 stating he would wait for our call that day; CSH called later in the afternoon; edits made and approved to transcript</p> <p>Draft summary sent via email for review 8 October 2018</p> <p>Follow up on draft summary via email 5 November 2018</p> <p>Mr. Nakanelua emailed CSH 10 November 2018 stating he had apprehensions about participating in the study and felt that his words could be taken out of context</p> <p>CSH emailed Mr. Nakanelua 13 November 2018; followed up with a phone call</p> <p>Mr. Nakanelua sent an email 14 November 2018</p> |

| Name              | Affiliation                              | Comments   |
|-------------------|--|--|
|                   |  | <p>with edits; CSH called multiple times the say day, Mr. Nakanelua called back; CSH will make the corrections to his summary</p> <p>CSH sent edited summary for review via email 19 November 2018</p> <p>Mr. Nakanelua emailed CSH his corrections to his summary 28 November 2018</p> <p>CSH emailed Mr. Nakanelua his edits 9 January 2019</p> <p>Mr. Nakanelua emailed CSH 10 January 2019 relating that he would get back to us tomorrow</p> <p>Mr. Nakanelua emailed CSH 11 January 2019 stating that we “have represented the voice, thoughts, and concerns well.”</p> <p>Mr. Nakanelua’s summary can be found in Section 5.5.1</p> |
| Neal, Patricia J. | Nā Moku Aupuni o Ko‘olau Hui             | <p>Letter and figure sent via USPS 21 November 2017; letter returned to CSH 27 November 2017</p> <p>Second letter and figures sent via USPS to forward address 2 March 2018; letter returned to CSH 6 March 2018</p>   |
| Nelson, Linda     | President, Native Hawaiian Plant Society | Letter and figures sent via USPS 13 June 2018  |
| Nemet, Cody       | <i>Kama‘āina</i> , Cultural Practitioner | Letter and figures sent via email 2 March 2018   |
| Newbold, Robin    | Chair, Maui Nui Resource Council         | <p>Letter and figures sent via USPS 21 November 2017</p> <p>Second letter and figures sent via USPS 2 March 2018</p>   |
| Nishiyama, Patty  | Member, Nā Kūpuna o Maui                 | <p>Letter and figures sent via USPS 22 December 2017</p> <p>Second letter and figures sent via USPS 2 March 2018</p>   |
| Noho‘ana Farm     |  | Letter and figures sent via USPS 13 June 2018  |

| Name                      | Affiliation  | Comments   |
|---------------------------|--|--|
| Oliveira, Roy Kalani      | President, Waiehu Kou Phase 3 Association                          | Letter and figures sent via USPS 21 November 2017<br>Second letter and figures sent via USPS 2 March 2018  |
| Oliveira-Medeiros, Mavis  | <i>Kama'āina</i>   | Letters and figures sent via USPS 21 November 2017<br>Second letter and figures sent via USPS 2 March 2018 |
| Ornellas, Daniel L.       | Vice President, Waiehu Kou Phase 3 Association                     | Letter and figures sent via email 21 November 2017<br>Second letter and figures sent via USPS 2 March 2018 |
| Pahukoa 'Ohana            | <i>Kama'āina</i> , Cultural Practitioners                          | Letter and figures sent via USPS 21 November 2017<br>Second letter and figures sent via USPS 2 March 2018  |
| Pang, Dr. Lorrin          |  | Letters and figures sent via USPS 21 November 2017<br>Second letter and figures sent via USPS 2 March 2018 |
| Pasco Jr., Michael D.     | <i>Kama'āina</i> , Cultural Practitioner                           | Letter and figures sent via email 22 December 2017<br>Second letter and figures sent via USPS 2 March 2018 |
| Pastula, Dana and Michael | Owners, Café O Lei   | Letter and figures sent via USPS 13 June 2018  |
| Pelligrino, Hokuao        | <i>Kama'āina</i> , <i>kalo</i> farmer, descendant of Bailey Family | Letter and figures sent via USPS 22 December 2017<br>Second letter and figures sent via USPS 2 March 2018  |
| Pua'a, Mikiala and Ka'u   | <i>Kalo</i> Farmers  | Letter and figures sent via USPS 22 December 2017<br>Second letter and figures sent via USPS 2 March 2018  |
| Pyle, Bill                | Former HC&S employee   | Letter and figures sent via email 2 March 2018   |

| Name                       | Affiliation  | Comments  |
|----------------------------|--|---|
| Raymond, Ki'ope            | Hawaiian Studies Teacher, University of Hawai'i – Maui College   | Letter and figures sent via USPS 27 December 2017<br>Second letter and figures sent via USPS 2 March 2018   |
| Reilly, Rose               |  | Letter and figures sent via email 2 March 2018, returned  |
| Roback, William            | Royal Order of Kamehameha  | Letter and figures sent via email 22 December 2017<br>Second letter and figures sent via USPS 2 March 2018  |
| Sakugawa, Jerry            | Upcountry Maui Farmer  | CSH called 11 July 2018; left a voice message<br>Mr. Sakugawa returned CSH's call 12 July 2018; CSH explained the project and the CIA process; Mr. Sakugawa stated that he does not use that much water but he is interested in seeing what the study is about; CSH emailed Mr. Sakugawa the consultation letter and figures the same day<br>Mr. Sakugawa did not respond   |
| Schattenburg-Raymond, Lisa | Horticulturalist/Former Executive Director, Maui Nui Botanical Gardens<br>Humanities Teacher, University of Hawai'i Maui College | Letter and figures sent via email 2 March 2018  |
| Scott, Lurlyn              | Nā Moku Aupuni o Ko'olau Hui   | CSH called on 4 February 2019; left a message<br>Ms. Scott returned CSH's call on 5 February 2019; CSH asked if it was OK for us to use her CWRM declaration in the study; Ms. Scott said OK but she wanted to see her declaration first<br>CSH emailed Ms. Scott her declaration for review on 6 February 2019<br>Ms. Scott approved use of her CWRM declaration in this study via email on 7 February 2019; see Section 5.6.7 |



| Name                  | Affiliation   | Comments  |
|-----------------------|---|---|
| Shishido, Jamie       | Upcountry Maui Farmer   | Letter and figures sent via email 13 June 2018<br><br>CSH called Mr. Shishido 11 July 2018; said to call back the following day at 9AM<br><br>CSH called Mr. Shishido 12 July 2018 and left a voice message; Mr. Shishido returned CSH's call later that afternoon; CSH discussed the project and the CIA process and encouraged him to read the letter and review the figures, if he wishes to participate or has questions he can contact CSH<br><br>Mr. Shishido did not respond |
| Smith, Annette        | Director, SWCD  | Letter and figures sent via email 22 December 2017<br><br>Second letter and figures sent via USPS 2 March 2018  |
| Smith, Earl           | Nā Moku Aupuni o Ko'olau Hui  | CSH called on 7 February 2019; Mr. Smith approved use of his declaration in this study; see Section 5.6.8   |
| Smith, Jade Alohalani | Representative, Moku o Kaupo  | Letter and figures sent via email 21 November 2017<br><br>Second letter and figures sent via USPS 2 March 2018  |
| Solamillo, Stanley    | Former Cultural Resources Expert, County Planning Department<br><br>Architectural Historian | Letter and figures sent via USPS 27 December 2017<br><br>Second letter and figures sent via USPS 2 March 2018   |
| Sterling, Donna       | Aha Moku Representative   | Letter and figures sent via email 21 November 2017<br><br>Second letter and figures sent via USPS 2 March 2018  |
| Stoner, Kawika        | <i>Kama'āina</i>  | Letters and figures sent via USPS 21 November 2017<br><br>Second letter and figures sent via USPS 2 March 2018  |
| Stoner, Maluhia       | <i>Kama'āina</i>  | Letters and figures sent via USPS 21 November 2017<br><br>Second letter and figures sent via USPS 2 March 2018  |

| Name                  | Affiliation  | Comments  |
|-----------------------|--|---|
| Takeshita, Sandy      | Upcountry Maui Nursery   | Letter and figures sent via email 13 June 2018<br><br>Ms. Takeshita replied via email 14 June 2018 requesting for more information on author of the email (sent from a general email handle); CSH replied the same day with information of Cultural Researcher who authored email; Ms. Takeshita replied the same day thanking CSH<br><br>CSH called 11 July 2018 discussing the project and the CIA process; Ms. Takeshita stated that she is on County water and not on EMI water, and therefore not interested in participation in the CIA |
| Tanahy, Dalani        | <i>Kapa</i> maker  | Letter and figures sent via email 2 March 2018  |
| Tavares, William      | Chairman, Committee for More Equitable Taxes                       | Letter and figures sent via USPS 2 March 2018   |
| Tengan, Ty            | Professor, University of Hawai'i at Mānoa                          | CSH called on 8 February 2019; left a message<br>CSH called on 11 February 2019; left a message<br>Mr. Tengan called CSH on 12 February 2019; left a message for CSH<br><br>CSH returned Mr. Tengan's call on 15 February 2019; Mr. Tengan approved use of his CWRM declaration in this study; see Section 5.6.9  |
| Texeira, Justin       | Upcountry Maui Farmer  | Letter and figures sent via email 13 June 2018<br><br>CSH called 10 July 2018; unable to leave a voicemail  |
| Ulupalukua Ranch Inc. |  | Letter and figures sent via USPS 13 June 2018   |
| Vicens, Chubby        | <i>Kama'āina</i>   | Letter and figures sent via email 13 June 2018  |
| Watanabe, Heidi       | Upcountry Maui Farmer  | Letter and figures sent via email 13 June 2018<br><br>CSH called 10 July 2018; left voice message   |
| Watanabe, Noelani     | Vice Chair, Native Hawaiian Historic Preservation Council for Maui | Letter and figures sent via email 2 March 2018; returned  |
| Watanabe, Warren      | Maui County Farm Bureau  | Letter and figures sent via email 13 June 2018  |

| Name             | Affiliation   | Comments  |
|------------------|---|---|
| Wendt, Carl      | Nā Moku Aupuni o<br>Ko'olau Hui<br><br>Cultural Practitioner<br>( <i>kalo</i> farmer, gatherer,<br>fisherman) | Referred by Mahealani Wendt<br><br>Letter and figures sent via USPS 22 December 2017<br><br>Second letter and figures sent via USPS 2 March 2018<br><br>CSH called on 11 February 2019; no answer, left a message   |
| Wendt, Edward    | Nā Moku Aupuni o<br>Ko'olau Hui   | Referred by Mahealani Wendt<br><br>Letter and figures sent 21 November 2017<br><br>Second letter and figures sent via USPS 2 March 2018<br><br>CSH called on 5 February 2019; no answer, left a message<br><br>CSH called on 6 February 2019; no answer, left a message<br><br>Returned CSH's call on 11 February 2019; CSH called the same day, no answer, left a message  |
| Wendt, Emily     | <i>Kama'āina</i> , family of<br><i>kalo</i> farmers   | Letter and figures sent via USPS 22 December 2017<br><br>Second letter and figures sent via USPS 2 March 2018   |
| Wendt, Mahealani | Nā Moku Aupuni o<br>Ko'olau Hui   | Letters and figures sent via USPS 21 November 2017<br><br>Second letter and figures sent via USPS 2 March 2018<br><br>Mrs. Wendt called the CSH Maui office on 8 March 2018, no voice mail<br><br>CSH called Mrs. Wendt on 9 March 2018; no answer, no voice mail available<br><br>CSH received an email from Mrs. Wendt on 26 March 2018:<br><br><i>Aloha,</i><br><br><i>I spoke informally with Mr. Hammatt by telephone earlier this month and he told me the deadline on your letter dated February 2018 is a soft deadline, and that you would continue to</i> |

| Name | Affiliation | Comments  |
|------|-------------|---|
|      |             | <p><i>accept input past the February 23, 2018 deadline indicated in your letter.</i></p> <p><i>I am writing to ask for confirmation that this is also the understanding of the Maui office.</i></p> <p><i>I am also writing to confirm that you have received declarations submitted as part of contested case and court proceedings of our community members. These declarations, forwarded early in this process to your office on our behalf by attorneys at the Native Hawaiian Legal Corporation, set out the traditional practices of our community members and how those practices would be impacted by the continuing water diversions of A&amp;B / EMI. A list of those declarations is attached for your information.</i></p> <p><i>Our community non-profit organization, Na Moku Aupuni o Ko'olau Hui, is in the process of encouraging its members to update their statements if they feel it necessary. We are also encouraging those who have not submitted statements to do so.</i></p> <p><i>Mrs. Wendt called the Maui Office and left a message on 27 March 2018</i></p> <p><i>CSH responded to Mrs. Wendt's email on 27 March 2018:</i></p> <p><i>Mahealani,</i></p> <p><i>Mahalo for getting in touch with CSH and taking time out of your schedule to visit the O'ahu office to follow up on the project.</i></p> <p><i>Yes, the February 2018 date was a soft deadline. Confirming that we are still accepting testimonies and are in the process of setting up interviews with interested parties. Mahalo for pointing out the date, I will need to take that out since we are now entering April 2018.</i></p> <p><i>Confirming that we have received <u>some</u> testimonies from the parties listed. I need to do more research through our files to</i></p> |

| Name | Affiliation | Comments   |
|------|-------------|--|
|      |             | <p><i>locate the remainder. For instance, I don't recall seeing testimony provided by Ty Tengan or Paul Reppun. The document I read was a compilation of testimonies, mostly from the hui, but it has been a while since I read through it so maybe it was there but I just cannot recall? So let me check what we have on file and get back to you on this.</i></p> <p><i>I have reached out to quite a bit of people listed in the List of Declarations, but others I do not have contact information for. I am having our Administrative Assistant try to locate contact information for those we do not have information for so we can send out consultation letters and maps to them. Mahalo for the list!</i></p> <p><i>Yes, please encourage the hui to update and submit testimony. Also, if anyone is interested (including yourself) in having a sit down interview for the cultural impact assessment, we can schedule something. Myself or one of our researchers will fly over and we can have a talk story session. Let me know if you or anyone you know is interested in participating or has questions about the process.</i></p> <p><i>Mrs. Wendt replied to CSH via email on 28 March 2018 with the following:</i></p> <p><i>Thank you for your reply. I will keep you informed of our progress in obtaining these statements and as our community has been through the wringer of legal process, it will probably not be necessary for you to be here in person. There's a lot of "interview" fatigue here after decades of dealing with the justice system. I will let our folks know of your offer, though, and thank you very much. We may indeed need your assistance at a later time.</i></p> <p><i>Let me know if you need for me to send any statements you are missing that were on my list.</i></p> |



| Name                              | Affiliation   | Comments  |
|-----------------------------------|---|---|
| Young, Joseph<br>“Jojo” and Edwin | <i>Kama‘āina</i><br>Cultural Practitioner<br>(gatherer, <i>mālama</i><br><i>‘āina</i> ) | Letter and figures sent via USPS 22 December 2017<br><br>Second letter and figures sent via USPS 2 March 2018<br><br>CSH called on 8 February 2019; no answer, left a message |

## 5.5 *Kama‘āina* Interviews

The authors and researchers of this report extend our deep appreciation to everyone who took time to speak and share their *mana‘o* (thoughts) and *‘ike* (knowledge) with CSH whether in interviews or brief consultations. We request that if these interviews are used in future documents, the words of contributors are reproduced accurately and in no way altered, and that if large excerpts from interviews are used, report preparers obtain the express written consent of the interviewee/s.

Interviews were conducted in accordance with Federal and State laws and guidelines with individuals knowledgeable of the general history, present and past land use, traditional gathering practices (both past and ongoing), and cultural sites of the License Area and the encompassing *ahupua‘a*. The following analysis of *kama‘āina* interviews is intended to facilitate the identification of potential impacts to cultural resources, ongoing cultural practices, and/or cultural sites within the License Area or its immediate vicinity.

### 5.5.1 Interview Summary for Kyle Nakanelua

**Disclaimer from Kyle Nakanelua:** *“It is critical to me that my testimony will not be used to support other diversions. I request that if my interview is used in future documents, my words are reproduced accurately and in no way altered. If large excerpts are used, those that are using my statements obtain my express written consent.”*

CSH interviewed Kyle Nakanelua on 13 April 2018 at Kahului Starbucks. Kyle Nakanelua was born on 10 September 1959 to Paul Hanai Nakanelua, Jr. and Barbara Jean Rodrigues in Honolulu. Mr. Nakanelua has an older and a younger sister. He was raised in Honolulu and lived there for 17 years. He spent four years in the military before moving to Wailuku in 1982. He worked for the Department of Transportation – Airports Division as a fireman for 30 years before retiring.

Mr. Nakanelua’s connection to Maui is that his maternal grandfather is from Kokomo and his father was born and raised in Wailua Village, the greater area known as Wailua Nui. He has traced his *mo‘okuauhau* (genealogy) prior to Kamehameha and has spent many summers and winter breaks with his grandparents, sister, and older cousin. He recalls spending time with his *kūpuna* (elders) as well as working in the *kalo* (taro; *Colocasia esculenta*) fields. Mr. Nakanelua describes working in the *lo‘i* (irrigated terrace) not as work, but as a “way of life.” Mr. Nakanelua elaborates what a typical day with his grandparents would entail:

Yeah, get up, clean up, house chores, and then....yard chores or farm chores. The farm was away so it's either weeding in the taro patch, cutting the grass, pulling the taro, helping clean up all the—you know when you harvest the taro there's always left-over work, right? There's--you got to move the roots, you got to move the cut *huli* [taro top], just all of these...just farming tasks. Yeah. So, we would participate in. Everything is manual labor. Nothing was machines. So, there was always work to do.

Although there are many varieties of *kalo*, Mr. Nakanelua points out that the two varieties that his grandparents cultivated were Lehua and Moi.

When he returned to his family property in 1989, he consistently worked on cleaning the taro patches at least three times a week and there were some challenges including invasive species and insufficient water flow.

Invasive species such as apple snails and feral hogs are an obstacle that Mr. Nakanelua faces in *kalo* farming. He is currently on a comeback after a two-year hiatus after feral hogs wiped out an entire acre of taro. He points out that these are not normal pigs as they are cross-bred with Russian boar so they're much more aggressive—eating baby goats, avocado trees, and *pohole* (fiddlehead fern).

In terms of the water flow, Mr. Nakanelua points out that as a child he recalls all the streams being full of water. Honomanū never flowed unless there was torrential rains. However, he points out that since the release order<sup>1</sup>, Honomanū and several other streams have been flowing nicely, including Puohokamoa and Waikamoi. He adds that it's not always the amount of water that matters, but the velocity behind it:

So it's not that its 6 feet wide of water and 4 feet deep. Its X amount wide and X amount deep but there's a really crisp and vigorous flow to it. You know, and that's what's important. That's what keeps everything stimulated and alive - that I've seen. If you talk about a healthy stream flow, that was a healthy stream.

Because Mr. Nakanelua is a taro farmer, having water that is cold and constantly running is a vital component of farming wet land *kalo*.

Besides tending to their *lo'i*, they were also responsible for gathering food products from the rivers and streams such as *ōpae* (general name for shrimp), *ōpihi* (general name for limpets), *ō'opu* (general name for fishes included in the families *Eleotridae*, *Gobiidae*, and *Blennidae*), and *hīhīwai* (endemic grainy snail; *Neritina graposa*). They also gathered *pohole*.

---

<sup>1</sup> Although CSH is not certain what release order Mr. Nakanelua was referring to, we note that EMI ceased all diversions within the Waiokamilo hydrologic unit after the BLNR ruled in March 2007 that EMI should release 6 mgd from Waiokamilo Stream. In July 2016, the CWRM issued an Order re Interim Restoration of Stream Flow, and ordered that the following streams, on which diversions had stopped, were to remain undiverted until further order by CWRM: Waiokamilo Stream, East and West Wailuanui, Makapipi, Hanawi, Waiohue, East Wailuaiki, West Wailuaiki, Waikamoi, Kapiliula, and Puakaa

'*O'opu* it used to be more prolific in this area...but not as much as it used to be. And I've seen it. As a young child, '*o'opu* was like prevalent in the streams....and now it ain't. I believe they're still there but I used to see them before I don't see them anymore.

When Mr. Nakanelua was a child, he recalls '*ōpae* being prevalent in the streams that flow through their property named Lakini. When he began to clean the family property on a regular basis, he points out that there was "some" because his grandmother would still catch '*ōpae* to use and eat. Today there is no '*ōpae*, but there are prawns. When posed the question if perhaps '*ōpae* was being over picked by others, he responds with "no" because "we were the only one there." Mr. Nakanelua does not think that the prawns are to blame for the decline of the '*ōpae* population, but instead believes "that the flow of water is impactful" and has seen the water decline since 1989.

In addition to freshwater species, his grandmother fished and gathered for food items *makai* (towards the ocean). He explains:

They fished for the little fish, the '*ōhua* [young fish] . . . They fished for little eels the way they did it. How they put the *palu* [fish bait made of fish head or stomach, also used for chumming] in the hand and then the small eels would come in and they would grab them and stuff like that. We participated in the picking '*opihi*...And certain types of *limu*.

'*Opihi* was eaten raw, while *hīhīwai* was used for soup. '*O'opu* was steamed. *Limu* was a side dish and used as a condiment to dishes. Typically, all marine life was taken home, cleaned, and then eaten for dinner. Any leftovers were eaten for lunch the following day.

The area of Ha'aluea is a *wahi pana* (storied place). Ha'aluea is a *papa* (reef) that extends just off the shoreline. Mr. Nakanelua shared with us that it was the '*awe'awe* or tentacle of the great squid named Ha'aluea. The *mo'olelo* behind it is that 'Ai'ai cut off the tentacle, which later became petrified. The *mo'olelo* stems from "Ku'ula from Hāna." It is said that Ku'ula and Hina were called upon for assistance in Wailuanui. A *leho* (general name for cowry shell) was removed from a gourd that was given to 'Ai'ai, son of Ku'ula. He attached the *leho* to a line and lowered it into the sea where it emitted rich, beautiful colors that attracted Ha'aluea. The large *he'e* (general term for octopus) came out of its hole and appeared on the surface of the water. Men on canoes surrounded Ha'aluea were frightened by his size. Ha'aluea had every intention of killing the men on the canoes but instead 'Ai'ai's friend shoved a stone into the head of the *he'e* and an arm was cut off, which now makes up the *papa* today (Thrum 1901:117-118).

Ha'aluea also serves as a fish breeding ground due to the lay of the land. Because it's a reef and the *muliwai* (rivermouth) empties into this area, Mr. Nakanelua points out that this is where fish spawn. The *papa* serves as a home for fish of all sizes as well as '*opihi*. Residents regularly fish in this area and have caught *kole* (surgeonfish; *Ctenochaetus strigosus*), '*ō'io* (ladyfish; *Albula Vulpes*), *akule* (big eyed scad fish; *Trachurops crumenophthalmus*), and pelagics such as '*ahi* (Hawaiian tuna fishes) and *aku* (bonito, skipjack; *Katsuwonus pelamis*). Mr. Nakanelua recalls his grandmother making *lomi* (knead, massage) '*ō'io* by cutting open the fish, scraping out the soft meat of the fish, then picking out the small bones with her fingers. She would add

*'inamona* (relished made of *kukui* [candlenut; *Aleurites moluccana*]) and *limu kohu*. Another favored option was to dry fish in a dry box.

Mr. Nakanelua shared a few *mo'olelo* that focus on the water of East Maui:

So there are various ponds that are dedicated to the *mo'o* and there are various streams that are dedicated to *puhi*. And there's one stream that's named after a *mo'o* and that stream or that area—stream rivulet is called Waiakakamilo, so “the water of Kamilo.” There's another stream in the area of Waianu, I believe. It's a big one. It's a main tributary and it's called Waiakuna or “the waters of Kuna” and that was a big *puhi* of that place, at that time.

Mr. Nakanelua continues that below the waters of Waiakuna is a pond commonly known as Ching's Pond. That is where he swam growing up or ponds that was on his grandmother's *'āina* (land).

Another point of interest that Mr. Nakanelua shares is his knowledge of a *heiau* (pre-Christian place of worship) complex called Pākanaloa. The site consists of a couple platforms, but in recent years it has been choked by *hau* (beach hibiscus; *Hibiscus tillaceus*) and trash. The Redo family resides near the *heiau* where they operate a watercress farm. On their property is a spring known as 'Ōhi'a. Mr. Nakanelua shares the *mo'olelo* of these two sites:

Because it was founded and formed by Kāne and Kanaloa. And I'm not talking about those magical, mystical gods. I'm talking about two real guys that actually existed, you know? And for me and my educational base their ancestors that are upon us, ancestors that were so great and from such a time, so long ago, that we have commemorated them to various landscapes across, you know, across this *pae moku* [group of islands]. But definitely on Maui that is one of their places that they have established. And if you think about establishing a spring - the establishment of a spring - it's drinking water. Fresh, pure drinking water that is necessary for people to live. And so if you look at it, there's a spring there, and then above the spring there's a temple complex or let's call it a church complex. Why do you need a church? You need a church because you have people. And people require [loud sigh] spiritual sustenance, you know, as well as food sustenance. So, there was an established ancient village there of where that was the central focal point. And if you look at the societies of the world - and everywhere - the center of society is the religious institution for a lack of a better phrase at this moment in time. So, the temple complex is called Pākanaloa or “the enclosure of Kanaloa” and it oversees and is connected to the well spring called 'Ōhi'a that was established by Kāne and Kanaloa who are notable ancestors that are always paired together. So, I think yeah if that ain't an archaeological site I don't know what is.

When CSH posed the question if he knows other people in the area who perform any other cultural practices, Mr. Nakanelua discusses the “buzz phrase” and how it was just how you lived in his grandparent’s time:

It was way of life. So, I learned stuff like that but it was way of life, it wasn’t one cultural practice. You never practice anything, you just did the work. So, I would virtually say yeah there are—everyone in that valley is a cultural practitioner....I think if you asked them a lot of them would scratch their heads and go ‘what you talking about’ [laughing]. And a lot of people don’t understand that because the academic world is really large right now, especially in Hawaiian traditions. And the majority of the cultural practitioners that exist, yeah, that have taken on the title, they do not live that kind of life...And I’m not discrediting them, yeah, I want to be clear. I’m not discrediting the life that they live here. But it’s definitely nothing like the life that country people live. So, for me...there’s insiders and there’s outsiders. And there’s an outside life and the way people live and there’s an inside life and the way people live.

He gives an example of diving, fishing, and gathering ‘*opihi* of someone who lives in the country. He explains that a person from the country will simply put on old clothes and bring a bag and a spear—no fins. That person will walk up current, dive in, and follow the current, which is what eliminates the need for fins. That person will spear just enough fish for himself and his ‘*ohana* (family). Then they would walk the shore to pick ‘*opihi* and maybe the stream to gather *hīhīwai*. Mr. Nakanelua states: “It’s so bloody sensible.” In comparison to those who have made a tradition into a novelty, which in turn has become a sport. He continues:

So, yeah so are there cultural practitioners? I will say...every one of those people that live in there [East Maui] are cultural practitioners. If you’re planting food, if you’re gathering food, if you do these things that is what is classified now a days as a cultural practice...Yeah.

Mr. Nakanelua is concerned with the act of diverting water, he explicitly states that “when those places dry up that adversely impacts the way of life, the cultural practice if you will” and it “adversely impacts the people’s way of life that live there.”

Now Mayor Alan Arakawa told me, his mouth to my ear, said they want to take Kīhei’s consumption off of the Wailuku aquifer and supplement that with 10 million gallons a day from the Ko‘olau water system. You know the whole problem with this is for the past 150 years they’ve been circumventing the law. They’ve been violating the law. And the administrators have allowed it to occur.

His recommendations for this project was simply “Follow the law! Support the law! File for your permit. There’s a policy and there’s procedures. Adhere to the policy and follow the



procedures. And stop trying to circumvent it [the law] because you smart. You know, just be honest, be transparent.”

**Closing statement from Mr. Nakanelua:** “In closing, I would like to express my gratitude to those that called for this EIS. It has afforded an opportunity for an old voice to be heard and hopefully heeded. The voice of the Mo‘o-Kūpuna (Elders that have passed) through Mo‘o-lelo (oral tradition) about the Mo‘o-‘āina (tangible and intangible life of the land) and Mo‘owai (life giving force of water) and the many Mo‘o-mahi (eco-system) that make up this environment of ours.

*He ali‘i ka ‘āina, He kānaka ke kaua.*

The land has authority, the human is the steward that is to care for it.”

### 5.5.2 Interview Summary for Skippy Hau

On Friday, 16 February 2018, CSH interviewed Skippy Hau and accompanied him on a *huaka‘i* (journey,trip) to historic water diversions and irrigation ditches within the EMI Aqueduct System. Born to Arthur Mann Yau Hau and Rose Sin Heong, Mr. Hau was born and raised in Kāne‘ohe, O‘ahu and moved to Wailuku, Maui in 1985. From that time, he has held his position as an Aquatic Biologist for Maui’s Department of Land and Natural Resources. He has also given presentations for the Marine Option Program at Maui Community College.

His work as an Aquatic Biologist has introduced him to many different aquatic species, mainly the *‘ōpae* (Figure 50 and Figure 51), *‘o‘opu* (Figure 52), and *hīhīwai* (Figure 53), all of which he has done extensive research on. His studies have taken him into the streams most deeply impacted by years of water diversion for the purpose of sugarcane production on Maui. To truly understand the negative impacts of water diversion or even the negative impacts of private ownership of water, one must first understand the *positive* impacts of properly managed, natural stream flow, which Mr. Hau has advocated for years. The importance of water to the Hawaiian people speaks volumes when one looks deeper into the meaning Hawaiian meaning and use of the term *wai*, water. As Carol Wilcox notes:

The difference between Western and Polynesian concepts of water was fundamental. Take, for example, the languages that drove the two cultures. While in English the word “water” means “a transparent, odorless, tasteless liquid, a compound of hydrogen and oxygen,” in Hawaiian the word “wai” has many meanings: water and blood and passion and life. Hawaiians were fully aware of the power and wealth bestowed on those who controlled *wai*. After all, this word is the root word for wealth, *waiwai*, and law, *kanawai*. [Wilcox 1996:24-25]

Mrs. Emma Nakuina, a Hawaiian scholar, wrote an article on “Ancient Hawaiian Water Rights” and all the different parts that attributed to its success in ancient Hawai‘i. Mrs. Nakuina notes:

Water rights were primarily for *lois* [irrigated terraces], that is, for *kalo* [taro] culture-potato patches, bananas or sugar cane had no recognized claim on a water right in the rotation. The cultivation of these, regarded as dry land crops, were invariably during the rainy season except in the *Koolau* or wet districts. Sugar cane and bananas were almost always planted on *loi* banks (*kuauna*’s) so as to

ensure a sufficiency of moisture from the seepage or ooze between them.  
[Nakuina 1893:83]

In her description of ancient Hawaiian water rights, Mrs. Nakuina makes a clear point that water was used primarily for the cultivation of *kalo*, the main staple of the Hawaiian people. So it came with no surprise that the amount of water required for sugar cane production would have profound effects on the families of East Maui and the population of aquatic species Mr. Hau is so familiar with.

On the way to our first stop at the Honopou stream diversion (Figure 54 and Figure 55), Mr. Hau spoke of a *kūpuna* who lived in this area by the name of Beatrice Kekahuna. In 2001, she, along with Marjorie Walette and Elizabeth Lapenia, members of *Nā Moku 'Aupuni o Ko'olau Hui* (a non-profit corporation organized by the Hawaiian community of East Maui) petitioned the Commission on Water Resources Management (CWRM) to amend the Interim Instream Flow Standard (IIFS) for 27 Streams in East Maui (State of Hawaii 2008:130). The details of the case is described as follows:

On May 24, 2001, Nā Moku (a nonprofit corporation organized by native Hawaiian residents of East Maui ahupua'a), Beatrice Kekahuna, Marjorie Walle, and Elizabeth Lehua Lapenia filed petitions to amend the IIFS for twenty-seven East Maui streams. On May 25, 2010, the Commission held an open meeting to reach a decision on IIFS amendment for nineteen of the streams. The Commission restored flow to six streams (two on an annual basis and four on a seasonal basis) and decided that the IIFS for the remaining thirteen streams would remain unamended. Before the end of the May 25, 2020 Commission meeting, Nā Moku's counsel orally requested a contested case hearing to challenge the decision, and on June 4, 2010, Nā Moku filed a written Petition for a Contested Case Hearing Before the Commission on Water Resource Management (Petition for Hearing) pursuant to the Commission's administrative rules. [...] The petitioners in that case testified that their native Hawaiian members "live, work, and play" in the areas of the streams at issues, and they claimed the Commission's decision to restore a limited amount of water to the streams adversely affected their native Hawaiian rights and their ability to engage in traditional and customary gathering practices. [...] ...community members who owned or resided on land in the area of the East Maui streams submitted testimony to the Commission about similar interests in gathering hīhīwai, limu, o'opu, and ōpae from the streams... [State of Hawai'i Court of Appeals 2012:1-2 and 5-7]

An interim order was issued in 2007 by the Board of Land and Natural Resources (BLNR) ordering "A&B/EMI [Alexander & Baldwin/East Maui Irrigation] be immediately ordered to decrease current diversions on Waiokamilo Stream such that the water flow can be measured [...] at the rate of 6,000,000 gallons per day based on a monthly moving average on an annual basis" (State of Hawaii 2008:131). Though this figure seems rather large, it is still not an adequate amount for those who have petitioned for the release of more water. At the Honopou diversion, Mr. Hau pointed out that modifications were made to allow more water to flow downstream, however, much of the water is still being diverted by EMI.

Continuing on our *huaka‘i*, we approached Honomanū where Mr. Hau recalled seeing residents gather ferns in this area. This fern, known on other islands as *hō‘i‘o* is called *pohole* by Maui residents and is particularly large and coarser (Pukui and Elbert 1986) (Figure 56). In one particular account by a Mr. James Hū‘eu Jr., he states that *pohole* grows only in the mountainous areas of Maui while *hō‘i‘o* can be found at different elevations on other islands (Maly and Maly 2001:46). Regarding Honomanū Stream, Mr. Hau published a report in 2007 that was featured in Bishop Museum’s Bulletin, *Biology of Hawaiian Streams and Estuaries*. This published work really encompasses Mr. Hau’s work as an Aquatic Biologist. A section of the report’s abstract briefly describes the effects of stream diversion and, likewise, stream restoration on *hīhīwai*:

Juvenile *hīhīwai* (*Neritina granosa*), endemic freshwater snails of Hawai‘i, were collected from ‘Īao and Honomanū Streams on the island of Maui. Each stream has two or three diversions at various elevations which removes most of the stream flow before reaching the ocean. The lack of flow restricts *hīhīwai* to the estuary. [...] The persistence of juvenile *hīhīwai* recruitment confirms the possibility for restoring native stream population if “natural flow” is restored. Stream restoration should be based on the needs of the slowest migrating animal such as *hīhīwai*. A slow-migrating species like *hīhīwai* may be a good indicator of the adequacy of stream flow during stream restoration programs. [Hau 2007:171]

Mr. Hau expands on the importance of proper water level and flow on the *hīhīwai* population:

The streams occasionally experience heavy rains and flash flooding which temporarily establishes *mauka-makai* connection (from the mountain to the ocean) that is vitally important for amphidromous animals migrating between the ocean and fresh water. The connection is maintained intermittently after storms with flows that exceed diversion capacities. [...]

*Hīhīwai* still attempt to migrate into ‘Īao and Honomanū estuaries even though both streams have been diverted for more than 100 years. Water collected by diversions is transported to agricultural lands by a comprehensive system of irrigation ditches and reservoirs (Wilcox, 1996). These diversions may also be carrying *hīhīwai* larvae away from the ocean. [...]

For diverted streams, the requirement for two or more flows are often overlooked and are needed to allow post larvae *hīhīwai* and other stream animals sufficient space and time to migrate upstream. Depending on the duration of the rainy season, these later flows may need to exceed diversion capacities and be able to break open a natural berm built up by large winter swells (>10) generated from the North Pacific. Substrate, which naturally moves downstream, blocks the stream from flowing into the ocean. On the other hand, with consistent rainfall, there is a sufficient flow to prevent this build up and a continuous stream connection to the ocean is maintained. [...]

‘Īao and Honomanū Streams represent many other streams in Hawai‘i that have been diverted. Restricted stream flows have resulted in smaller estuaries and prevented *hīhīwai* from migrating to higher elevations. Unless the animals reach adequate freshwater stream habitats, they are unable to grow into healthy

reproducing populations. In Honomanū and 'Īao Streams, the diversion of over 90% of the stream flow results in intermittent stream conditions, which limit the average growth of *hīhīwai* to less than 10 mm. The recruitment of *hīhīwai* and other amphidromous species requires consistent stream flows. [Hau 2007:177, 180]

Mr. Hau's research on *hīhīwai* presents clear statistics that a certain level of stream flow is required to ensure healthy migration and population of this species and also of 'o'opu and 'ōpae. In a memo to the CWRM from the Division of Aquatic Resources (DAR), the same points were made regarding restoration efforts in East Maui Streams, some of the points mentioned below are in regard to stream diversion and native aquatic animals and entrainment of native animals in stream diversions:

- The removal of stream diversions and the complete restoration of stream flow would be the best possible condition for native aquatic animals. DAR understands that management of the resource is a balance between the needs of the animals and the needs of people thus supports some use of water from East Maui Streams.
- In no case are additional diversions of stream water recommended, although current levels of stream flow diversion may be appropriate on some streams. Flow restoration is only recommended on 8 of the 19 streams under consideration [Waikamoi, Puohokamoa, Haipua'ena, West Wailua Iki, East Wailua Iki, Kopiliula, Waiohue, and Hanawī].
- Co-mingling of stream and ditch flows should be avoided where at all possible to limit the potential spread of invasive aquatic species.
- As newly recruiting animals move upstream to adult habitats, they follow the available path of water in the stream. Thus release of water from sluice gates in the immediate vicinity of diversion intakes serves to funnel animals to the intake and results in high rates of entrainment (and ultimately death) of animals migrating upstream. Therefore, water releases should provide a pathway as far away as possible from the point of diversion to minimize entrainment of upstream migrating animals. [Nishimoto 2010:3-4]

We continued on our *huaka'i* and passed Pi'ina'au and Palauhulu Streams. Mr. Hau talked about a woman who lived near these streams that joined at the rear of her home, Auntie Sarah Ka'auamo. These two streams join above Waialohe Pond where Mr. Hau has done surveys collecting post larvae 'o'opu, 'ōpae, and *hīhīwai*. Another study Mr. Hau participated in again mentioned the negative effect of water diversion on native stream fauna:

There is contact pressure in Hawai'i to utilize freshwater resources for urban, resort, and agricultural purposes. This had resulted in increased concern for the future of the indigenous freshwater stream fauna... [...] The fishes and aquatic invertebrates have an amphidromous life cycle. [...] This life cycle requires streams which flow continuously. Thus, the endemic Hawaiian stream fauna is

particularly sensitive to any anthropogenic perturbations which disrupt stream flows for extended periods. [Way et. al 1998:54]

Mr. Hau mentioned that back in the 1920s and 30s, those who lived near the streams would catch 'ōhua, which is the young stage of the *manini* (*Acanthurus triostegus*) (Figure 57). At this stage, the 'ōhua has not yet gotten its stripes so easily identified when it matures to a *manini*. The 'ōhua would be gathered well before sunrise, where they'd be prepared and put in the dry box and then "eaten like candy", as Mr. Hau described. *Hinana* (young 'o'opu fish) would be prepared and eaten the same way. This information from old time residents of East Maui helped Mr. Hau in figuring out the pattern of population of those species and also the constant decline once the negative impacts of diverted water became more severe. The *kama'āina* would see large populations of fish when they were kids but now in their older years, it is rare to find the same species in these streams. The stories of gathering fish and the availability of certain species give a glimpse into the health and decline of their stream habitat. 'Ōpae were once caught in lower streams whereas today they are only caught in the mountain areas where water remains cool. Though the population still thrives, they have adapted in some way to inconsistent stream flow caused by water diversions.

Another negative impact brought up by Mr. Hau in regard to EMI's presence in East Maui is the abandonment of equipment and structures. Dilapidated structures and inoperable equipment are almost completely overgrown with vegetation and left at several diversion sites (Figure 58 and Figure 59). Some specific concerns presented by Mr. Hau require clarifications that he is unable to obtain from the CWRM. These concerns include:

1. Exactly how much water is being diverted and when will it be released to residents?
2. Of the water being diverted, what exactly will it be used for?
3. With the absence of sugar cane plantations, what is the reason for continued diversions?

There has also been some speculation that the continued diverted water will be used for cattle ranching. If this is true, Mr. Hau expresses concern that cattle ranching, similar to sugar cane cultivation, requires large amounts of water, land, and ample maintenance. He feels that the community is being excluded in any issue regarding the release of water or the use of diverted water and that families are still not receiving the appropriate amount of water to maintain their *lo'i*. Through his work as an Aquatic Biologist, Mr. Hau is an advocate for healthy stream ecosystems that rely on natural streamflow for the success of aquatic populations. Without the proper level of natural streamflow, native aquatic populations are at risk of decline.





Figure 50. 'Ōpae kala 'ole; opae kuahiwi (*Atyoida bisulcata*) in bucket (CSH 2018)



Figure 51. 'Ōpae oe ha 'a (*Macrobrachium grandimanus*); native prawn (CSH 2018)



Figure 52. 'O'opu nopili (*Sicyopterus stimpsoni*) (CSH 2018)



Figure 53. Hīhīwai (*Neritina granosa*) from Honomanū Stream (CSH 2018)





Figure 54. Honopou Stream diversion by Ha'ikū Ditch (CSH 2018)



Figure 55. Control gate (Ha'ikū Ditch by Honopou Stream) (CSH 2018)



Figure 56. Skippy Hau at lower Honomanū Stream, *pohole* ferns line the left bank (CSH 2018)



Figure 57. Estuary photo of 'ōhua (*manini*) (*Acanthurus triostegus*) (Skippy Hau 2018)



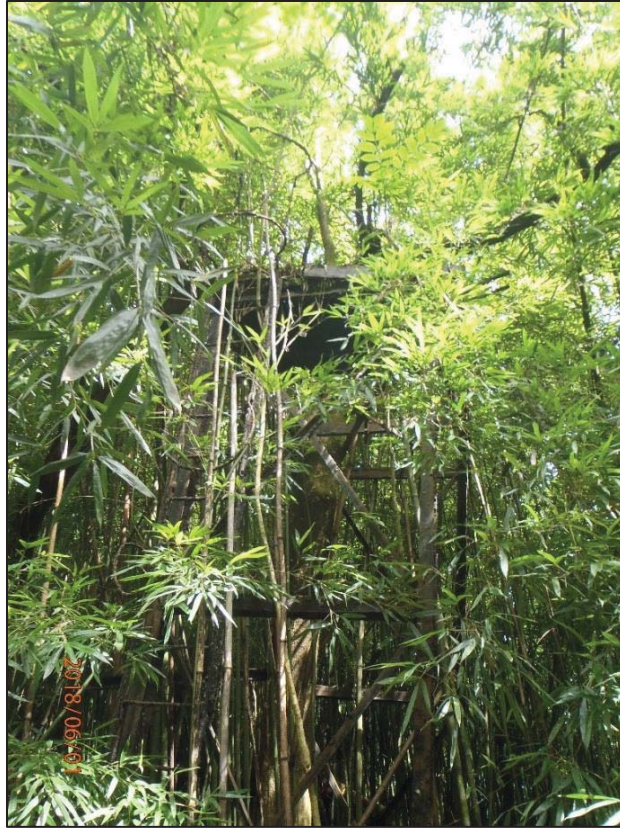


Figure 58. Abandoned, dilapidated structure (Skippy Hau 2018)



Figure 59. Abandoned equipment (Skippy Hau 2018)





Figure 60. West Wailua Iki Stream, Skippy Hau with 'ōpae net (CSH 2018)



Figure 61. Dam across West Wailua Iki Stream (CSH 2018)





Figure 62. View of West Wailua Iki Stream waterfall from access road (CSH 2018)

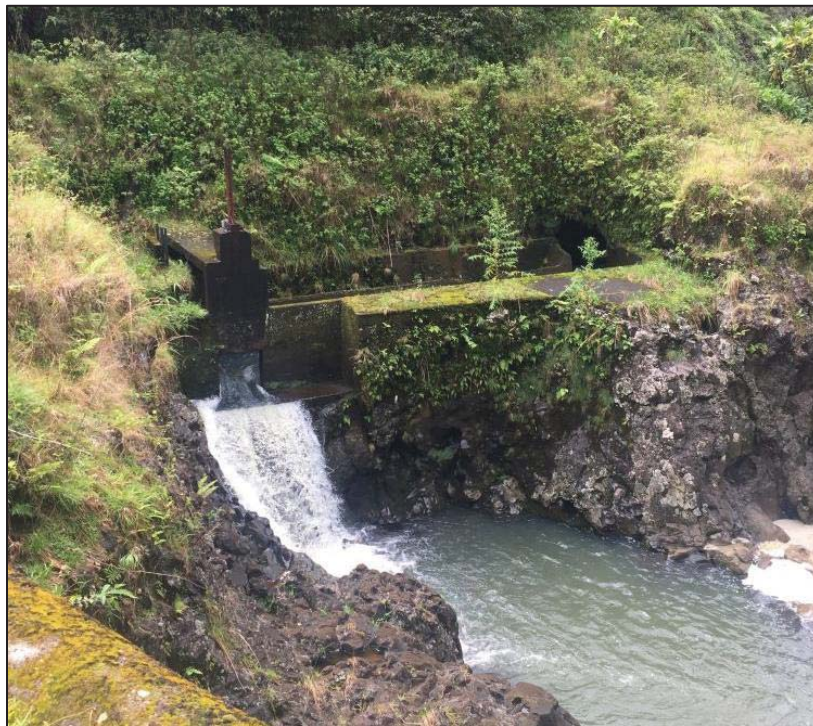


Figure 63. Control gate to release diverted water on West Wailua Iki Stream (CSH 2018)





Figure 64. Irrigation ditch, Waiohue Stream (CSH 2018)



Figure 65. Flume above Waiohue Stream (CSH 2018)





Figure 66. Waiohue control gate removed; intake blocked on other side (CSH 2018)





Figure 67. Lower Honomanū Stream (*makai* of Hāna Highway) (CSH 2018)



### 5.5.3 Interview Summary for Garrett Hew

On 26 June 2018, CSH met with Mr. Garret Hew, a retired EMI manager, at his home in Kula, Maui. Mr. Hew was born to Harry Hew and Nellie Shim in Pu'unēnē, Maui and later raised in Kula. His father was from Maui and his mother from Kōhala, on Hawai'i Island. Although they met on O'ahu, they eventually made Maui their home with their five children including Mr. Hew. Now on Maui, his dad became a farmer and grew Kula onions, tomatoes, and a variety of other crops. His grandmother and great-grandmother were also farmers making Mr. Hew a 4th generation farmer in his family.

Growing up on a farm meant alot of chores but also alot of memories. Mr. Hew and his siblings grew up with the motto, "If you wanna eat, you better work" and this carried on into his adult life. Mr. Hew explains that growing up, it was a hard life but very rewarding to be outside and learn how to farm and ranch. It has become a family tradition and even his grandchildren love participating in the chores of ranching. Today, Mr. Hew does both cattle ranching and farming.

After graduating from high school, Mr. Hew attended Pacific University in Forest Grove, Oregon. It took him some time to find his true interest. In 1978, Mr. Hew graduated from Oregon State University with a degree in Horticulture and some background in Business. Soon after graduating, he returned home and took over the family farm when his father retired. He continued to raise Kula onions, tomatoes, and other vegetables but was met with issues outside of his control such as weather and bug issues. After five years of trying his hand at farming, he decided to get a job and was hired at Hawaiian Commercial & Sugar Company (HC&S) in December of 1983 in the Irrigation Department.

Under HC&S, Mr. Hew had the title of Ditch Supervisor whose primary responsibility was regulating water. Two years later he was transferred to East Maui Irrigation Co. Ltd. (EMI) where he was put in charge of administrative functions. Mr. Hew can recall his start at EMI and how he had a brusque introduction of being out in the field. He recalls training being tough but it was obvious to his superiors that he could handle the outside elements and physical qualifications of the job. This included hiking several miles and doing tunnel inspections.

In one specific case, Mr. Hew remembers doing a tunnel inspection with two supervisors: Robert Pu'u and Steven Cabral. He recalls how they would clear the tunnel floors from fallen rocks:

We blow air into the tube and strap a piece of plywood on top. So what you do is, you jump on the plyboard and float down [the tunnel], and when you see rocks on the tunnel floor you stop and put it on the plyboard. And if you have plenty rocks, you turn the tire upside down where the plywood is under water [...] And you throw rocks in it and then you float them down.

These routine cleanings were done whenever there was 40 millions gallons of water or less flowing through the main Koolau/Wailoa ditch tunnels because any more would make it hard to stand up to perform maintenance work. Mr. Hew's determination and hard work during training really spotlighted his work ethic and he earned a lot of respect from his supervisors and co-workers. He learned a lot from them and from working in the ditch system.

While working for EMI, Mr. Hew also received his explosives license which allowed the clearing of rocks and roads. Today, machines are used to clear obstructions but in his day, things were cleared by using explosives. He maintained his position in Administration for EMI throughout his entire employment but when the opportunity presented itself for him to learn more in other positions and departments within the company, Mr. Hew learned as much as he could.

Mr. Hew was eventually promoted to Manager in 2000 and named President in 2005. He oversaw the entire operations of EMI until his retirement in 2017. Through his years with the company, he learned many things from past supervisors and members of the community. He learned that in the past, Ke'anae and Wailua were cultivated in rice. In the late 1800s, Chinese immigrants were brought to Hawai'i to work in the sugar plantations and intermarried with Native Hawaiians who resided in Ke'anae and Wailua. Eventually *lo'i* (irrigated terrace) were converted to rice paddies. These days, many of the paddies have returned back to *lo'i kalo* (taro patch). His old supervisor mentioned Maggie Alu who had a *poi* (made from cooked taro corms, pounded, and thinned with water) shop in Kūpau Valley but eventually when it became difficult to make a living off of *poi*, many people in the valley looked for work with the County and in other parts of Maui. It became routine for EMI to hire people who lived in East Maui, which allowed them the opportunity to support their family while still being relatively close to home.

Being a farmer himself, water diversion was a personal concern for Mr. Hew as well. One day while out in the field with Supervisor Robert Pu'u, he questioned how *lo'i* situated below diversions were still receiving water. He saw for himself that below each diversion and ditch system were springs that would feed into the taro patches. Even through the controversy of the water diversions, EMI offered assistance with clearing out *'auwai* (ditch, canal) but were rejected by the community. As a local, he understood the anger caused by the diversions but as a family man, he also understood the need of working to support and provide for your family. In his perspective, it wasn't that he was choosing to do harm to the families by diverting water but that he was simply fulfilling his position with EMI. He says "You just have to let it go in one ear and out the other. We just do our thing. If anyone like make humbug with you, just walk away."

Mr. Hew also mentioned how natural disasters, like heavy rain, landslides, and earthquakes have also interrupted the natural flow of water. He was told stories by locals of Hāna that an earthquake caused the Mokulehua Stream water to sink into the ground instead of flow down to the ocean. In another instance, heavy rains and big floods have washed away ponds, like Makapīpī, where he once took his kids swimming. Heavy rains caused a landslide that completely took out the pond adjacent to the Hana Highway and although a pond stands there today, it is now 200 feet below from where it originally was.

Mr. Hew explained how folks traveled to Hāna before the highway was built:

[...] they used to use the EMI ditch trail to access going to Hāna. So, you either catch the boat from Kahului, go all the way to Hana, which is real rough ride. Or you go horse and mule and you catch our ditch trail at Pāpa'a'ea and go up the road, come all the way across, and either come down Pi'ina'au Road or over across to Kopiliua Stream.

According to Mr. Hew, Jimmy Hueu, the former overseer in Ke'anae, explained that the Hāna Highway was built in sections. The section from Pāpa'a'ea to Pi'ina'au was built from 1923 to 1925. The next section, from Pi'ina'au to Kopiliula, was built between 1925 and 1927. Prior to construction of this road, the trails used to reach beyond Pāpa'a'ea were ditch access roads. There were no established trails or roads except for old hunting trails.

Regarding his knowledge of archaeological sites, Mr. Hew can recall a few in Honomanū, including a small Chinese graveyard and a few more along Pi'ina'au Road. He was told there was a ditchman who lived with his family in that area whose *kuleana* (responsibility) was to maintain the ditch and regulate the water. According to Mr. Hew, there were eight ditchman houses set up near sections of the ditch that needed routine maintenance. He is closely familiar with the ditchman homes nearest Pi'ina'au Road.

In regard to gathering practices, Mr. Hew explained that people would gather near the streams but drew closer to the ditches when water levels were extremely low, making it easy to catch 'ōpae (general name for shrimp). Mr. Hew would also take his children to gather 'ōpae. After gathering enough, they'd fry the 'ōpae and eat it with *poi*. *Hihīwai* was also a favored dish. Mr. Hew also caught Tahitian prawns (*Macrobrachium lar*) which have slowly become a threat to the native 'ōpae population. Regarding native stream life, Mr. Hew has taught his children and friends to gather only what you need and doing so maintains a healthy balance and ensures an ongoing supply of natural stream resources. Aside from stream life, Mr. Hew has also gone hunting. He was a member of the Kaupō Gun Club and would hunt around the South side of Maui. The east side of Maui was known for pig hunting and the Kaupō area for goats and axis deer. With the axis deer, Mr. Hew takes the meat and makes it *teriyaki* (marinade of soy sauce, mirin, and sugar) style. When he caught pig, he usually gave it away to his friends who make smoked sausage.

These days, Mr. Hew enjoys spending time with his family and in his yard growing fruits and vegetables. He has adopted a bartering system with friends where he'll trade harvested items for other food like *pastele* (a Puerto Rican dish made with grated green banana) and fish. He refuses to sell anything he harvests and any excess is given to friends or donated to the Maui Food Bank. Mr. Hew served on the Food Bank board for seven years and was the Vice Chair and Chair in the last several years.

When asked what was the coolest thing he experienced while employed with EMI, his reply was the construction and locations of the ditches. The EMI ditch system was an architectural feat that he believes could not be replicated today even with the use of modern technology. Mr. Hew made it clear that his time with EMI and HC&S was a blessing. He was able to provide for his family and learned many different things. He ultimately supports the decision of releasing water back into the streams but believes there still needs to be peace and understanding with the community and in situations where EMI would still need to utilize water, the community should be compliant



Figure 68. View of Maui from Mr. Hew's house



Figure 69. Picture of banana and tangerine trees on Mr. Hew's property





Figure 70. Picture of *kalo*



Figure 71. Mr. Garret Hew and his *kalo*



## 5.6 Commission on Water Resource Management (CWRM) Declarations

In 2001, the Native Hawaiian Legal Corporation (NHLC), on behalf of Nā Moku Aupuni o Ko'olau Hui, petitioned the Commission on Water Resource Management (CWRM) to amend the Interim Instream Flow Standards (IIFS) for 27 East Maui streams. Declarations provided as a part of that proceeding from the community were first filed in the same year to increase the IIFS and are in the public domain (see <http://files.hawaii.gov/dlnr/cwr/cch/cchma1301/CCHMA1301-20141230-NHLC-DE.pdf>). Below are declarations made by cultural practitioners, an expert witness, and Nā Moku Aupuni o Ko'olau, a community of taro farmers, fishermen, and hunters. As a courtesy, CSH attempted to contact each individual to obtain approval to include these declarations in the CIA. These declarations were submitted to CWRM before CWRM issued its Findings of Fact, Conclusions of Law, and Decision and Order on June 20, 2018, setting forth the approved IIFS.

### 5.6.1 Dan Clark

#### DECLARATION OF DAN CLARK

I, Dan Clark, declare that:

1. The statements below are based upon my personal knowledge.
2. I am a member of Nā Moku Aupuni O Ko'olau Hui.
3. My family has an interest in property in proximity to Piinaau Stream.
4. I am a taro farmer. My family grows kalo on 0.129 acres of property located in Ke'anae and irrigated by Piinaau and Palauhulu. I am farming this land based on my leases with various property owners on the Ke'anae peninsula.
5. I have been kalo farming in Ke'anae for 15 years.
6. The Wailuanui-Ke'anae ahupua'a comprise one of the most beautiful spots on the earth. Once my work is accomplished, I take time to enjoy the beauty of the natural landscape.
7. The fact that the fishing resource is in the process of being restored is a consolation to the hard work required to keep the ecosystem alive. When you can gather, the resource (food) will be there.
8. Currently, my family and I clean both our section of the ditch and above our area at Piinaau and Palauhulu in an effort to mālama the land and streams.
9. The lack of stream flow is a problem for me and my 'ohana because I need cool, fast running water to feed my lo'i for the best production of kalo. The low stream flow has caused a decrease in my kalo production and an increase in disease to my kalo.
10. If there was enough water in the streams, I would be able to harvest a much healthier kalo crop at Piinaau and Palauhulu. Additionally, it would restore the entire ecosystem, which would benefit everyone.

11. If stream flow was restored, my family and I would continue to clean Piinaau and Palauhulu, the streams that water our lo'i.

12. For me, recreation is enjoying the surroundings and gathering around a healthy ecosystem. If the water was to flow again, I would definitely enjoy seeing the Piinaau and Palauhulu areas restored and in good health again. There are songs and legends associated with the spots we go to. It is a spiritual feeling.

13. If water was returned, I would appreciate viewing the beauty of Ke'anae's restored natural ecosystem.

14. Please return the stream flows.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Keanae, Maui, Hawai'i, September 28, 2014.

---

*[Dan Clark]*

DAN CLARK

## 5.6.2 Jonah Jacintho

### DECLARATION OF JONAH JACINTHO

I, Jonah Jacintho, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. My family has an interest in property near Honopou. We grow kalo on that property, which is about two acres. I have my own lo'i as do my aunt and sister.
4. I am farming this land based on my family history and the practices passed down to me.
5. I learned how to farm taro from Aunty Beatrice Kepani Kekahuna and Lurlyn Scott.
6. Traditionally, my 'ohana gathered pohole, fish for enenue, 'o'opu, watercress, hihiwai, prawns, banana, limu, bamboo, and ulu in and around Honopou.
7. Traditionally, my 'ohana fished for moi, enenue, aholehole, 'opihi, kumu, tako or he'e, moanakali, kole, ulua, honu, mullet, omilu, pāpio, uhu, paananu, menpachi, and aweoweo in or near the mouth of Honopou.
8. My 'ohana also engaged in mālama 'āina and mālama kahawai at Honopou by cleaning the 'auwai to our family lo'i, pruning, and cleaning the buildup on the stones in the ponds. My family also fished and planted according to moon phases.
9. My mother, Juliana Jacintho, was baptized in Honopou.
10. I currently gather kalo, pohole, fruit, 'ulu, and watercress in and around Honopou.
11. I fish for enenue, ulua, uhu, 'opihi, haukiuki, poopaa, omilu, aholehole, lae, aweoweo, paananui in or near the mouth of Honopou.
12. I gather and fish to feed my family and myself.
13. My family engages in mālama 'āina and mālama kahawai by fishing and gathering by moon phases. We also clean Honopou for good consistent flow, which keeps the water cooler for planting.
14. I also swim, relax, and get together with my family along Honopou. I learned to swim there.
15. I appreciate the natural beauty of Honopou. I like listening to the stream flow as well as smelling the flowers and fresh flowing water. I love hearing the birds singing and the sound of the wind blowing through the trees. I enjoy the feeling of following what my grandfather did with kalo fanning. I feel him with me.

16. The lack of stream flow is a problem because we cannot fish as much. We have to take only a small amount of fish, and much time is needed before the fish replenish. We have lost large amounts of ocean fish due to wanner waters and the fact that less nutrients get into ocean from the land.

17. If there was enough water in the streams, I would farm more kalo because the flow would be sufficient. I would fish more too, because the water would bring back the abundance of fish.

18. More water would also help meet our needs for home use and gardening.

19. If there was more water in the streams, I would fish for ulua, omilu, pāpio, moi, aholehole, uhu, paananu, enenue, he'e, and aweoweo in Honopou.

20. If water was put back in the streams, I would clean Honopou for kalo farming.

21. If water was restored, the streams would flow faster and at cooler temperatures that are ideal for growing taro.

22. More water in the streams would bring back fish, 'o'opu, prawns, and 'ōpae, which my family members rely on. Old ways of life would be more feasible.

23. If there was more water in the streams, I would continue swimming, family picnics, and prawning at Honopou.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Honopou, Maui, Hawai'i, December 13, 2014.

---

*[Jonah Jacintho]*

JONAH JACINTHO

### 5.6.3 Lezley Jacintho

#### DECLARATION OF LEZLEY JACINTHO

I, Lezley Jacintho, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a taro farmer. I have been growing kalo in Honopou for about six years now on approximately two acres of land.
4. I am farming this land based on my family history and talking with kupuna about practices their parents had done to farm lo'i long before we did.
5. I learned how to farm taro from Beatrice Kepani Kekahuna and Lurlyn Scott.
6. My 'ohana has lived in Honopou for many generations.
7. Traditionally, my 'ohana gathered 'ulu, kalo, uala, moi, aholehole, banana, 'o'opu, pūpū, kala, hau, native crayfish, hihiwai, 'opihi, limu, pohole, mango, 'awapuhi, tī leaf, lū'au, guava, watercress, oranges, and medicinal plants in and around Honopou.
8. Traditionally, my 'ohana fished for aholehole, honu, moi, mullet, poopaa, puhi, ulua, lobster, pāpio, 'ō'io, lae, uhu, menpachi, kole, black crab, haukiuki, kupipi, and opihi in or near the mouth of Honopou, Punalau/Kolea, Honomanu, Hanawi, and Makapipi. They also gathered limu in those areas.
9. My 'ohana also engaged in mālama 'āina and mālama kahawai. They were aware of spawning times, they cleaned the 'auwai, gathered only what was needed, gathered and fished with the moon cycle, rebuilt walls, and cleaned Honopou.
10. Currently, my 'ohana and I gather pohole, banana, avocados, 'ulu, mango, orange, puakenikenī, and lū'au in and around Honopou and Honomanu. We also pull kalo if it is not rotten.
11. My family and I fish for pāpio, enenue, moi, prawns, lobster, haukiuki, 'opihi, and kupipi in or near the mouth of Honopou and Honomanu.
12. I gather and fish to feed my family, teach my kids to feed themselves, and live as our grandparents did.
13. My family engages in mālama 'āina and mālama kahawai by cleaning Honopou and nearby ponds, planting kalo, cleaning, and working together to grow food.
14. We also swim in the ponds, teach our kids how to swim, catch prawns, fish, and play games in and around Honopou.



15. I appreciate the natural beauty of Honopou, including the birds and dragon flies. I love the smells of 'awapuhi and other flowers. I enjoy looking around, taking in the beauty and the greenery, and hearing rushing water while sitting on Lynn's deck next to the pond.

16. Water is used to irrigate my lo'i as well as other lo'i. The level of water barely can feed those lo'i. More water is needed as we continue to open more lo'i. Around these lo'i the water also feeds homes that have been established from generations.

17. The lack of stream flow affects our taro. We have lost taro due to root rot and other diseases.

18. Because the streamflow connects to the ocean, improper flow restricts spawning of different species of fish. Thus, the lack of stream flow affects our gathering rights as Hawaiians to feed our 'ohana as was once possible. Native species like 'o'opu cannot travel back up stream due to lack of water, which compromises their reproduction. Our families who live in this area cannot gather enough resources from the ocean and streams because there is not enough fish, hihiwai, 'ōpae, and 'o'opu. The low stream flow has also caused people to move away to provide better for their family.

19. Additionally, swimming in the ponds is what we all enjoy and should continue to be enjoyed, not compromised by improper flow which can cause stagnate water, bringing leptospirosis and other bacteria.

20. If there was enough water in the streams, I go back to traditional gathering practices, being more self-sustainable as a valley. Everything in Honopou would be in abundance.

21. If there were more water in the streams, I would fish for what was traditionally fished for in Honopou. Aholehole would come back as well as other species like moi, nohu, and menpachi.

22. If water were put back in the streams, I would mālama the streams the same way as my kupuna did. We would open more lo'i and continue to monitor fishing practices in and around Honopou.

23. If there was more water in the streams, I would make even more use of the ponds, teach our kids to fish and gather to make traditional tools and implements. I would also appreciate the beauty of the strong flow of water, the additional greenery at Honopou because everything would flourish.

24. Spiritually, we are connected to the water. Water is life. Without water we will not be.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Honopou, Maui, Hawai'i, December 13, 2014.

---

*[Lezley Jacintho]*

LEZLEY JACINTHO

**5.6.4 Kauai L. Kanakaole**DECLARATION OF KAUI L. KANAKAOLE

I, Kauai L. Kanakaole, declare that:

1. The statements below are based on my personal knowledge and upon research that I have conducted.
2. I reside at [REDACTED] I was born in Hilo on Hawaii Island, but moved with my family to Hana, Maui at age 4 and grew up in Hana until graduating from Hana High School.
3. Attached to my declaration as Exhibit "1" is a true and accurate copy of my resume.
4. I received my Bachelors of Arts in English and my Teaching Certificate in Secondary Education from University of Hawaii at Hilo. I started my professional career in teaching at Hilo High School then moved on to Ke Ana Laahana Pubic Charter School before returning home to my alma mater at Hana High and Elementary School. All of my teaching experiences have put me in the middle of high Native Hawaiian populations, from Keaukaha to Hana, public education was an important vehicle for me to reach the native "underprivileged" community and give back what I had gained from my own upbringing in these types of communities.
5. I served as Department Head at Hana High School, trying to rally the school population around reading and raising our students' reading test scores, which came to fruition in 2011 when we scored the highest in Maui County.
6. My hula career started as an 8 year old child in Hana with Namahana Kalama-Panui, learning about the stories and songs of the place I grew up in. Hula had me hiking through the mountains gathering kinolau (body forms of the gods) of the gods we danced about and this practice became my first introduction to the water diversions of East Maui.
7. We were curious about the flumes, waterways, and water pumps that cut through our sacred forest so our kumu and aunties told us about the sugar plantations on the other

- side of the island needing water and even as a young child I remember feeling angry and confused.
8. My hula career continued on in Hilo with renowned Halau o Kekuhi, which is also my family's halau on my father's side.
  9. Hula comes from Edith Kanakaole, my father's mother, and was passed down matrilineal and continues in that vein today.
  10. I was a dancer in the PBS broadcast of "Great Performances: Holo Mai Pele" (2000), went on tour for the hula drama "Kamehameha: Na Hoailona" (1999) and "Hanau Ka Moku" (2002).
  11. Being an olapa dancer in Halau o Kekuhi has afforded me many cultural learning experiences and opportunities however the added responsibility of being of familial descent from this hula lineage gave this experience deeper meaning.
  12. Hula has taught me about the many facets of our culture, from menial work to ritualistic prayer, from the bloom of a leaf-bud to the cycle of water in the forest, from obeying the request of an older sibling to embracing the transformation into your god-self.
  13. Hula has given me an education that cannot be translated into any degree at a university, and my family has solidified those teachings and anchored me spiritually and it is this inherited DNA that I pass on to my two children.
  14. In 2007, I participated in Halau o Kekuhi's Aha Ailolo Puaalohelohe, which is a rigorous rite of passage from olapa to kumu, and I was granted the right to teach the traditions of hula Aihaa and hula Pele that have been taught to me.
  15. In 2009 I started my own hula halau and continue today with children and adult classes for Halau o Nakaulakuhikuhi.
  16. I am a member of the Edith Kanakaole Foundation, which was started in 1990 by my father and his siblings in order to maintain and perpetuate the teachings, beliefs, practices, philosophies and traditions of their parents, the late Luka and Edith Kanakaole.

17. I am currently contracted by Ala Kukui Retreat Center to conduct research on water in East Maui looking at it from a cultural perspective.
18. My research is entitled “Ke Ala Huli i Waihanau” and I use Papaku Makawalu to understand the cycles and significances of water in the Koolau, Hana, Kipahulu and Kaupo districts of Maui.
19. My ties to East Maui are from my mother’s side, whose great grandmother, Kahele was a native of Kipahulu and married a Japanese stow-away immigrant by the name of Ishii.
20. My mother remembers her grandmother telling her stories of watching her mother Kahele down at the muliwai (estuary) feed the shark at Maulili. She was of pure Hawaiian descent and although not much was said about Kahele, this little piece of information has been passed down. From this we know that the shark is an aumakua (family deity) of our family and because of that we honor these ocean beings through chant and dance and have an affinity for the muliwai there at Maulili and the flow of fresh water from mauka to makai.
21. These combinatorial experiences, influences, lineages have given me the intimate connection and cultural prowess to understand this land that I live on and the natural cycles it goes through and especially our human role in those natural cycles.
22. East Maui, which is comprised of the four moku (land district) of Koolau, Hana, Kipahulu and Kaupo, is historically significant and is extolled in the chants and stories for time immemorial. In the epic saga of Pele and Hiiaka, when Hiiaka journeys up the island chain from Hawaii to fetch her older sister’s lover on Kauai she lands first at Kauiki in Hana and chants about the majestic Kauiki hill, the outcrop of Mokuhano in the sea and the fresh water spring of Punahoa that brings life to the area.
23. Through stories we know that the gods Kane and Kanaloa have traversed the region thrusting their staff into the ground at various places and fresh water bubbled up. People of the area worshipped these gods because of the abundance of water as in the



story of Kalemakuakaimano who was a man who lived in the Pauwalu area where the watercress patches are today.

24. When he lived there, there was no spring, just the water from the river that would flow when there was a lot of rain, however because he constantly importuned Kane and Kanaloa as his gods, grew and ate the kinolau of these gods, they visited him one day. At that visit he prepared a feast and chewed the awa for his gods and served them. In return Kane and Kanaloa thrust their staff and springs erupted out of the ground with a loud rumble that continued so one of the springs was closed up and the one that was flowing quietly was left.
25. There are countless stories and chants that communicate the importance of water in this East Maui region. It is this abundance that made and continues to make this particular land waiwai (valuable) to its inhabitants.
26. This high value was not taken for granted or misused at any cost but met with severe punishment if ever abused, punishment of death. There are a few stories about misuse or greed of the water resource in this area that were met with the death penalty because without water there would be significant repercussions. Found in the Hawaiian language newspaper Ka Nupepa Kuokoa was a story about "Na Akua" Kane and Kanaloa.

*Ka Moolelo o Na Akua*

*... na laua ka wai o Kou ma Kaupo, na laua i hoomake kahuna oia o Koino ma Kikoo i Kipahulu, a na laua i hoomake ka moopuna a Waianu ma no ka hoohaumia i ka wai, a na laua i wahi i ka pohaku a puai mai ka wai.*

*The Story of The Gods*

*... the water of Kou at Kaupo belongs to them (Kane and Kanaloa), they were the ones who killed the priest Koino who was from Kikoo at Kipahulu, and they were also the ones who killed the grandchild of Waianu folks because of his defiling of the water there, and it was the gods who split the rock and water bubbled forth.*

27. Tampering with a natural resource to the point where it prohibited the untainted continuance of the natural cycle was met with strict consequences and this was a pervasive understanding. It's an innate thought process for native people to think

this way, which is why as a little girl I was angry and confused about the water diversions in the forest even without any preconceived notions of the sugar industry’s effect on Hawaii.

28. It’s fundamental to the psyche of the native Hawaiian that we understand the cycles of our natural world and find our fit, as humans, in it all. My Hawaiian ancestors categorized their world into a system of knowledge known as Papaku Makawalu, whose origin can be found in the Kumulipo (Hawaiian Creation chant).
29. Papaku Makawalu is a Hawai‘i ontological knowledge system that assigns the Hawaiian universe to three Papa or houses of knowledge. The first of the three is Papahulihonua, which includes all of the earthly elements such as the ocean, volcanic processes, and the water cycle. Kane (and Kanaloa for that matter) is a vital component of Papahulihonua in his occupation as water, Kane is the entity in and of Papahulihonua that mingles continuously with elements of Papahulilani (the second Papa).
30. Papahulilani is the atmospheric elements including the sun, weather, stars, planets, heavenly strata, and seasonality.
31. The third Papa is Papahanaumoku. This papa is comprised of the living components with the biological intelligence of procreation. Those who belong to the house of Papahanaumoku are the direct beneficiaries of Kane. These individuals include everything from plants, to birds, to coral, to fish, to mea kolo (creepers), and kanaka (man). The house of Papahanaumoku also includes the activities that kanaka engage in, including things like hula and caring for land. Kanaka functions including consciousness and inner conscious are also in the house of Papahanaumoku.
32. Water is one of the few elements that easily traverse all three Papa. It is the nature of the water cycle that make it a part of Papahulihonua when it is on the earth in the form of streams, springs, aquifers or even a puddle. Kane and

Kanaloa preside over these waters as in the chant “Ka Wai a Kane”:

*E ui aku ana au ia oe,*  
 One question I put to you,  
*Aia i hea ka wai a Kane?*  
 Where is the water of Kane?  
*Aia i ke kuahiwi, i ke kualono,*  
 Yonder on mountain peak, on the ridges steep  
*Ike awawa, i ke kahawai;*  
 In the valleys deep, where the rivers sweep  
*Aia i laila ka wai a Kane.*  
 There is the water of Kane.

33. Then Laka presides over the evaporation/transpiration process, it gets taken up into the atmosphere, which is the realm of Papahulilani and falls to earth in the form of rain, mist, or snow.

34. The role of Laka is illustrated in this chant:

*A ke kuahiwi, i ke kualono*  
 From the mountain tops, to the highland ridges  
*Ku ana o Laka i ka mauna*  
 Laka presides over the forest  
*Noho ana o Laka i ke po‘o o ka ohu*  
 Laka is at the pinnacle of the gathering of the mist  
*O Laka kumu hula*  
 Laka the source of movement

35. As water accumulates it is the beneficiary of Papahanaumoku that ingest and rely on this element for life. The kanaka (man), the plants and animals, crawlers and winged creatures are the ones who are either made up of water and/or rely on it for survival.
36. Papaku Makawalu gives us a framework to understand the movement of water throughout the different papa (foundations) and this framework can be applied to our own localities to understand peculiarities about the cycles we experience everyday. In looking at the moku of Koolau for example, the water cycle there is a microcosm for what is happening in other moku in East Maui, Maui, Hawaii and the world.
37. Starting with Oopuola stream and continuing on to the end of the Koolau moku at Makapipi stream, each water source was given a name by our ancestors. These names tell us information about that particular source, which we can use to better

acquaint ourselves with the land, elemental sources and cycles that occurred.

38. Kaaiea stream, for example, was named for the Aiea tree that grew abundantly in the area. The species of this endemic Hawaiian genus *Nothocestrum* consisted of soft-wooded shrubs and trees with oblong leaves, yellowish flowers and white/red berries, which grew from 1500-5000 feet elevation. The aiea tree acted as a causative in the water cycle and it helped to accumulate water in the forest.
39. Ohia stream and spring was named such not for the ohia tree; ohia also means “tabooed, as food patches during famine”. A native of the area, Henry Kahaleulaokekua Kamali, who has long passed, was born in 1886 at Pauwalu close to Ohia stream and grew up in the area. In his 1970 interview with Clinton Kanahele, which was conducted in Hawaiian and later translated and transcribed he described the water as such:
 

“Ohia, That is the waters of Kanaloa and Kane. The water gushes forth from inside from a spring. Yes, that is healing water for coughs and all kinds of sicknesses. There the sick were taken. When you have your illness you go into there to bathe. Healed.”
40. The native people in the area understood that this water was special, sacred, kapu (taboo) and only to be used in unique circumstances.
41. A wind of the Wailua area is named Kialeale, meaning stirring, moving, undulating, and rippling with force. This wind is also characteristic of the land because the water sources of Koolau moku (district) are powerful, full of energy and maintain a strong presence over the other elemental forces of nature.
42. The Kialeale wind occupies Papahulilani and is a manifestation of the god Lono and through its stirring force, clouds accumulate in the uplands and that is when the god Kane releases the rains that penetrate the earth and amass in the kuahiwi (hill) and kualono (mountain ridge), in the awawa (valley) of Honomanu, Waiohue, Wailua, and Makaiwa.
43. It is in this realm of Papahuihonua that we kanaka (man) have most intimate dealings with this water. It is the kanaka (man) of Koolau who give praise to the god Lono who initiated the Kialeale wind that brought this precious resource to the

earth where he is able to utilize its gifts, while still allowing the cycle to continue. It would be requisite of the kanaka to deny this resource its due diligence.

44. Kialeale is of Koolau moku only, it serves this area and it would be wrong to take the product (water) of its service elsewhere because that creates a void, a break in the cycle that is distinctly Koolau.
45. The unique natural cycles that occur in each locality belong to that particular place, the mana (spiritual power) that is created as a result of these cycles belongs to that particular place and the displacement or gross manipulation of that element whether it be water, earth, lava, wind or sun is counter to everything that the kanaka Hawaii believe. And this is illustrated for us in the simple act of naming everything in their world.
46. The wind in Koolau moku is not known as just "Wind" but "Stirring, Moving, Undulating Wind".
47. The spring in Pauwalu is not named "Spring" but "Tabooed, as a food garden during famine Spring".
48. There is a reciprocity of energy that occurs between element and kanaka and it is imperative that these relationships are nurtured and continued so that the our island world lives and prospers.

The people of Koolau were not just called "Wailua-ans" or "Keanae-ans" but "Koolau Hauwalaau". It is a poetic saying, which means "Koolau of the Loud Voices" because inhabitants of the area were said to be loud of voice. And it is this hauwalaau that must be heeded, that must be reckoned with, that must be regarded because they are the mouthpiece of the land of which they occupy.

I declare under penalty of perjury that the foregoing is true and correct.



DATED: Hana, Maui, Hawai'i, [December 17<sup>th</sup>], 2014.

---

*[Kaui L. Kanakaole]*

KAUI L. KANAKAOLE

### 5.6.5 Pualani Kimokeo

#### DECLARATION OF PUALANI KIMOKEO

I, Pualani Kimokeo, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni o Ko'olau Hui.
4. My father Henry Ben Kaauamo was from Wahinepee. My mother Sarah Ahkuna Hueu was from Ke'anae.
5. I grew up in Wailua/Ke'anae.
6. When I was growing up, my mother had different leases from the state. She had about fifty patches. My mother worked the patches until I was in high school. She continued farming most of them until the 90s and stopped when she was 70 years old. My father worked as a taro farmer until he was 80-something. He refused to give up. My dad was also a garbage collector for the County. He also did a lot of hunting for pigs in these mountains as well.
7. I too am a taro farmer. I grow kalo on about one acre of property in Keanae that is irrigated by Palauhulu and another water source that may be connected to Piinaau.
8. I have an interest in the land I farm based on my connection to Kalilimoku, on my mother's side.
9. Before times, the fathers worked the taro patches. Mothers fought to get stream flow and worked on the traditional gathering.
10. I learned traditional and customary gathering practices from my grandmother Ellen. She and my mother taught us about what to look for, how to know when big water is coming, how to respect the seasons. We would pull kalo, pick 'opihi, and gather 'ōpae all in the same day.
11. Traditionally, my 'ohana gathered 'ōpae, watercress, lū'au, haha, pepeiao, hihiwai, pupulo'i and guava in Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.
12. Traditionally, my 'ohana fished for 'o'opu, aholehole, uau, and pāpio in or near the mouths of Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.
13. My 'ohana also engaged in mālama 'āina and mālama kahawai at Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East

Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue by respecting the seasons. They didn't have problems that required the same kind of cleaning because there was more flow.

14. Currently, my 'ohana and I gather 'ōpae, and limu in or near the mouths of Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. I also gather 'opihi in those same areas.

15. I farm, gather, and fish to feed my family.

16. I taught my kids what I know about farming, gathering, and fishing. My kids also started hunting when they were three. They learned from Doug Chong. They are now teaching their own children our practices.

17. I engage in mālama 'āina and mālama kahawai by cleaning the ditches with a sickle. That allows better flow to my lo'i, which are the last lo'i to get fed by the streams.

18. We also enjoy Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue recreationally.

19. I thank Ke Akua for everything before our eyes, everything he gives us. My mom was a strong woman. I learned a lot from her. I love that she tried to teach us. I try to instill all of that into our children. To me, Ke'anae will always be what I envision from when my mom instilled these lessons in me. To me, that's the biggest gift from Ke Akua.

20. The lack of stream flow is a problem for my family because we cannot grow kalo how we would like to. The taro gets diseased and damage. We get pocket rot and what we call "guava seed," or growths on the taro that affects the quality. We have apple snails, which like the warm water. Also, farmers in Ke'anae have to compete for water. It's not like before – we used to share and it wasn't a problem.

21. If there was more water in the stream, I would worry less about my kalo. I would expect more cool water to reach my lo'i.

22. If there were more water in the streams, my 'ohana would gather 'ōpae, limu, and opihi in or near the mouths of Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. I also gather 'opihi in those same areas.

23. If water were put back in the streams, I would continue to mālama the streams and cleaning the ditches.

24. If there was more water in the streams, I would appreciate the natural scenery. It would be nice to see the streams of Ke'anae the way I knew them when I learned how to farm and gather from my mother.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Keanae, Maui, Hawai‘i, [11/01/2014], 2014.

---

*[Pualani Kimokeo]*

PUALANI KIMOKEO

**5.6.6 Davianna McGregor, PhD**

*\*Note, only Exhibit "A" is included in this report.*

DECLARATION OF DAVIANNA MCGREGOR, PhD

1. I am submitting this expert testimony in support of the petitions filed by Na Moku Aupuni O Ko'olau Hui to amend interim instream flow standards for various East Maui streams located on the Ko'olaupoko, Maui coastline.
2. Attached as Exhibit "A" is a true and correct copy of PETITIONERS' DIRECT EXPERT TESTIMONY OF DAVIANNA POMAIKAI MCGREGOR, Ph.D, filed in the contested case hearing docket DLNR File No. 01-05-MA. [
3. Exhibit A is testimony I prepared for and presented to the Board of Land and Natural Resources in 2005 in the contested case proceeding involving Na Moku Aupuni O Ko'olau Hui's challenge to the request of Alexander and Baldwin/Hawaiian Commercial and Sugar/East Maui Irrigation Company for a 30-year lease of the four East Maui water license areas.
4. Attached as Exhibit "B" is a true and correct copy of my most current curriculum vitae.
5. I recognize that in 2008 the CWRM voted to partially restore 5 of 8 streams then under consideration by amending the IIFS for Wailuanui, Waiokamilo, Pi'ina'au, Hanehoi, and Honopou Streams, in order to respond to the claims of active taro farmers depending on those streams for the irrigation of taro crops in Wailuanui, Ke'anae, Hanehoi, and Honopou valleys.
6. However, I further understand that EMI's compliance with those amended IIFS continues to be an outstanding issue before the CWRM in this contested case hearing.
7. Accordingly, I affirm that the substance of the testimony I presented to the BLNR in 2005 is still applicable and material to the current IIFS contested case hearing before the CWRM and I now offer it for consideration in this proceeding.



8. I have reviewed the Declarations of Na Moku Members submitted in 2001 in support of the stream flow petitions, attached as Exhibit "C" hereto that were provided to me by the Native Hawaiian Legal Corporation.
9. I have reviewed the Declarations contained in Exhibit "D" which were provided to me by the Native Hawaiian Legal Corporation and submitted in 2010 during the CWRM's 90-Day factfinding process.
10. I have reviewed the Witness Statements for CCH-MA-13-01 of Emily Akiona Wendt, Aja Akuna, Terrance D.K. Akuna, Darrell Aquino, Charles Barclay, Leonora (Smith) Barclay, Danny Carmichael, Healoha Carmichael, Dan Clark, Harry Hueu, Sandy Hueu, Jonah Jacintha, Juliana Jacintha, Lezley Jacintha, Kames F. "Kimo" Kaaa, Gladys Kanoa, Sanford Kekahuna, Jerome K. Kekiwi, Jr., Pualani Kimokeo, Norman "Bush" Martin, Jr., Lurlyn "Lyn" Scott, Edward Wendt, and Joseph "Jojo" Young.
11. Based on my prior research, it is my opinion that the 2001 Statements, the 2009 submissions, and the 2014 Witness Statements referenced above, describing the areas of use for traditional and customary practices of gathering in streams ranging from Makapipi to Honomanu are consistent with my prior research as presented in the Ke'anae-Wailuanui Cultural Landscape study of July 1995. The statements are also consistent with my prior testimony provided in Exhibit A, in which I reported that community members from the Keanae-Wailuanui region engage in traditional and customary gathering activities throughout the traditional practices region (Makapipi to Honomanu) including in unoccupied areas in order to maintain the resources.

DATED: Honolulu, HI, December 23, 2014.

[Davianna P. McGregor]

Davianna Pomaikai McGregor, Ph.D

## EXHIBIT A

PETITIONERS' DIRECT EXPERT TESTIMONY OF  
DAVIANNA POMAIKAI MCGREGOR, Ph.D.

Q. Please state your name for the record.

A. DAVIANNA POMAIKAI MCGREGOR.

Q. Where do you live?

A. I live in Kaiwiula, Kapalma, O'ahu and Ho'olehua, Moloka'i.

Q. Where do you work and what is your title?

A. I am a Professor of Ethnic Studies at the University of Hawaii, Manoa.

Q. What is your educational background and training?

A. I graduated from the University of Hawaii with a Bachelor of Education degree in Secondary Education in 1972 and a Bachelor of Arts degree in Asian/Pacific History in 1973. I did my graduate work at the UH, where I obtained a Master of Arts degree in Pacific Islands Studies in 1979. I also earned a PhD in Hawaiian and Pacific History from the University of Hawai'i in 1989.

Q. What was your doctoral dissertation topic?

A. The title of my doctoral dissertation is "Kupa'a I Ka 'Aina: Persistence On The Land." It examines the conditions of Hawaiians from 1898 to 1930, the first 32 years of direct U.S. rule over Hawai'i. It compared the conditions of Hawaiians in urban O'ahu with that of Hawaiians in rural Hawaiian communities on the island of Moloka'i, the moku of Hana, Maui and the ahupua'a of Waipi'o, Hawai'i.

Q. Did you prepare a *curriculum vitae* to reflect your education and training?

A. As part of my testimony, I have submitted my *curriculum vitae* which contains information on my academic training, my teaching, my research, and my publications.

Q. Have you previously been qualified to testify as an expert witness?

A. I have served as an expert witness regarding traditional Hawaiian subsistence, cultural, and religious customs and practices in the following Civil Cases: *Kelly v. 1250 Oceanside Partners*, Civ. No. 00-1-0192K (Haw. 3<sup>rd</sup> Cir.); *Office of Hawaiian Affairs, et al vs. Housing and Community Development Corporation of Hawaii, et al*, Civil No. 94-4207-11 SSM, 1994 - 2001; *Kamaka v. Department of Defense*; *Pele Defense Fund v. Paty*, Civ. No. 89-089 (Haw. 3<sup>rd</sup> Cir.); *Pele Defense Fund v. Campbell Estate*, Civ. No. 89-089 (Haw. 3<sup>rd</sup> Cir.); and *Hanakeawe v. Nansay Hawaii, Inc.*, Civ. No. 90-316 (Haw. 3<sup>rd</sup> Cir.). I have also testified as a cultural expert in the following criminal trespass cases. *State of Hawai'i v. Spalding* (Haw. 3<sup>rd</sup> Cir.); *State of Hawai'i v. Naeole* (Haw. 3<sup>rd</sup> Cir.); *State of Hawai'i v. Kaleo Patterson* (Haw. 3<sup>rd</sup> Cir.); *State of Hawaii v. Keli'ikoa* (Haw. 3<sup>rd</sup> Cir.).

Q. Have you ever been qualified before administrative bodies to testify as an expert?

A. I appeared as an expert before the State of Hawai'i Water Commission in the Waiahole Water Case, Docket No. CCH-0A95-1, and *In re Waiola O Molokai*, Docket No. CCH-MO96-1; before the Public Utilities Commission in Docket # 7259 Relating to Hawaiian Electric Light Company, Regarding Integrated Resource Planning, 1993; and before the Public Utilities Commission in Docket # 6617 To Require Energy Utilities in Hawai'i to Implement Integrated Resource Planning, 1990.

Q. Have you had the opportunity to study the nature and extent of cultural, religious, and subsistence activity in which the Native Hawaiians have engaged to support themselves?

A. Yes. I first studied rural Hawaiian communities where Native Hawaiians comprised the majority of the population and continued to support their extended 'ohana through traditional Hawaiian subsistence farming, fishing, hunting, and gathering customs and practices when I wrote my PhD dissertation. Subsequently, I conducted a number of studies of the traditional and customary practices of Native Hawaiians, which mirror long-held cultural practices of ancient Hawaiians in several rural communities throughout the state. While all have unique features associated with those communities, these traditions and

customs I've recorded are resilient and persistent. In many instances, the continuation of these cultural practices is financially necessary for many families. These studies have taken me to East Maui, where I conducted extensive and expanded research, as well as Moloka'i and the Island of Hawai'i.

Q. What prompted your expanded research for East Maui?

A. In June 1993, the Hawai'i State Legislature approved what later became Act 156 to implement a preexisting statutory mandate requiring planning for the state's physical environment and for socio-cultural enhancement, which recognizes the significance of the state's "cultural landscapes." Accordingly, it established a task force to examine Hawaiian cultural landscapes. This task force was responsible for developing designation criteria, specifying activities and uses consistent with cultural landscape districts, developing procedures for definition of cultural landscape districts and their boundaries, and reporting their findings to the legislature.

Q. What happened as a result of this effort?

A. In January 1994, the DLNR Cultural Landscape Task Force reported back to the Legislature on the importance of landscape preservation within a vital daily living context. The Task Force defined cultural landscapes as geographic areas, which exhibit monolithic characteristics of an ethnic, economic or cultural nature. They reflect the interaction of cultural, economic, and natural forces on the environment. They are a definable area, which clearly defines the settlement or use of the land, water, and/or living systems (plants and animals) over a long period of time, as well as cultural values, norms, and attitudes toward the land, water and/or living systems. These geographic areas possess a significant concentration, linkage or continuity of landscape components (i.e., vegetation, buildings and structures, archaeological sites, roads and trails, waterways, religious and natural features and resources), which are united by human use and past events and/or aesthetically by plans or physical development. Typically, these landscapes could involve abandoned villages or agricultural systems, taro-producing areas, sugar lands, ranches, fishing areas, traditional gathering areas, and entire islands.

Q. What were the recommendations of the Task Force?

A. The Task Force supported a model project focusing on the Ke‘anae-Wailuanui area on Maui, because it recognized that this community is a taro-growing area with long continuity of use and with local support for preservation.

Q. What was the purpose of this model project?

A. The project involved a cultural landscape study to inventory and assess the resources of the Ke‘anae-Wailuanui communities. The Maui County General Plan of 1990, on which the Hana Community Plan is based, has themes, one of which under “land use” is:

To preserve for present and future generations existing geographic, cultural and traditional community lifestyles by limiting and managing growth through environmentally sensitive and effective use of land in accordance with the individual character of the various communities and regions of the County.

Maui County adopted the Hana Community Plan as part of its adoption of County General Plan in July 1994, under Section 2.80.050 of the Maui County Code. To implement the Hana Community Plan, the Maui County Planning Department initiated the resulting Ke‘anae-Wailuanui Cultural Landscape study. The Hana Community Plan calls for county government to “compile special plans and studies necessary to implement the recommendations of the Community Plan.” It also establishes the following goals, policies and implementing actions:

Land Use: Preservation and enhancement of the current land use patterns which establish and enrich the Hāna Community Plan region’s unique and diverse qualities.

- Identify and inventory exceptional open space resources and viewsheds. Explore protective management measures such as covenants, easements, and other planning tools.
- Explore alternative land use and overlay zoning designations that recognize and preserve the unique natural and cultural characteristics of each community within the Hana region.
- Encourage the availability of agriculturally suitable lands to provide opportunities for small diversified agricultural activities with residential tenancy for farmers.



Q. What was the specific goal of the Keʻanae-Wailuanui Cultural Landscape study of July 1995?

A. The goal was to describe and quantify conditions and traditions which have shaped the land and which still affect the patterns of land use. Land use management policies based on a broad foundation of knowledge of resources will better enable the community and its representatives in county and state government to make effective decisions appropriate to this and other rural and agricultural areas.

Q. What were the specific tasks of the study?

A. There were three major tasks: (1) identify the historic context of the landscape, through archaeological research to determine the depth of wetland taro cultivation and a literature search, including a summary of Land Commission Awards for the Keʻanae and Wailuanui ahupuaʻa, focused on agricultural or other uses of the claims; (2) identification of cultural landscape components, including farm land, crops, vegetation types, water control, gathering, hunting, home sites, ocean-related activities, and lands associated with Hawaiian legends; and (3) preliminary mapping using historical maps, aerial photographs, and detailed land classification maps to identify existing land use areas and the boundaries of the cultural landscape.

Q. What was the methodology for conducting this study and who was the team responsible for conducting the work?

A. The methodology is described on pp. 13-17 of the report. Basically, (1) Cultural Surveys Hawaii, Inc. conducted a literature search, including a review of aerial photographs, (2) Cultural Surveys Hawaii, Inc. and Group 70 conducted field surveys, including mapping of taro loʻi; and (3) I conducted personal interviews, relying heavily on kupuna (9 of 13 interviewees) from Keʻanae and Wailuanui.

Q. How reliable are the sources of oral history, as related by those Hawaiians you interviewed?

A. The oral history interviews were consistent with each other and were cross validated with the information gathered through the literature search and the field surveys.

Q. What are the cultural landscape area boundaries?

A. The team identified the Keanae-Wailuanui core Cultural Landscape area boundaries in Figure 3 of the report. The area encompasses the Ke'anae peninsula and runs southeast along the coast to the southeast ridge of Wailuanui Valley. On the west, it is bounded by the Ke'anae YMCA, Ke'anae Arboretum and the Palauhulu stream. Inland it extends 600 feet mauka of the Hana Highway, stretching from the YMCA camp to the ridge on the east side of Waikani Falls. The informants also identified a wider traditional cultural practices region shown in Figure 4 of the report, for fishing, hunting and gathering. This extends from Makapipi Stream and forest access road in the east, to Honomanu and the Kaumahina ridge on the west and mauka to Pohaku Palaha on the northern rim of the Haleakala Crater.

Q. In summary, what did these sources of information show?

A. The literature search documented the cultural and natural setting of the cultural landscape area, which has a rich and long history of supporting Hawaiians who tilled the land, grew taro and other food crops, and fished the nearshore ocean seas as far as 11 miles offshore. In the various land commission testimonies, maka'ainana from the Ke'anae-Wailuanui community described their agricultural pursuits in the 1840's. The field surveys, combined with the literature search, yielded information that enabled the team to map the cultural landscape - historic locations of buildings, taro lo'i, 'auwai, and other cultural features of the communities that settled the area. The interviews helped me link current uses of land and streams by residents to their historic uses and verified those practices that continued to be followed along the traditions of their ancestors. The relative isolation of this cultural landscape enabled it and its residents to avoid or resist intensive modern land developments and retain many of the ancient traditions passed down through the generations of Hawaiians who resided in this area.

Q. Why was the Ke‘anae-Wailuanui area selected for this cultural landscape study?

A. Aside from the land use planning angle I’ve previously mentioned, it was particularly appropriate because it is associated with a deep and long tradition of growing taro, the staple crop of Native Hawaiians for generations. The earliest Polynesian voyagers to Hawai‘i brought taro with them. It has been linked mythologically to the origins of Hawaiians as a people. The plant itself has attributes which are embedded in the notion of the family and kinship relations. All parts of the taro plant are used for food. Much of the traditions surrounding the cultivation and use of taro have persisted in Ke‘anae-Wailuanui to a much greater extent than most other parts of Hawai‘i. With such an intimate association with the people and culture of Hawai‘i, Ke‘anae-Wailuanui was a prime candidate for designation as a cultural landscape. Today, large-scale taro cultivation is confined to isolated areas in Hawai‘i – Hanalei/Waioli, Hanapepe and Waimea on Kaua‘i, Waikane/Waiahole on O‘ahu, Onokohau, Waihe‘e, Ke‘anae-Wailuanui on Maui, and Waipi‘o Valley on the island of Hawai‘i. The taro landscape of Ke‘anae-Wailurumi is a viable traditional economy which has maintained historic and cultural integrity, traditional lifestyles, and social continuity to an equal or greater extent than any of the other taro growing landscapes in Hawai‘i.

Q. What physical attributes of Ke‘anae-Wailuanui did your study examine?

A. The 1995 study identified 12 components for examination. They are listed on page 44 of the report. Among them are taro cultivation, the Ko‘olau Ditch built and maintained by EMI, and cultural resources and use areas.

Q. What did you learn about the taro cultivation in Ke‘anae-Wailuanui?

A. Wetland taro cultivation is the most important single component of the cultural landscape of Ke‘anae-Wailuanui. Wetland taro cultivation requires a precisely defined, stable field system with a continuous and reliable source of water. The system must be designed so that cool, fresh water can be delivered constantly to every field. In this sense, a taro landscape is designed as a single system with interrelated elements (fields, streams and ‘auwai). Alteration of any of these elements could affect the entire system. The ancient Hawaiians who designed this landscape were limited in the degree to which they could alter the natural topography. They dealt

with this constraint by flexibility of design. Seen as a whole, the taro landscape appears as a simple network of inter-connected rectangles defined by banks, which hold in water. Upon closer inspection, it is apparent that field design, water flow, and water delivery are a response to subtle variations in the natural landscape. A taro landscape is extremely complex in its internal workings.

Q. What areas of taro cultivation exist in Ke‘anae-Wailuanui?

A. There are five major locations of active taro cultivation – Ke‘anae peninsula, Wailuanui, Ke‘anae Arboretum, Waianu Valley, and Lakini. An additional small area of cultivation exists at Waiokamilo Stream just makai of its crossing of Wailuanui Road. There are small lo‘i on both sides of the stream. In addition, throughout the district old taro terraces can be found and taro still grows in the wild in the valleys, along streams. Informants speak of going out and gathering lu‘au leaves from the wild taro because it has a good flavor, distinct from the cultivated varieties. Some of the areas for the gathering of wild lu‘au include Pi‘ina‘au, Nua‘ailua, Kupa‘u, Waipio, Awiowio, Pohole and Pahoa.

Q. Please describe the Wailuanui taro area.

A. This is the largest taro system of the cultural landscape, with 339 lo‘i, that Cultural Surveys plotted off a 1982 aerial photograph in Figure 15. They lie mainly west of Wailuanui Stream and to the north and east below Hana highway. It is an area of mixed cultivation and uncultivated areas. There is also a smaller set of lo‘i above Hana Highway in the area known as Lakini. See, Figure 21.

The essence of Wailuanui is water (wai = water). Wailuanui is best viewed looking mauka. The taro lo‘i as seen from makai, are framed by the steep green slopes of the valley with Waikani Falls to the east and Waiokamilo Stream waters entering from the center and west. The lo‘i themselves, as they ascend the slopes, decrease in size to accommodate the requirements of water control. Nowhere else in Hawai‘i are such miniature fields still cultivated in this kind of topography with such integrity. See, p. 126.

Q. Please describe the Wailuanui ‘auwai system.

A. It is evident that at Wailuanui Valley, the ‘auwai and lo‘i systems were constructed first and subsequent residences and circulation networks accommodated the already established systems. The pattern of cultivated lo‘i at Wailuanui is likely close to what existed at the time of the Mahele, but for the time when rice was cultivated just prior to and after the dawn of the 20<sup>th</sup> century.

Cultural Surveys was able to produce a schematic of the ‘auwai as it takes water from Waiokamilo Stream and passes through Lakini. Figure 21. The water flows past these lo‘i, partially returning back to Waiokamilo Stream, but mainly flowing under the existing Hana Highway to irrigate the valley lo‘i below that point.

There is another major diversion of Waiokamilo Stream below Hana Highway that irrigates the extreme western end of the valley. See, Figure 22.

Cultural Surveys approximated the direction of flow in the ‘auwai system servicing the valley, as the system was complex and our team did not have the time or resources to make a definitive map of all aspects of it.

Q. Did you discover any major changes in the use of the valley for taro cultivation since the time of the Mahele?

A. Our team did not find any historic map of the valley. Taro cultivation is well documented for the entire area in the 1850’s Land Commission Award documents. In Appendix A of the report, the various claims for Land Commission Awards in Ke‘anae-Wailuanui are rendered in a table. The table illustrates the extent to which taro was grown on the claimed parcels. The table summarizes the testimonies submitted in support of the requests for Land Commission Awards and reflects the presence of taro cultivation at the time of the Mahele for these parcels. While it indicates what was happening on those parcels at that time, it does not indicate which of the pieces claimed were actually awarded by the Land Commission. Nevertheless, the table gives an accurate indication of the extent to which active taro cultivation existed and on which parcels in the valley. This



activity also indicates where irrigation water from the streams was being applied in pursuit of this activity at the time of the Mahele.

Q. Did you discover any other evidence of the extent of taro growing in the valley during different times in history following the Mahele?

A. Apparently, as an 1896 map (Figure 9) of the lower section of the valley reveals, by then there was a sizable area devoted to rice cultivation, although much of the southeastern portion along Wailuanui Stream remained in taro. This pattern apparently persisted through 1903, according to a similar map of the area (Figure 10). Some of the residents I interviewed indicated that rice was preferred at that period because water temperature was not the crucial consideration as it is for taro cultivation, reflecting a diminished water supply to the valley for irrigation. Chinese farmers grew rice in significant parts of the valley between 1880 and 1927, when the market collapsed because of the competition from California.

A 1936 photograph (Figure 16) shows that a majority of the valley was under taro cultivation, with considerably less tree and bush vegetation than was present in 1994 when I conducted my field research. By 1966, in contrast, while all cultivated areas appeared to be in taro, there is a dramatic increase in forest growth along the periphery of the valley, compared to 1936, as Figures 17 and 18 reveal. Contrasted with current conditions, as depicted in the photographs taken in 2004 and this year in June, it appears that there is now substantially different, as well as fewer, areas of taro lo'i than was being actively cultivated in 1966.

This evidence shows there was apparently a period of decline in taro cultivation in the valley between 1936 and 1966, as well as between 1966 and 1994. However, while to varying degrees, the Wailuanui valley residents, especially Hawaiians, continued a tradition of taro cultivation that continues through the present. This cultural landscape is distinctive in terms of this long tradition, and continues on to this day, reflecting how critical taro production is to this community.

Q. Do you have an opinion as to whether the current taro cultivation reasonably approximates the amount of water used to cultivate taro at the time of the Mahele?

A. Yes.

Q. And what is that opinion?

A. While the rice cultivation earlier last century may have altered some of the pattern of lo'i in the valley, the broad pattern remains since both crops are wetland agricultural products and the irrigation system plays a critical role in their cultivation. The mechanics of irrigation systems must follow gravity. Residences are found on slightly elevated areas at the edges of the fields, not in the center of the lo'i, which would be the low spot and subject to periodic flooding. The roadway network serving these residences skirt the cultivated areas and does not cut into the system of lo'i. This pattern involves frequent tending and fits the horticultural character of Hawaiian agriculture where the cultivated fields are relatively small and are within walking distance of residences. It is a pattern developed before automobiles and mechanized agriculture. The field was central, not the residence. This pattern is found even in areas where residences are not nearby. See, p. 126.

There was far more taro cultivation in the valley in the 1800's than presently. There is also far less water flowing naturally into the valley as a result of the major EMI diversion into the Ko'olau Ditch mauka of Kupau and Akeke Spring. This reduction in taro production is significant compared to historic levels.

Q. On what basis do you make this conclusion?

A. During the fieldwork for this study, which included field trips as well as interviews, it became apparent that the Ke'anae-Wailuanui communities have a long history of small commercial ventures associated with processing and marketing of local taro. Besides the People's Store, which once stood at Ke'anae landing, there were six separate poi mills, each in operation over a different span of time. Each sold local taro processed into poi to the community itself and also exported taro. Taro was exported in two separate directions: to

Hana and to Ha'iku/Kahulu/Wailuku. The Alama Poi Shop operated from the 1920's to the 1950's. The Ching Poi Mill operated in the 1930's through the 1950s, exporting poi to Kahului and Hana. The Ng family operated a mill that exported poi to Hana. The Alu family ran the Kupa'u Mill from the late 1930's to the early 1950's. The Lum Hoy Poi Mill exported poi to Wailuku from the 1930's through the 1940s. The last mill, Ke'anae-Wailua Poi Mill was started in 1975 by Mr. Ed Wendt and operated through 1984. The current level of taro production contrasts sharply with what historic records show.

Q. Do you have an opinion, based on your training, research, and expertise, whether the land uses of Wailuanui residents are linked to Hawaiian cultural mores and practices?

A. Yes.

Q. What is your opinion?

A. The land use patterns of the Ke'anae-Wailuanui region have been shaped by Hawaiian cultural mores and practices. The 'ohana values and practices of the community stress the conservation of natural resources for the benefit of present and future generations. Rules of behavior are based on respect of the 'aina, the virtue of sharing, and a holistic perspective of organisms and ecosystems that emphasize balance and coexistence. The Hawaiian outlook which shapes these customs and practices is lokahi or maintaining spiritual, cultural, and physical balance with nature. In the course of their travels through the various 'ili of the traditional cultural practices region, practitioners of Ke'anae and Wailuanui are able to renew their knowledge and understanding of the landscape, the place names, names of the winds and the rains, traditional legends, wahi pana, historical cultural sites, and the location of various native plants and animals. The region is thus experienced as a part of their 'ohana, necessitating the same care as would a member of their family.

Q. Do you have an opinion, based on your training, expertise, and research, on how important traditional and customary gathering of 'o'opu, 'opae, and hihiwai is to the Hawaiians of Wailuanui?

A. Yes.

Q. What is that opinion?

A. Ke'anae-Wailuanui is one of the few remaining areas in the Hawaiian Islands where 'opae can be gathered. Virtually every stream has 'opae at some time during the year. However, it is easier to gather 'opae in the tunnels of the EMI ditch system. The irrigation ditch itself is an excellent breeding area for the 'opae because it has flowing water year round. Some streams below the ditch, however, don't have enough flowing water to sustain the 'opae year round when the water is diverted into the ditch system. Commercial sale of 'opae is prohibited under a state law that went into effect in 1993. 'Opae is still a popular delicacy among the families in the district. They also gather 'opae to share with family and friends outside and on different islands. 'Opae, the 'a'aniu net used to gather it, and the methods of preparing it will continue to be a distinctive aspect of the cultural lifestyle for which Ke'anae-Wailuanui is known and distinguished.

'O'opu and hihiwai are becoming increasingly scarce in the Hawaiian Islands. Certain species of 'o'opu are endangered and others are rare. They require pristine and flowing stream waters to exist. Ke'anae-Wailuanui is one of the few areas where they still can be found in sufficient size to be occasionally caught for subsistence food.

The gathering of hihiwai is also carefully managed. The location of the hihiwai is knowledge that has been passed down from generation to the next for their protection and proper management. It is not information that is made available to the general public.

Q. What is the geographic range of this gathering activity?

A. Family members of all ages engage in some level of gathering activity in the Ke'anae-Wailuanui district. Kupuna like Helen Nakanelua still go out and gathers 'opae with her homemade 'a'aniu net in the 'auwai that runs through her property at Lakini. Waiokamilo Stream still has 'opae which is accessible to the kupuna. The Ka'auamo family is best known for their traditional and customary gathering activities. Awapuhi Ka'auamo Carmichael still goes out gathering for 'opae, hihiwai, and 'opihi from Kailua and over through Kuhiwa. Awapuhi Carmichael identified some of the area which she regularly accessed for gathering of 'opae, hihiwai, and 'o'opu:

We have our own names. Kapa'ula, gather 'opae. We use Puaakaa, we call it Kaunoa. Above the road, the ditch above the road, we use that stream, and then it branches off. Even Makapipi, we use Makapipi stream. We use all the way to the tunnel. We use it. Kuhiwa gulch is used by our family. Kuhiwa gulch we use also. Makapipi is just mauka. Kuhiwa is mauka.

Gathering from a variety of places is important in order to maintain the resources. The choice of place to gather is determined by the weather and other natural signs. Awapuhi Carmichael described the factors which affected her decision as to where to gather on a particular expedition:

It depends on what we're getting, and how we feel ... We never go to the same place. You know how the Hawaiians used to do, they don't go back to the same place, so can restore. It depends on the weather, and then we go by the moon, the stars. If use one place, then go to another place, depends on the moon and the stars. We go up far ... We all go to the same places, although each of us have our favorite hole, places, where we go for opae, you know. All mauka for 'opae. And then below have the 'o'opu and the prawns, they introduced the prawns, and hihiwai. Above the road is more the 'opae. Above the road is where all the opae are. Above the main highway. And then below the road has hihiwai, 'o'opu, you know.

Within the traditional cultural landscape area for Ke'anae-Wailuanui unoccupied areas with flowing pristine streams and the forested areas are integral to the livelihoods of the families in the district. For example, nobody lives in the area from Wailuaiki to Kopili'ula and over to Hanawi but there are many gulches and streams flourishing with hihiwai and 'o'opu.

Q. What was the importance of subsistence gathering to the health of Hawaiian gatherers who engaged in this traditional activity – historically and in current times?

A. Through subsistence, families attain essential resources to compensate for low incomes. They can also obtain food items, especially seafood, that may be prohibitively costly under a strict cash economy. If families on fixed incomes were required to purchase these items, they would probably opt for cheaper, less healthy foods that would predispose them to health problems. In this respect, subsistence not only provides food, it also ensures a healthy diet.

Subsistence generally requires a great amount of physical exertion (e.g., fishing, diving, hunting) that is a valuable form of exercise and stress reduction and contributes to good physical and mental health. It is also a form of recreation that the whole family can share in. Family



members of all ages contribute at different phases of subsistence, be it active hunting, fishing or gathering or cleaning and preparing the food for eating. Older family members teach the younger family members how to engage in subsistence and prepare the food, thus passing on ancestral knowledge, experience and skill.

Q. What was the pattern of these subsistence activities amongst those traditional and customary gatherers of Ke‘anae-Wailuanui you interviewed?

A. Subsistence gathering, hunting and fishing is an integral part of the lives of the residents of Ke‘anae-Wailuanui. There is general agreement among the informants that their traditional cultural practices region extends from Honomanu in the west to Makapipi in the east and mauka from Pohaku Palaha on the rim of the Haleakala crater makai to the shoreline, and into the ocean as far as the buoy 11 miles offshore. Additional areas are used by residents of Ke‘anae-Wailuanui depending on where their family ancestors originated and established subsistence practices. For example, some families fish and gather as far as Kaupo or as far west as Honopou and mauka to Waikamoi. The location and distribution of water is the primary determinant of the distribution of natural resources. Traditional land use boundaries were defined in relation to the amount and location of water. The change of season from wet to dry does affect the distribution and availability of subsistence resources. When there is a lot of rain, the resources are more abundant and spread out over a larger area. During the dry period, the amount of resources shrink and they are distributed near to water sources.

Most subsistence areas can only be accessed by land through a trail or a dirt road. The Pi‘ilani Trail affords an important route of access between ‘ili along the coastline. The Ke‘anae-Wailuanui residents also use an extensive network of mauka to makai trails to carry out their subsistence activities. Hunters say that one can readily catch a decent sized pig without venturing far up the mountain. However, the network of trails allows access to upper regions where the larger animals roam. Fishing resources vary by ocean depth. Along the rocky shoreline fishermen gather crab, ‘opihi, ha‘uke‘uke, and other shellfish. In the reef, residents gather limu and catch squid, lobster, and reef fish such as ‘uhu, kala, and manini. At greater depths bottom fish are caught such as weke, elm, ‘opakapaka and uku. In the bays, nets are used to surround ‘akule. ‘Aholehole, ‘ama‘ama and uouoa are also caught with gill nets. In the deep ocean and out

to the buoy the fishermen troll for ono, aku, 'ahi, marlin, and mahimahi. Ocean resources are accessed by land through mauka-to-makai trails and along the Pi'ilani Highway. Boats are also used for ocean subsistence activities. The launching areas are Honomanu Bay, Ke'anae Landing, Wailuanui Bay and Hana Harbor.

Resource gathering patterns are also influenced by ho'ailona or spiritual signs in natural phenomena. Ke'anae-Wailuanui residents stay alert to the direction and patterns of clouds, winds, rain, the flight of birds, rainfall and all natural elements to inform them about where the ideal place is to gather on any given day. They also keep track of the moon phases and the effect on the shifts in the tides. Ancestral knowledge of the interpretation of place names in the district also informs Hawaiians about the special features or qualities of that particular area for subsistence and cultural use.

Q. Is this a traditional pattern of subsistence activity?

A. Traditional factors shape the pattern, nature and purpose of the ongoing subsistence fishing, gathering, farming and hunting activities. These include family and ancestral connections to particular features of the landscape; the distribution of water; access; the type of resource to be obtained; the life cycle of that resource; the diet and feeding habits of fauna; the weather and seasonal changes; and ho'ailona. The subsistence activities are also guided by traditional values and customs which include but are not limited to the following:

1. Only take what is needed.
2. Don't waste natural resources.
3. Gather according to the life cycle of the resources. Allow the resources to reproduce. Don't fish during their spawning seasons.
4. Alternate areas to gather, fish and hunt. Don't keep going back to the same place. Allow the resource to replenish itself.
5. If an area has a declining resource, observe a kapu on harvesting until it comes back. Replant if appropriate.
6. Resources are always abundant and accessible to those who possess the knowledge about their location and have the skill to obtain them. There is no need to overuse a more accessible area.

7. Respect and protect the knowledge which has been passed down intergenerationally, from one generation to the next. Do not carelessly give it away to outsiders.
8. Respect each other's areas. Families in Ke'anae-Wailuanui usually fish, hunt, and gather in the areas traditionally used by their ancestors. If they go into an area outside their own for some specific purpose, they usually go with people from that area.
9. Throughout the expedition keep focused on the purpose and goal for which you set out to fish, hunt, or gather.
10. Be aware of the natural elements and stay alert to natural signs, e.g. falling boulders as a sign of flash flooding.
11. Share what is gathered with family and neighbors.
12. Take care of the kupuna who passed on the knowledge and experience of what to do and are now too old to go out on their own.
13. Don't talk openly about plans for going out to subsistence hunt, gather, or fish
14. Respect the resources. Respect the spirits of the land, forest, ocean. Don't get loud and boisterous.
15. Respect family 'aumakua. Don't gather the resources sacred to them.

Q. To what extent, if any, does taro cultivation relate to the traditional and customary gathering of 'o'opu, 'opae, and hihiwai?

A. These native aquatic marine species and taro rely upon pristine, clear, cold, free running streams that flow year round. All of the great historical taro growing areas of Hawai'i rely on pristine streams where native aquatic species thrive – Ke'anae-Wailuanui, Kahakuloa on Maui; Hanalei on Kaua'i; Waipi'o on Hawai'i, the windward valleys of Moloka'i. 'O'opu, 'opae and hihiwai have been a part of the traditional diet of taro farmers in these areas.

Q. Were you able to determine the degree to which traditional and customary gathering of 'o'opu, 'opae, and hihiwai in Wailuanui has changed since the 1890's?

A. Auntie Helen Nakanelua who was 83 in 1994 was born in 1911 and described how she used to go out and gather 'opae with her grandmother who would have been born and learned how to gather 'opae before the 1890's:

And I used to go along with my grandma, with a five gallon can, you know those tall ones, and I pack some wood, and I pack salt, so that whenever my grandma goes with the upena net, do you have an idea what the upena net looks like and they have a little bag there? Some of the bags are small, but she used to have these long bags, and then she cleans that where I am, she takes that out, we clean it and we cook it in this can. Salt it and cook it there, the wood that I take we cook it. And after it's cooked, I begin spreading it on a table oil cloth and a mat I used to pack along and then she leaves me there I attend that opae while it's drying. By the time she comes back here, it's partly dried, I gather that 'opae again, and separate it in another bag, because that's partly dried, and we continue on, she gets another bag to do the same thing, cook, so that by the time she ends up her day, most of the opae, except the last one she has is partly half dried already. Do you know how the upena look like? I show you, cause I have made some for me, because I use it.

Although Auntie Helen continues to gather 'opae, it is not as plentiful as it had been in her youth. An indicator of the decline of 'opae is the passage of a state law in 1993 which prohibits its commercial sale due to its scarcity.

Q. Do you have an opinion as to the importance of the Ke'anae-Wailuanui region to Hawaiian cultural history?

A. Yes.

Q. What is that opinion?

A. The most distinctive historic association of the Ke'anae-Wailuanui landscape is its unbroken relationship to the foundations of Hawaiian culture through the traditional cultivation of taro, the major component of the cultural landscape. The traditional cultural practices region is also significant as a surviving enclave of Hawaiian subsistence, cultural, and spiritual beliefs, customs, and practices. Rural Hawaiian communities like Ke'anae-Wailuanui are cultural kipuka - places where Hawaiians have maintained a close relationship to the land through their livelihoods and customs - that play a vital role in the survival of Hawaiian culture as a whole. There is a growing recognition that protection of the natural resources and the integrity of the lifestyle and livelihoods within rural districts is essential for the perpetuation of Hawaiian culture. However, the survival of these cultural kipuka and the traditions and customs related thereto are continually eroded by an ever increasing lack of water.

Q. Do you have an opinion on how significant the Keʻanae-Wailuanui region is as judged against federal criteria for cultural significance?

A. Yes.

Q. What is that opinion?

A. The Keʻanae and Wailuanui cultural landscape is significant under the four National Register criteria of significance and an additional Hawaiʻi state criterion. Under Criterion A, Keʻanae-Wailuanui is associated with significant events affecting broad patterns of history. The evolution of Hawaiian culture and society in the Hawaiian Islands over the past 1500 years was sustained by highly developed and well-managed systems of wetland taro cultivation. Keʻanae-Wailuanui is an extraordinary example of a highly developed historic Hawaiian wetland irrigation system which sustained the complex social organization and sophisticated customs and practices of the Native Hawaiian culture. The cultural landscape also includes the historic network of irrigation ditches and tunnels which were developed in the late nineteenth and early twentieth centuries. The last completed segment of the Hana Belt Road is also in this cultural landscape.

Under Criterion B, Keʻanae-Wailuanui is associated with events which involved famous people such as the landing of Umi-a-Liloa's war canoes during his 14th century battle over Hana against Hoʻolae-Makua and the staging of the battles between Kalaniopuʻu and Kahekili in the 18th century.

Under Criterion C, Keʻanae-Wailuanui epitomizes the quality and integrity of a historic landscape centered around the historic wetland cultivation of taro. In addition, the 2 churches, its public school facility and the Waikani Bridge are also excellent examples of each of these types of historic architecture.

Under Criterion D, Keʻanae-Wailuanui provides excellent potential to yield information important in the prehistory and history on the origins, chronology and



development of Hawaiian taro cultivation, as well as the complex social structures which both sustained and perpetuated by this kind of agricultural technology.

Q. To what extent are those that now gather and attempt to farm taro in the valley genealogically linked to the Hawaiians that lived in the valley during the 1800's?

A. The informants that I interviewed said that they lived and farmed lands that their ancestors had lived on and farmed in the 1800's.

Q. Do you have any opinion based on your training and education of whether there is any correlation historically between the amount of traditional gathering from the streams and the amount of fish and limu that could be taken from the coastal areas of the valley and the sea for subsistence purposes?

A. Yes.

Q. What is that opinion?

A. The abundance of aquatic and marine resources are dependent upon the pristine, clean, free flowing year round streams flowing into the ocean. The bays where the fresh water mixes into the ocean water are important spawning grounds for the fish. Moki Day, a Hawaiian fisherman from the area, described how the bays are important breeding grounds which deserve protection:

You can consider all the shoreline area between here and Kaupo as breeding grounds for all these shoreline species of fish. They come into our rivers here because we have the fresh water, and they come in here and breed here and lay their eggs here.

According to the late Uncle Harry Mitchell, who had been a long-time resident of the area, the streams and the ocean together provided the breeding ground for 'o'opu. He described the lifecycle of the 'o'opu as follows:

The first heavy rains usually arrived in August or September, carrying the 'o'opu to the ocean where they spawned. Once they laid their eggs, the mother 'o'opu died. The baby 'o'opu, called hinano, would hatch and develop in the salt water from August/September through November. The salt water made them strong

enough to climb up the stream where they would mature. About November, the hinano began to make their way up stream to the large fresh water pools in the mountains. Their migration upstream coincided with the arrival of the migratory birds from the north which fed upon the hinano as they made their perilous journey to the uplands.

Q. Do you have an opinion on how significant the diversion of stream water from Wailuanui Valley by EMI has been on the ability of its residents to continue their tradition of taro growing and gathering from the streams and coastal areas?

A. Yes.

Q. What is that opinion?

A. The diversion of steams in the Ko'olau watershed, via the East Maui Irrigation (EMI) Company system, has reduced the surface water flow in the region mauka of the cultural landscape. The system currently provides most of the irrigation water for central Maui's large-scale agriculture and is the main source for county water supplies to upcountry Maui residents and farmers.

While the degree of reduction has not been quantified, the volumes of water carried by the ditch are significant and impact on the stream ecology in Ke'anae-Wailuanui is probable. Native endemic and indigenous species such as 'o'opu and 'opae and hihiwai are likely to have been affected within the last few generations, with consequent impact on the traditional gathering practices that are part of the local lifestyle. During interviews for the study, some residents expressed concern over the impact of the diversion of water by EMI Co. on the ecology of the region. They also questioned the effects that the EMI diversion may have on the temperature and consistent flow of stream water to taro lands.

Q. Do you have an opinion on what positive steps should be taken to promote the perpetuation of the cultural landscape of Ke'anae-Wailuanui?

A. Yes.

Q. What is that opinion?

A. Provide incentives for taro growing, such as tax relief for parcels used for taro farming. Provide support to the community to maintain the water sources and the 'auwai, such as state and county support to clean and maintain the agricultural irrigation systems. Maintain the Pi'ilani Trail along the shoreline as well as the trails and unimproved roads running makai from the highway to the beach, and the trails and unimproved roads running mauka into the forest reserve should be maintained and their significance in the cultural landscape assessed. The watershed's forest should be protected. Access for cultural, subsistence, and spiritual customs and practices should be afforded to those residents of the community who will maintain traditions of respect and stewardship of the land and water resources. Develop the Ke'anae Arboretum to offer interpretation and education, with emphasis on practical and hands-on experience. Improve lookout points with better paving, approach signage, interpretive signage, landscaping and benches. Preserve and maintain the 2 large heiau and other cultural sites. Document and protect historic taro terraces. Perpetuate significant aspects of the cultural landscape without hampering changes beneficial to the community and its residents.

Q. Are you familiar with crucial definitions of traditional land divisions used by Hawaiians?

A. Yes.

Q. What are the land divisions that were common in delineating the various land uses made by Hawaiians?

A. The traditional Hawaiian land divisions according to Malo (1951:16-18) consist of the following district, subdistricts, land divisions and land parcels:

- island: *Moku-puni* (cut off surrounded).
- Large District: *Apana* (pieces) or *Moku-o-loko* (interior division), e.g. Hana.
- Sections: '*Okana* or *Kalana*, e.g. Honua'ula. [*'Okana* is also a district or sub-district and usually comprising several *ahupua'a*; *Kalana* is smaller than a district (Pukui & Elbert 1971: 113, 258).]
- Subsection within '*Okana*: *Poko*. [Dividing a District, or *ahupua'a* into two or more sections, e.g.: Hamakua *Poko*; Hamakua *Loa*]

- *Ahupua'a*. (running *mauka-makai*, from the mountains to the sea) [a sub-district land division, some contain a few hundred acres, others 10,000 acres, or more]
- *'Ili- 'aina* [*'Ili- 'aina*, a sub-division of an *ahupua'a*; *'ili lele*, a discontinuous *'ili- 'aina*, consisting of two or more parcels of land in the same *ahupua'a* and having the same name]
- *Mo'o- 'aina* [*mo'o- 'aina* is a cultivated garden within an *'ili- 'aina* or *'ili-lele*]
- *Pauku- 'aina* (joints of lands) [*pauku- 'aina* is a land section smaller than a *mo'o- 'aina*]
- *Kihapai* (patches or farms) [dry land garden]
- *Ko'ele* [*ko'ele*, a cultivated garden, the produce of which went to the *ali'i* of the district or island]
- *Hakuone* (land cultivated by 'ohana with crops going to *konohiki*) [produce of which went to chief of the *ahupua'a*]
- *Kuakua* (broad *kuauna* or *kuaauna*, an embankment) [embankments between wet taro gardens, usually cultivated] (Malo 1951: 16-18). Information in brackets [ ] added.

---

Harry Mitchell, April 22, 1988.

### 5.6.7 Lurlyn Scott

#### DECLARATION OF LURLYN SCOTT

##### **Declaration of Lurlyn Scott**

I, Lurlyn Scott, hereby declare that:

1. I am Hawaiian by birth.
2. I am the daughter of the late Marjorie Walleth, and the niece of the late Beatrice Kekahuna, both of whom were original petitioners to amend the interim instream flow standard (IIFS) for Honopou Stream before this Commission in May 2001.
3. I was born on July 2, 1959 in California after my mother left the U.S. Air Force to begin a family.
4. My mother, Marjorie Walleth, was the daughter of Maria Kaehukai Kepani and John Kalia Kaleialoha.
5. The name listed on the current tax map of this area of Honopou, tax map zone 2, section 9, plat 1 is "Elizabeth Kepani."
6. Elizabeth Kepani's husband, Jerry Kepani, is my mother's first cousin.
7. My extended 'ohana has lived in Honopou for many generations and after returning to Maui from California as a young girl, I grew up along Honopou Stream.
8. As a young girl growing up, I both played in Honopou Stream and enjoyed the scenic beauty of the stretches of stream where I swam and played.
9. During my lifetime, my 'ohana gathered 'ōpae, 'o'opu, hihiwai, watercress, medicinal plants, and crayfish from Honopou Stream to supplement our diet.
10. My 'ohana also traditionally gathered rocks for the imu in and around Honopou Stream.



11. Traditionally, my 'ohana fished for āholehole, enenue, po'opa'a, moi, weke, moana, kole, 'opihi, uhu, and honu in or near the stream mouths of Honopou, Punalau/Kolea, Honomanu, Hanawi, and Makapipi.

12. They also gathered limu in and along those coastal areas.

13. My 'ohana would mālama Honopou by cleaning out the hau, only taking what they needed, cleaning limu off rocks, and being aware of the spawning cycle of fish and other creatures.

14. My family also used the stream to wash clothes and soak hau to make rope.

15. I also helped my 'ohana raise kalo in lo'i tended to by my mother and other members of my family and located on the properties designated as TMK 2-9-1-14, being portions of Grant 1082 and 3101:2. LCA 5595E-1, and Grant 1918:1.

16. My mother passed away on April 3, 2010.

17. After her passing, I continued to farm kalo in the Honopou lo'i.

18. My cousins Sanford Kekahuna, Richie and Leilani English, Maudrey English, and various youth groups like Kukulu Kumuhana, Mormon Young Women's Group and the Royal Hawaiian Guard help me work the Honopou lo'i. My cousins Kainani Kaleialoha, Lezley Jacintho and Jonah Jacintho have their own lo'i in the system and have their friends come to work with them.

19. My daughter, Wyonette and her children, and Kainani Kaleialoha and her ohana all reside in homes location on these parcels.

20. My family and I currently gather 'o'opu, crayfish, hihiwai, rocks for the imu, pohole, and ferns for lei making in and around Honopou, Honomanu, Hanawi, and Makapipi Streams.

21. We fish for lobster, enenue, po'opa'a, aholehole, uhu, mullet, and ulua in or near the mouths of Honopou, Honomanu, Hanawi, and Makapipi streams.

22. I gather and fish to perpetuate my cultural food and traditions so my grandchildren will be able to live off the land like our kūpuna did.
23. My family would mālama Honopou by cutting back the hau, trying to regulate shoreline fishing, and breaking apart dams built by other people.
24. We also swim, cliff dive, and enjoy the tranquility at Honopou, Honomanu, Hanawi, and Makapipi after a hard day at work.
25. Our children and grandchildren learned to swim at Honopou.
26. I like hearing and seeing the natural flowing streams at Honopou, Honomanu, Nuailua, Pi'ina'au, Palauhulu, Waiokamilo, Hanawi, and Makapipi.
27. Attached as Exhibit "A-149" is a schematic drawing of the various kalo lo'i that my 'ohana has collectively tended over the decades I have witnessed kalo farming on these properties (hereafter, "Honopou lo'i").
28. Included on Exhibit "A-149" are arrows which depict the direction of water flow passing through the various designated lo'i.
29. I certify that the layout of the Honopou lo'i, albeit not to scale, and direction of water flow is truly and accurately depicted in Exhibit "A-149".
30. I estimate that the land area covered by the Honopou lo'i is about one acre.
31. On September 25, 2008, the Commission on Water Resources Management voted to amend the IIFS for Honopou by establishing a flow of 2.0 cubic feet per second (cfs) at Station A.
32. Station A is located about a half mile below the lowest EMI dam on Honopou Stream, known as "Haiku Dam."
33. Attached as Exhibit "A-151" is an aerial photograph of the Honopou drainage basin, which truly and accurately reflects the location of Station A, which is where the

amended IIFS for Honopou stream is measured, and the USGS metering locations that once measured flow and temperature readings of water flow into and out of the Honopou lo'i.

34. When the CWRM amended the IIFS for Honopou Stream to 2.0 cfs at Station A in Exhibit "A-151" in September 2008, I elected not to appeal the decision, although I had reservations about whether this amount of flow would be sufficient to support the kalo cultivation on the Honopou lo'i, the gathering of o'opu, opae, and hihiwai, and fishing along the mouth of the stream at the coastline.

35. After consulting with attorneys for my mother and aunt, we decided not to appeal the September 2008 CWRM decision because it specifically incorporated an Adaptive Management Strategy (AMS).

36. As a result of the amended IIFS, I looked forward to monitoring the work of EMI workers who installed modifications to the Haiku Dam to supposedly allow more water to pass over that dam to meet the amended IIFS.

37. With great optimism, in 2009-12, I witnessed CWRM and USGS staff periodically install, and download raw data from, instruments at Stations A and B on Honopou Stream in what appeared to be a sustained effort to monitor and enforce stream flow compliance with the amended IIFS established in 2008.

38. I also witnessed USGS staff from Maui separately installed metering in and around the Honopou lo'i at strategic spots to monitor the temperature and flow of the water we diverted from, and later returned to, Honopou Stream.

39. The metering of water temperature and flow *in real time*, apparently through a satellite upload to the USGS website, was especially useful.

40. Access to this metering data, especially the real time information, provided valuable objective information on whether my 'ohana was getting adequate water to irrigate our kalo.

41. In March 2009, I witnessed EMI workers cooperating with CWRM staff to install modifications to the Haiku Dam at Honopou Stream to allow more water to bypass the diversions at that dam.

42. One of the major modifications included a metal bypass flume installed on top of the cement grate feature of the Ha'iku Dam to allow a limited amount of additional stream water to pass over this diversion structure.

43. Attached as Exhibit "A-146" is a photograph taken on March 23, 2009, which I took the day EMI workers installed that metal flume over the Haiku Dam.

44. Despite the collection of stream flow data since the IIFS for Honopou was amended in 2008, I have been supplied with flow measurements for Honopou only sporadically when my attorneys asked CWRM staff for them.

45. The CWRM has not provided me regular or reliable access to flow measurements, either online or by other means of communication.

46. I learned of flow measurements only through my attorneys at NHLHC.

47. I have only recently been made aware that the CWRM staff presented its flow data to the CWRM.

48. Attached as Exhibit "A-145" is a true and correct copy of September 24, 2009 update, which I downloaded from the CWRM website.

49. As shown in Exhibit "A-145", the AMS adopted by the CWRM appeared to protect my interests in restoring flow to Honopou Stream, and I looked forward to "[c]ollaborat[ing] with agency staff and registered diversion owners to determine appropriate actions," as stated on page 12 of Exhibit "A-145."

50. In addition, as the graphic on page 11 of Exhibit "A-145" indicates, the AMS process allowed for continuous adjustments based on the CWRM staff's ongoing monitoring

and evaluation, enabling the CWRM to revise the IIFS to address the needs of kalo farmers, cultural gatherers and people who fish.

51. I sincerely believed and relied on CWRM's pledge that the AMS was the key to restoring stream flow where conditions and needs required it and that the CWRM would finally and timely meet the needs of kalo farmers, cultural gatherers, and fishermen.

52. As indicated on page 16 of Exhibit "A-145," EMI diverts water from Honopou Stream at 4 elevation levels with the Wailoa, New Hamakua, Lowrie and Haiku ditches.

53. As shown on page 20 of Exhibit "A-145," EMI failed to abide by the amended IIFS (2.0 cfs @ Station A) for all of the field measurements recorded between October 2008 and July 2009 during the initial implementation phase.

54. Despite the stream channel modifications installed after the 2008 IIFS amendment, I experienced low flows to the Honopou lo'i cultivated by my 'ohana.

55. Since the 2008 IIFS amendments for Honopou Stream, I have not been able to cultivate all 30 lo'i shown in Exhibit "A-149", because there is inadequate stream flow in Honopou to support all the kalo I and my 'ohana could otherwise plant and grow successfully without experiencing harm to our kalo crop from the lack of stream flow.

56. Without adequate stream flow we could otherwise tap to irrigate more kalo, we were forced to reduce the amount of kalo planted in the Honopou lo'i and the dry cracked lo'i that I saw in the summer of 2009, as depicted in Exhibit "A-147".

57. Unfortunately, apparent funding shortages began to affect my ability to access the real time metering by the USGS in and around the Honopou lo'i after I have begun downloading important objective evidence of the shortage of irrigation water negatively affecting by kalo.

58. Ultimately, when the USGS staff removed gauging stations that it had previously installed at strategic points on or near the Honopou lo'i due to lack of funding, I



lost access to important flow and temperature data being recording in real time at the intake to the Honopou lo'i and the outflow from that lo'i system.

59. Before the removal of these meters, working with my attorneys, I was able to download various graphs depicting the water flow and temperature into, and the outflow from, the Honopou lo'i at various times between November 2008 and 2010, all of which is attached as Exhibit "A-150".

60. Attached as Exhibit "A-148" is a video which truly and accurately depicts the amount of water that flows past the Haiku Dam, as a result of the modifications undertaken in 2010 to meet the 2008 IIFS amendments for Honopou Stream, and the amount of water that continues to fall into the diversion ditch at that point.

61. The Haiku Ditch transports those diverted water to points northwest to irrigate Hawaiian Commercial and Sugar fields in Central Maui.

62. As shown in Exhibit "A-148," I estimate that, in 2014, despite the Haiku Dam modifications, EMI still diverts over 80% of the Honopou stream flow at Haiku dam.

63. The restoration of natural flow to Honopou Stream would enhance kalo cultivation in the Honopou lo'i, the gathering of o'opu, opae, and hihiwai in Honopou Stream, and fishing along the mouth of the stream at the coastline.

64. Also, during summer months, we have stagnant, smelly water that is not useable for domestic use.

65. In addition, from 2009 through 2014, although i repeatedly reported to the CWRM staff members that I was not receiving sufficient flow to irrigate the Honopou lo'i, I did not see the staff attempt to increase stream flow as a remedy to my problems.

66. If there was enough water in the streams, I would grow more kalo, raise watercress, gather 'o'opu, crayfish, hihiwai, rocks for the imu, pohole, and ferns for lei making in Honopou, and fish for lobster, enenue, po'opa'a, aholehole, uhu, mullet, and ulua in or near the mouths of Honopou, Honomanu, and Makapipi.

67. If water were put back in the streams, I would mālama the streams the same way I do now.

68. I would also clean the muliwai, move rocks for better flow, and observe ancient fishing practices at Honopou.

69. If there was more water in the streams, I could swim and enjoy Honopou recreationally all year round.

70. I would also get to enjoy watching the ulua go upstream, smelling the clean breeze, hearing the water flowing, and watching for 'o'opu.

71. If there was more natural flow restored to Honopou Stream, I would be better able to teach the opio of my 'ohana and others in my community how to mālama the kahawai, perpetuate the traditions and customs of my ancestors and enhance our food security for future generations.

DATED: Honopou, Maui, HI, December [16], 2014.

---

*[Lurlyn Scott]*

Lurlyn Scott

**5.6.8 Earl Smith, Sr.****DECLARATION OF EARL SMITH, SR.**

I, Earl Smith, Sr., declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I live in Kaupō.
4. My family has about four to five acres of on property irrigated by Waiokamilo Stream. Not all of our lo'i are open because there is not enough water.
5. Traditionally, my family gathered 'ōpae, 'o'opu, and hihiwai from Hanawi, Makapipi, and One'o streams.
6. My family also traditionally fished along the East Maui shoreline near the mouth of Honopou, Hanehoi/Puolua, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.
7. Traditionally, my family engaged in mālama 'āina and mālama kahawai in the above streams by only taking what they needed for their 'ohana and to share with family and neighbors.
8. Currently, my 'ohana gathers 'ōpae, hihiwai, and 'o'opu in Hanawi. It's the only place where I can find these living things. The other streams are dead.
9. Currently, my 'ohana fishes for moi, aholehole, manini, and eneneue along the East Maui shoreline near the mouth of Honopou, Hanehoi/Puolua, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West

Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. There has been a depletion of fish. Enenue used to be there by the schools but now there are less. Only the strong survive.

10. My family also practices mālama 'āina/mālama kahawai in and around the above streams by only taking what we need, not to sell. I work with marine biologists so the scientists can survey/research environmental impacts and depletion of resources from Hana to Keanae. I also plant native plants.

11. I gather and fish for home consumption and to share if I have more than enough. I also gather and fish to teach my kids and grandkids how to live off the land and sea (fishing, gathering, hunting) to survive after I'm gone.

12. In the past, my family used to wash clothes and swim in the stream.

13. When I go to the streams, I take in the beauty. I don't alter what's there, what's beautiful. The way it was, that's the way I leave it.

14. The lack of stream flow is a problem for me because my grandkids don't have the experience or resources to gather what they need from the land and water. The lack of water has caused too much pilikia. When nobody cares, nobody understands our practices and our need to harvest. It pains me. It's very emotional.

I declare under penalty of perjury that the foregoing is true and correct.

EARL SMITH, SR.

### 5.6.9 Ty Kāwika Tengan, PhD

#### DECLARATION OF TY KĀWIKĀ TENGAN, PhD

1. I am competent to testify to the matters herein, and unless otherwise indicated, I make this declaration based upon my personal knowledge, skill, experience, training and education.
2. I am a Native Hawaiian, born into a family with strong genealogical ties to our Hawaiian ancestors. Native Hawaiian custom and religion was and is an integral part of my family's daily life.
3. Today, I am a practitioner and a scholar of Native Hawaiian cultural and religious practices. I speak the Hawaiian language fluently.
4. In 2003, I received a PhD from the Department of Anthropology at the University of Hawai'i at Mānoa.
5. Currently, I am the Chair and Associate Professor of the Department of Ethnic Studies and also Associate Professor of the Department of Anthropology at the University of Hawai'i at Mānoa.
6. Through practice, community service, the writing of books, journal articles, and reports, I have dedicated my academic career to the study of Native Hawaiian culture and religion. Attached hereto as Exhibit A is a copy of my recent curriculum vitae.
7. My opinions in this Declaration are based upon my personal knowledge, skill, experience, training, and education.
8. Further some of my opinions in this Report are based upon the following source material: Alexander, W.D. *A Brief History of Land Titles in Hawai'i* (1882); Handy, E.S. Craighill, *Hawaiian Planter* (1940); Handy, Handy, & Pukui, *Native Planters* (1972); and Maly, Kepa, *VOLUME I Wai O Ke Ola: He Wahi Mo'olelo No Maui Hikina. A Collection of Native Traditions and Historical Accounts of the Lands of Hāmākua Poko, Hāmākua Loa and Ko'olau, Maui Hikina (East Maui), Island of Maui* (2001).



9. I have reviewed the witness statements of Edward Wendt, Lezley Jacintho, and Terrance P. Akuna provided to me by the Native Hawaiian Legal Corporation.
10. I do not have a personal or familial relationship with any of the named Petitioners in this case.
11. Petitioners have neither paid me nor promised any compensation for my opinions or testimony in this matter.
12. On or about December 4, 2007, I testified as an expert witness at a State of Hawai'i administrative hearing before the Commission on Water Resource Management for the State of Hawai'i in "RE Iao Ground Water Management Area High-Level Source Water Use Permit Applications and Petition to Amend Interim Instream Flow Standards of Waihe'e, Waiehu, Iao, & Waikapu Streams Contested Case Hearing," Case No. CCH-MA-06-01.
13. In general, Native Hawaiian spiritual tenets and beliefs are expressed and perpetuated in their relationship to each other and to their *kulāiwi* (native land). The naming of winds, rains, landmarks, and waters perpetuate the traditional knowledge that the inhabitants developed of these areas and their resources over centuries of cultivation and habitation.
14. The first inhabitants of the islands were remembered as akua "gods" for their capacity to endow nature with cultural features and "create" society.
15. Kāne and Kanaloa were two of the four primary akua in the Hawaiian pantheon; Kāne was associated with fresh water and taro, and Kanaloa with the ocean and fishing. Wai, fresh water, is an important element in Hawaiian spirituality and fundamental to the exercise of traditional and customary practices. Fresh spring water is presented as ho'okupu to the akua (gods). Kāne and Kanaloa are known to have introduced the ritual, social, and medicinal use of drinking 'awa (kava), a drink that requires the waters of Kane.
16. Handy, Handy, and Pukui (1972) described the correlation between water and life in Hawai'i:

...The life of taro was dependent upon water. In his role as life-giver, Kane the procreator was addressed as Kane-of-the-water-of-life (Kane-ka-wai-ola). Water (*wai*) was so associated with

the idea of bounty that the word for wealth was *waiwai*. And water rights were the basic form of law, the Hawaiian word for which was *ka-na-wai*, meaning “relative to water...”[1972:19] [cited in in Maly (2001:21)].

17. East Maui was historically divided into 8 moku or districts, all meeting at a large rock on the northeast brink of the crater of Haleakalā, called Palaha. Alexander (1882:175-76).
18. The 27 streams from Honopou to Makapipi fall into the moku of Hāmākualoa and Ko‘olau. The two moku are both included in the larger region known as known as Maui Hikina, East Maui, each having unique characteristics. Lyons (1875) and Coulter (1935) as cited in Maly (2001:7).

## HĀMĀKUALOA

19. Hāmākualoa is characterized by numerous minute ahupua‘a which indicate a dense population once settled there. Handy (1940: 109).
20. J. Waiamanu, recounts the story of Kāne and Kanaloa (or Kāneloa, in this version) in *Ka Ho‘omana Kahiko*, Ka Nupepa Kū‘oko‘a, January 19, 1865 in which Kāne and Kanaloa sailed to Maui and drank ‘awa in Hāmākua. Because there was no water, they caused fresh water to flow which was called “ka wai a Kaneloa” (the water of Kāneloa). The actual location of this spring, Kaneloa, is unknown today. Maly (2001:21).
21. Hāmākua loa is described as follows by firsthand accounts during the 1930s-1950s after the water diversions were in place:

Two kama‘aina at Ke‘anae said that there were small lo‘i developments watered by Ho‘olawa, Waipi‘o, Hanehoi, Hoalua, Kailua, and Na‘ili‘ilihaele Streams, all of which flow in deep gulches. Stream taro was probably planted along the watercourses well up into the higher kula land and forest taro throughout the lower forest zone. The number of very narrow ahupua‘a thus utilized along the whole of the Hamakua coast indicates there must have been a very considerable population. This would be despite the fact that it is an area of only moderate precipitation because of being too low to draw rain out of trade winds flowing down the coast from the rugged and wet northeast Ko‘olau area that lies beyond. It was probably a favorable region for breadfruit, banana, sugar cane, arrowroot; and for yams and ‘awa in the interior. The

slopes between gulches were covered with good soil, excellent for sweet potato planting. The low coast is indented by a number of small bays offering good opportunity for fishing. The Alaloa, or “Long-road,” that went around Maui passed through Hamakua close to the shore, crossing streams where the gulches opened to the sea.[Handy et. al. 1972:502] [as cited in Maly (2001:8) (emphases in Maly)].

22. Native testimony indicates “there are many lo‘i [in Honopou].” *Ibid.* at 120-21, 125, 129, 194, 201. *See also ibid.* at 104, 106, 127, 130, 135, 203, 205-06, 208-10, 212, 214, 220, 225-26.
23. The famous Alaloa or Alanui that circled the island was created by the high chief Kiha-a-Pi‘ilani (or Kihapi‘ilani) after securing his rule over Maui. In *Ka Nupepa Kuokoa*, August 23, 1884, Moses Manu related that after paving sections of the trail in different parts of the island, Kihapi‘ilani “began the paving in the forest of ‘O‘opuloa [i.e., ‘O‘opuola], at Ko‘olau, extending from Kawahinepe‘e to Kaloa, then on to Pāpa‘a‘ea, and on to Ka‘ohekanu at Hāmākua Loa” (translation and emphasis by Maly (2001:27). Abraham Fornander (1996:206) also noted that Kihapi‘ilani “kept peace and order in the country, encouraged agriculture, and improved and caused to be paved the difficult and often dangerous roads over the Palis of Kaupo, Hana, and Koolau—a stupendous work for those times, the remains of which may still be seen in many places, and are pointed out as the “Kipapa of Kihapiilani” (cited in Maly (2001:28)). The trail was significant because it created an interconnected cultural and historical landscape where customary practices of gathering, farming, exchange, and travel could be conducted from Hāmākua Loa to Ko‘olau and beyond.

## KO‘OLAU

24. The Ko‘olau region of Maui has been described as the “wettest coastal region in all the islands.” Handy, Handy, & Pukui (1972:498) as cited in Maly (2001:8).
25. “Oopuola Gulch marked the northwestern boundary of Ko‘olau. Its stream, and likewise Waikamoi, Puohokamoa, and Haipuaena streams watered small patches.” Handy (1940:109).
26. Handy, Handy, and Pukui (1972:272) reported that “On the northeast flank of the great volcanic dome of Haleakala...the two adjacent areas of Ke‘anae and

Wailua-nui comprise the fourth of the main Maui centers and the chief center on this rugged eastern coast. It supported intensive and extensive wet-taro cultivation. Further eastward and southward along this windward coast line is the district of Hana, the fifth great center[.]” As cited in Maly (2001:7).

27. For generations following initial settlement, communities were clustered along the watered, windward (ko‘olau) shores of the Hawaiian Islands. Along the ko‘olau slopes, streams flowed and rainfall was abundant, and agricultural production became established. The ko‘olau region also offered sheltered bays from which deep sea fisheries could be easily accessed, and near shore fisheries, enriched by nutrients carried in the fresh water, could be maintained in fishponds and coastal fisheries. It was around these bays that clusters of houses where families lived, could be found, and in these early times, the residents generally engaged in subsistence practices in the forms of agriculture and fishing. Handy, Handy, and Pukui (1972:287) cited in Maly (2001:6).
28. Waikamoi, Puohokamoa, and Haipuaena watered small lo‘i areas. *Ibid* at 9.
29. “Honomanu, a large stream with a broad deep valley at its seaward end and a good beach for fishing canoes and gear, facing its broad bay. Anciently Honomanu supported a large population. Old terraces run back into the valley as far as the level land goes[.]” *Ibid*.
30. Just beyond Honomanu is Nu‘uailua [Nu‘a‘ailua], flat bottomed like Honomanu but smaller. Terraces cover the flatlands and much taro was formerly raised, watered by an ample stream; but the valley has long been uninhabited.” *Ibid*.
31. Ke‘anae “is a unique wet-taro growing ahupua‘a.” *Ibid*. at 9. “It is on the broad flat peninsula of lava extending for about a half a mile into the sea from the western line of the valley that Ke‘anae’s famed taro patches are spread out -- striking evidence of old Hawaii’s ingenuity.” *Ibid*.; *see also ibid*. at 137, 139-40, 145-46, 251, 254, 271, 273, 281-86, 288, 289.
32. In *Ka Nupepa Kuokoa*, dated October 4, 1923, Mrs. Annie Kalau related a visit to Maui Hikina wherein her hosts took her to Waianu at ‘Ōhi‘a and told her a story of how Kane and Kanaloa used their spears to cause fresh water to flow for their ‘awa; these waters irrigated lo‘i in this valley at the time of her visit.

33. Beyond Ke‘anae “is a sizable bay formed by erosion where three streams flow into the ocean....About half the gently sloping land seaward of the cliff was terraced with lo‘i which were watered by Wailuanui (Big Wailua) Stream, the larger of the three that flow into the bay....And on high ground there was a war temple” Maly (2001:0). “Wailua has been notable for its continued occupancy and cultivation by Hawaiian families.” *Ibid.*; see also *ibid.* at 137, 142-44, 150- 52, 154-56, 241-44, 246-51, 257, 277-79, 283, 291.
34. Beyond Wailuanui “there are a succession of small deep gulches, each one having a few lo‘i: East Wailuaiki and West Wailuaiki (Little Wailua), Kapili‘ula [Kopili‘ula], Waiohue, Pa‘akea, Kapa‘ula, Hanawi. Then comes Nahiku, a settlement spread over gently rising ground above the shore, with a number of groups of lo‘i watered from Makapipi Stream.” *Ibid.*
35. In his 1861 story of the pig god Kamapua‘a, published in *Ka Hae Hawaii*, G.W. Kahiolo noted that Wailuaiki was the home of the goddess Kapoma‘ilele, the sister of Pele who distracted Kamapua‘a with her flying genitals, luring him to Maui. *Ibid* at 23.
36. The legendary story of Laukaieie as told by Moses Manu in *Nupepa Ka Oiaio* (1894-1895) provides an abundance of rich cultural information about the Ko‘olau-Hāmākua region and its traditional and customary practices. Some activities include (starting in Nāhiku and going to Ho‘olawa, adjacent to Honopou): harvesting lū‘au of the god at Nāhiku; seeing the kalo that grew on the cliffs of Hanawī and watching a man carry a large taro there; walking on a path at Waiohue; passing the point of Kamokupeu which is a hula‘ana (trail that crosses the water between two points of land); watching noio birds, finding a kū‘ula i‘a (fishing shrine) at ‘Ohea cliff; seeing the famed kala fish outside of the point of Mokumana at Pauwalu; passing Kaliae and its renowned winds; traveling to Wailuaiki famed in song where one can see women going to the shore of Kapilikaunoa; gathering awa and ‘anae fish at Wailuaiki from a fishpond made by Kāne; seeing the stone body of the supernatural octopus Hā‘aluea off the landing of Wailuanui;



arriving at the muliwai of Wai'ōlohe at Ke'anae; finding a nearby cave that ran to the uplands of Kūō; visiting a pond mauka of Puhipinao where the prophet shark Hi'u was born; glimpsing Kahekili's leaping place of Pu'ukanohua; entering a cave at Kawahinepe'e that led to Waikamō'i stream and 'O'opuola, where slept the supernatural 'o'opu Ka'o'opili; viewing a carved stone in a cave flanked by ti plants at Maka'iwa; reaching Hawini to gaze at the cove of Holawa (Ho'olawa). Maly (2001 :34-36). What emerges from this journey is the significance of pathways, those on land or sea, through caves or streams, for connecting the gods, land, and people in an integrated cultural landscape. At the core of this, free flowing water is central for creating abundance, life, and growth in the region.

37. Today the importance of water to the perpetuation of Hawaiian culture and tradition is echoed in the following witness statements: "Without the water, my whole way of life would be lost," Edward Wendt, par. 20, "Spiritually, we are connected to the water. Water is life. Without water we will not be." Lezeley Jacintho, par. 24, and "If there is no water, there is no life." Terrance P. Akuna, par. 18.
38. Fresh water is essential to the perpetuation of Native Hawaiian traditional customary practices. The return of streamflows will support the regeneration of the land and people.

I declare under penalty of perjury that the foregoing is true and correct, to the best of my knowledge, information, and belief.

---

*[Ty Kāwika Tengan]*

TY KĀWIKĀ TENGAN, PhD.

**5.6.10 Edward Wendt**DECLARATION OF EDWARD WENDT

I, Edward Wendt, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am the president of Nā Moku Aupuni O Ko'olau Hui.
4. I am a taro farmer. I farm kalo on more than one acre of land irrigated by Waiokamilo, Kualani, and Wailua.
5. My family has been in Wailuanui for six generations. I still farm on lands that trace back to the Māhele on my mother's side (Kaiha'a-Waila'ahia-Lu'ukia). I farm the same taro patches, 'auwai, and rivers in the same traditional and customary manner. That knowledge was passed on to me through the generations.
6. My ancestors are buried in Lakini and at St. Gabriel's Church located in Wailuanui.
7. Traditionally, my family gathered 'ōpae, 'o'opu, and hihiwai from Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.
8. My family also traditionally fished for uhu, u'u, kole, ulua, 'uku, kumu, moi, honu, and anae in or near the mouth of Honopou, Hanehoi/Puolua, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ohi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.
9. Traditionally, my family engaged in mālama 'āina and mālama kahawai by being careful not to overharvest the stream animals as well as clearing the vegetation or rubbish blocking stream flow in and around Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, Waiokamilo, Kualani, Wailua, Waikani

(Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.

10. Currently, I gather 'o'opu and hihiwai in Honomanu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Hanawi, Makapipi, and Waiohue. I also fish for moi, enenue, manini, uaouao, ulua, and anae in or near the mouth of Honomanu, Nuaailua, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Hanawi, Makapipi, and Waiohue.

11. I also engage in mālama 'āina and mālama kahawai by clearing stream banks of vegetation and rubbish that otherwise block stream flow in and along Honomanu, Piinaau, Palauhulu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Hanawi, and Waiohue.

12. For me, gathering and fishing from the streams enables me to provide a protein source to my 'ohana and neighbors, including kupuna, who may be unable to gather and catch their own fish. I also aim to teach the 'ōpio the traditional practices to mālama streams and gather and fish from the streams and coast lines.

13. I appreciate viewing and visiting Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, and East Wailuaiki. Every morning, my wife and I walk up to Waikani (Wailuanui) waterfall to enjoy the view and experience the beauty of this area.

14. Dewatering the streams prevented my generation from teaching 'ōpio how to mālama streams and use techniques wisely to gather from streams and fish along coastline near the muliwai.

15. The diminished stream flow has negatively affected the muliwai and the coastal fisheries, including a fish sanctuary in Hana that depends on the water. Much of my kalo could not survive the emptying of these streams, so it has made farming more difficult. The lack of stream flow has also allowed vegetation along the stream banks to block the stream beds, and has permitted invasive snail species and African tulips to take over the taro crop. Additionally, some of my neighbors have abandoned kalo farming because the streams had stopped flowing. Ultimately, the loss of stream water has changed the whole way of life

in Wailuanui-Ke‘anae. It takes more time to find the resources to gather, which robs me of my time for recreation and time with my ‘ohana.

16. If there was enough water in the streams, I would gather and fish as my family before me did. I would gather ‘ōpae, ‘o‘ōpū, and hihiwai from Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, ‘Ōhi‘a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. My family would fish for uhu, uu, kole, ulua, ‘uku, kumu, moi, and honu (if it were legal, of course) in or near the mouths of Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Hanawi, and Waiohue.

17. If there was more water in the streams, I would continue to clear stream banks of the vegetation and rubbish that would otherwise block stream flow.

18. If water was returned to the streams, I would appreciate viewing and visiting Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuailua, Piinaau, Palauhulu, ‘Ōhi‘a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.

19. Many original members of Nā Moku have died since we first petitioned for the return of water to these streams. It makes me sad and lose hope. They never lived to see the water return to the lo‘i in 2008. I am afraid I will not live to see the return of the water we are now fighting for.

20. Without the water, my whole way of life would be lost. Corporations last forever. Traditional people do not. Crown lands should be set aside for the benefit of the people.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Honolulu, Hawai‘i, HI, September 10, 2014.

---

*[Edward Wendt]*

EDWARD WENDT

**5.6.11 Emily Wendt**DECLARATION OF EMILY WENDT

I, Emily Wendt, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I was born April 7, 1925 in Hana.
4. My parents were James Akiona and Ellen Higgins.
5. My family consisted of my parents, five brothers and three sisters.
6. I was the fourth born of the family.
7. Until 15 years old, from 1925 through 1940, I lived in a house in Keanae peninsula.
8. Thereafter, my family sent me to Maunaolu Seminary, where I boarded and received my education until the 10<sup>th</sup> grade.
9. While going to school, I visited Wailuanui periodically to visit and stay in touch with my 'ohana.
10. I got married to Donald Wendt and raised my family of five children in Kahului, where I still reside.
11. During the years I was raising my children, my husband and I visited Wailuanui-Keanae as frequently as weekly.
12. My grandmother, Helena Akiona, who used to live at Lakini, is still buried at St. Gabriel's Church located in Wailuanui.
13. My father died when I was nine years old.
14. When I was between the ages of 10-13, I and my older cousin, Dorothea Lum Ho, who taught me how to gather, would gather 'ō pae, 'o'opu, and hihiwai from Palauhulu, Waiokamilo, Kualani, Hanawi, Wailuanui Streams.
15. My family also traditionally fished for popa'a, hinale'a, and kupipi from the shoreline near the mouths of West Wailuaiki and Wailuanui Streams.



16. My brother Jimmy, who was my senior by six years, would bring me by canoe to the shoreline near the muliwai of Wailuanui, Kopiliula, and Waiohue Streams to swim and pick opihi. He taught me the most about how to fish and gather.

17. My father, uncle, brothers and cousins also shared and supplied the family with u'u, enenue, kole, ulua, kumu, moi, honu, aholehole and anae, which they fished in or near the mouth of Wailuanui and West Wailuaiki.

18. My family raised pigs, chicken, and cattle while I was growing up in Keanae.

19. My brother Jimmy and I helped raise and brand pipi in our back yard

20. For me, gathering and fishing from the streams and coastlines near streams was a very important food source to my 'ohana. In fact, most of the food we ate came from what my 'ohana fished, gathered or raised.

21. I recall my relatives, the Akinas, Nakaneluas, and Ka'auamos, as well as my neighbors, all raising taro in Wailuanui and Keanae valleys as the staple for our diets.

22. Many of these families pounded their own poi, as I was taught to do when I was old enough.

23. When my father typically went shopping for food, he only purchased a few items, like sugar, cream, rice, and cookies.

24. The rest of our diet came from what we raised, fished and gathered.

25. As a youth in Wailuanui-Keanae, my 'ohana lived a very basic life living off the land and sea.

26. As I was growing up in Wailuanui-Keanae, I was not aware of any complaints against East Maui Irrigation Company about how much water was available in the lo'i and auwai of the valleys.

27. To this day, my nephew Norman Akiona and son Ed catch fish like papio, enenue, pala, manini, and kole from the Wailuanui-Keanae area for me to eat.

28. It makes me sad and lose hope when I see so many original members of Nā Moku who have died since we first petitioned for the return of all water to these streams; water that would support more taro growing, gathering, and fishing along the mouths of those streams.

29. I do not understand why Nā Moku members who started in 2001 have had to wait so long for the return of the water.

30. I think the priority should be to leave water in East Maui streams so the people who used it traditionally can continue to survive like my ‘ohana used to be able to do.

31. To me, I don’t know why Hawaiian Commercial and Sugar insists on diverting water that is so important to Hawaiian traditions and customs.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Kahului, Maui, Hawai‘i, December 17, 2014.

---

*[Emily Wendt]*

EMILY WENDT

## Section 6 Traditional Cultural Practices

---

Timothy R. Pauketat succinctly describes the importance of traditions, especially in regard to the active manifestation of one’s culture or aspects thereof. According to Pauketat,

People have always had traditions, practiced traditions, resisted traditions, or created traditions . . . Power, plurality, and human agency are all a part of how traditions come about. Traditions do not simply exist without people and their struggles involved every step of the way. [Pauketat 2001:1]

It is understood that traditional practices are developed within the group, in this case, within the Hawaiian culture. These traditions are meant to mark or represent aspects of Hawaiian culture that have been practiced since ancient times. As with most human constructs, traditions are evolving and prone to change resulting from multiple influences, including modernization as well as contact with other cultures. It is well known that within Hawai‘i, a “broader ‘local’ multicultural perspective exists” (Kawelu 2015:3) While this “local” culture is deservedly celebrated, it must be noted that it has often come into contact with “traditional Hawaiian culture.” This contact between cultures and traditions has undoubtedly resulted in numerous cultural entanglements. These cultural entanglements have prompted questions regarding the legitimacy of newly evolved traditional practices. The influences of “local” culture are well noted throughout this section and understood to represent survival or “the active sense of presence, the continuance of native stories, not a mere reaction, or a survivable name. Native survivance stories are renunciations of dominance, tragedy and victimry” (Vizenor 1999:vii). Acknowledgement of these “local” influences helps to inform nuanced understandings of entanglement and of a “living [Hawaiian] contemporary culture” (Kawelu 2015:3). This section strives to articulate traditional Hawaiian cultural practices practiced within the *ahupua‘a* in ancient times, and the aspects of these traditional practices that continue to be practiced today; however, this section also challenges “tropes of authenticity” (Cipolla 2013) and acknowledges the multicultural influences and entanglements that may “change” or “create” a tradition.

This section integrates information from Section 1.4 and Sections 3-5 in examining cultural resources and practices identified within or in proximity of the License Area in the broader context of the encompassing East Maui landscape. Excerpts from interviews and declarations that were given in 2014 as part of the contested case on the Petition for IIFS are incorporated throughout this section where applicable.

The following subsections are also supported by a qualitative and quantitative analysis, as depicted in Table 13 and Table 14. The following analyses provide a tabulation of cultural resources, practices, and beliefs that were discussed via approved interviews and the declarations that are part of the public record in the CWRM proceedings.

Table 13. Tabulation of Cultural Practices Via Approved Interviews and Declarations

| Cultural Practice        | Area / Location   | Declarant/Interviewee Comments   | Tally of People/Mentions |
|--------------------------|---|--|--------------------------|
| <b>Farming/Gardening</b> |   |  |                          |
| Farming, generally       | Honopou, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili'ula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue) | More water would improve ability to better garden and farm, follow traditional lifestyles  | 14                       |
| Kalo farming (wet land)  | Wailuanui, Ke'anae, Honopou, Waianu Valley, Lakini, Waiokamilo  | Water level/flow/velocity, invasive pests (apple snails, feral pigs), temperature all decrease yield and increase rot and disease (e.g., "guava seed"); 'auwai can become clogged affecting the above; families unable to continue selling <i>poi</i> must find other work; more flow requires less cleaning; competition between farmers; more water, less worry; from an O'ahu based community member who has conducted research in East Maui: "Ke'anae-Wailuanui is a viable traditional economy" | 14                       |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui 322

TMKs: Various

| Cultural Practice                         | Area / Location  | Declarant/Interviewee Comments  | Tally of People/Mentions |
|---|--|---|--------------------------|
|   |  | which has maintained historic and cultural integrity, traditional lifestyles, and social continuity to an equal or greater extent than any of the other taro growing landscapes in Hawai'i"; alteration of any interrelated element (field, stream, 'auwai) can affect entire system—extremely complex' incentives should be provided for taro farming (e.g., tax relief, support for community ditch maintenance |                          |
| Farming, gardening misc. crops            | (Kula, misc. garden veggies); (Honopou, misc.); (East Maui community member - "native crops"); (O'ahu based community member via historical documentation - 'awa, yams, kō, arrowroot, breadfruit, banana) | N/A   | 4                        |
| Growing watercress                        | East Maui  | N/A   | 2                        |
| Raising livestock (pigs, chicken, cattle) | Ke'anae  | N/A   | 1                        |
| <b>Gathering</b>                          |  |   |                          |
| Gathering, generally                      | Honopou, Wahinepe'e, Puohokamoā, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu,   | From an O'ahu based community member who has conducted research in East Maui: "Gathering from a variety of places is important in order to maintain the resources. The choice of place to   | 12                       |



| Cultural Practice              | Area / Location  | Declarant/Interviewee Comments  | Tally of People/Mentions |
|--------------------------------|--|---|--------------------------|
|                                | ‘Ōhi‘a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili‘ula Puaka‘a, Pa‘akea, Waia‘aka, Kapā‘ula, Hanawī, Makapīpī, and Waiohue, Ke‘anae | gather is determined by the weather and other natural signs....Within the traditional cultural landscape area for Ke‘anae-Wailuanui unoccupied areas with flowing pristine streams and the forested areas are integral to the livelihoods of the families in the district” “Through subsistence, families attain essential resources to compensate for low incomes...subsistence not only provides food, it also ensures a healthy diet... is a valuable form of exercise and stress reduction and contributes to good physical and mental health. It is also a form of recreation that the whole family can share in.” Provide food for those who cannot gather on their own ( <i>kūpuna</i> , etc.) |                          |
| Gathering rocks for <i>imu</i> | Honopou  | N/A   | 1                        |
| <b>Gathered Plants</b>         |  |   |                          |
| Gathering <i>pohole</i>        | Honomanū, Honopou, Hanawī, and Makapīpī  | Different type only found in mountainous areas of Maui  | 5                        |
| Gathering <i>limu</i>          | Honopou, Punala‘u/Kōlea, Honomanū, Hanawī, and Makapīpī, Honopou, Wahinepe‘e, Puohokamoa,  | N/A   | 6                        |

| Cultural Practice    | Area / Location  | Declarant/Interviewee Comments   | Tally of People/ Mentions |
|----------------------|--|--|---------------------------|
|                      | Ha'ipua'ena,<br>Punala'u/Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopili'ula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue   |  |                           |
| Gathering watercress | Honopou,<br>Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u/Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopili'ula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue | N/A  | 4                         |
| Gathering tī leaf    | Honopou  | N/A  | 1                         |
| Gathering lū'au      | Honopou,<br>Honomanū,<br>Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u/Kōlea,   | Wild taro growing in<br>abandoned <i>lo'i</i> along<br>streams has distinct flavor | 2                         |

| Cultural Practice               | Area / Location  | Declarant/Interviewee Comments | Tally of People/Mentions |
|---------------------------------|--|--------------------------------|--------------------------|
|                                 | Honomanū,<br>Nua‘ailua, Pi‘ina‘au,<br>Palauhulu,<br>‘Ōhi‘a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopili‘ula<br>Puaka‘a, Pa‘akea,<br>Waia‘aka, Kapā‘ula,<br>Hanawī, Makapīpī,<br>and Waiohue  |                                |                          |
| Gathering <i>‘awapuhi</i>       | Honopou  | N/A                            | 1                        |
| Gathering<br><i>puakenikenī</i> | Honopou,<br>Honomanū   | N/A                            | 1                        |
| Gathering <i>pepeiao</i>        | Honopou,<br>Wahinepe‘e,<br>Puohokamoa,<br>Ha‘ipua‘ena,<br>Punala‘u/Kōlea,<br>Honomanū,<br>Nua‘ailua, Pi‘ina‘au,<br>Palauhulu,<br>‘Ōhi‘a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopili‘ula<br>Puaka‘a, Pa‘akea,<br>Waia‘aka, Kapā‘ula,<br>Hanawī, Makapīpī,<br>and Waiohue | N/A                            | 1                        |
| Gathering <i>hāhā</i>           | Honopou,<br>Wahinepe‘e,<br>Puohokamoa,<br>Ha‘ipua‘ena,<br>Punala‘u/Kōlea,<br>Honomanū,   | N/A                            | 1                        |

| Cultural Practice                                       | Area / Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|---|---|--------------------------------|--------------------------|
|   | Nua‘ailua, Pi‘ina‘au, Palauhulu, ‘Ōhi‘a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili‘ula Puaka‘a, Pa‘akea, Waia‘aka, Kapā‘ula, Hanawī, Makapīpī, and Waiohue                                  |                                |                          |
| Gathering ferns for <i>lei</i>                          | Honopou, Honomanū, Hanawī, and Makapīpī   | N/A                            | 1                        |
| Gathering medicinal plants                              | Honopou   | N/A                            | 2                        |
| Gathering <i>‘uala</i>                                  | Honopou   | N/A                            | 1                        |
| Gathering banana  | Honopou   | N/A                            | 2                        |
| Gathering bamboo  | Honopou   | N/A                            | 1                        |
| Gathering <i>ulu</i>                                    | Honopou, Honomanū   | N/A                            | 2                        |
| Gathering <i>kalo</i>                                   | Honopou, Honomanū   | N/A                            | 3                        |
| Gathering fruit (e.g., mango, guava, oranges, avocados) | Honopou, Honomanū, Wahinepe‘e, Puohokamoa, Ha‘ipua‘ena, Punala‘u/ Kōlea, Honomanū, Nua‘ailua, Pi‘ina‘au, Palauhulu, ‘Ōhi‘a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili‘ula Puaka‘a, Pa‘akea, | N/A                            | 3                        |

| Cultural Practice          | Area / Location  | Declarant/Interviewee Comments  | Tally of People/ Mentions |
|----------------------------|--|---|---------------------------|
|                            | Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue  |   |                           |
| Gathering <i>hau</i>       | Honopou  | N/A   | 1                         |
| Gathering medicinal plants | Honopou  | N/A   | 2                         |
| <b>Gathered Proteins</b>   |  |   |                           |
| Gathering <i>hīhīwai</i>   | Honomanū, Honopou, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/ Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili'ula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue, One'o | Lack of flow restricts the snails to the estuary; diversions may carry snail larvae away from ocean; smaller estuaries prevent up migration; "slowest migrating animal" good indicator of the adequacy of stream flow; from an O'ahu based community member who has conducted research in East Maui: "The gathering of hīhīwai is also carefully managed. The location of the <i>hīhīwai</i> is knowledge that has been passed down from generation to the next for their protection and proper management. It is not information that is made available to the general public" | 11                        |
| Gathering <i>ōpae</i>      | Wailuanui, mountain areas, Honopou, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/ Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo,  | Few left nowadays; caught now only in mountain areas where water is cool and less diverted; from an O'ahu based community member who has conducted research in East Maui: "Ke'anae-Wailuanui is one of the few remaining areas in   | 9                         |



| Cultural Practice         | Area / Location  | Declarant/Interviewee Comments  | Tally of People/ Mentions |
|---------------------------|--|---|---------------------------|
|                           | Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili'ula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue, Ke'anae, One'o   | the Hawaiian Islands where 'ōpae can be gathered. Virtually every stream has 'ōpae at some time during the year. However, it is easier to gather 'ōpae in the tunnels of the EMI ditch system. The irrigation ditch itself is an excellent breeding area for the 'ōpae because it has flowing water year-round. Some streams below the ditch, however, don't have enough flowing water to sustain the 'ōpae year round when the water is diverted into the ditch system", 'a'aniu net used to gather it |                           |
| Gathering prawns          | Honopou, Honomanū  | (though these are invasive and may be a threat to 'ōpae, people still gather for food)  | 3                         |
| Gathering native crayfish | Honopou  | N/A   | 2                         |
| Gathering 'opihi          | Honopou, Punala'u/ Kōlea, Honomanū, Hanawī, and Makapīpī, Honopou, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani | N/A   | 7                         |

| Cultural Practice          | Area / Location  | Declarant/Interviewee Comments | Tally of People/Mentions |
|----------------------------|--|--------------------------------|--------------------------|
|                            | (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili'ula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue  |                                |                          |
| Gathering <i>haukiuki</i>  | Honopou, Punala'u/Kōlea, Honomanū, Hanawī, and Makapīpī  | N/A                            | 3                        |
| Gathering <i>pūpūlo 'i</i> | Honopou, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili'ula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 1                        |
| Gathering <i>pūpū</i>      | Honopou  | N/A                            | 1                        |
| Gathering <i>kūpipi</i>    | Honopou, Punala'u/Kōlea, Honomanū, Hanawī, and Makapīpī, Wailuaiki and Wailuanui   | N/A                            | 2                        |
| Catching crab              | Honopou, Punala'u/Kōlea, Honomanū, Hanawī, and Makapīpī  | N/A                            | 2                        |
| Catching lobster           | Honopou,   | N/A                            | 3                        |

| Cultural Practice  | Area / Location   | Declarant/Interviewee Comments  | Tally of People/Mentions |
|--------------------|---|---|--------------------------|
|                    | Punala'u/Kōlea, Honomanū, Hanawī, and Makapīpī  |   |                          |
| <b>Fishing</b>     |   |   |                          |
| Fishing, generally | Wailuanui, Ke'anae, Honopou, Honomanū, Honopou, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili'ula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | Process of restoration/keeping ecosystem alive; loss of fishing opportunity translates to less opportunity to teach kids how to make traditional tools and implements; "Through subsistence, families attain essential resources to compensate for low incomes ... subsistence not only provides food, it also ensures a healthy diet... is a valuable form of exercise and stress reduction and contributes to good physical and mental health... It is also a form of recreation that the whole family can share in."; "The <i>ko'olau</i> region also offered sheltered bays from which deep sea fisheries could be easily accessed, and near shore fisheries, enriched by nutrients canied in the fresh water, could be maintained in fishponds and coastal fisheries. It was around these bays that clusters of houses where families lived, could be found, and in these early times, the residents generally | 11                       |

| Cultural Practice         | Area / Location  | Declarant/Interviewee Comments  | Tally of People/ Mentions |
|---------------------------|--|---|---------------------------|
|                           |  | engaged in subsistence practices in the forms of agriculture and fishing”   |                           |
| Fishing for <i>‘o‘opu</i> | Wailuanui, Honopou, Honopou, Wahinepe‘e, Puohokamoa, Ha‘ipua‘ena, Punala‘u/Kōlea, Honomanū, Nua‘ailua, Pi‘ina‘au, Palauhulu, ‘Ōhi‘a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili‘ula Puaka‘a, Pa‘akea, Waia‘aka, Kapā‘ula, Hanawī, Makapīpī, and Waiohue, Ke‘anae, One‘o | “Certain species of <i>‘o‘opu</i> are endangered and others are rare. They require pristine and flowing stream waters to exist. Ke‘anae-Wailuanui is one of the few areas where they still can be found in sufficient size to be occasionally caught for subsistence food.” | 9                         |
| Fishing for <i>kole</i>   | Honopou, Punala‘u/Kōlea, Honomanū, Hanawī, and Makapīpī, Honopou, Hanehoi/Puolua, Waikamoi, Alo, Wahinepe‘e, Puohokamoa, Ha‘ipua‘ena, Punala‘u/Kōlea, Honomanū, Nua‘ailua, Pi‘ina‘au, Palauhulu, ‘Ōhi‘a/Waianu Waiokamilo, Kualani, Wailua, Waikani  | N/A   | 6                         |

| Cultural Practice         | Area / Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|---------------------------|---|--------------------------------|--------------------------|
|                           | (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili'ula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue.  |                                |                          |
| Fishing for 'ō'io         | Honopou, Punala'u/Kōlea, Honomanū, Hanawī, and Makapīpī   | N/A                            | 2                        |
| Fishing for <i>akule</i>  |   | N/A                            | 2                        |
| Fishing for <i>manini</i> | Honopou, Hanehoi/Puolua, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani<br>(Wailuanui), West Wailuaiki, East Wailuaiki, Kopili'ula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue. | N/A                            | 3                        |
| Fishing for <i>moi</i>    | Honopou, Punala'u/Kōlea, Honomanū, Hanawī, and Makapīpī, Honopou, Hanehoi/Puolua, Waikamoi, Alo, Wahinepe'e, Puohokamoa,  | N/A                            | 6                        |



| Cultural Practice            | Area / Location  | Declarant/Interviewee Comments | Tally of People/ Mentions |
|------------------------------|--|--------------------------------|---------------------------|
|                              | Ha'ipua'ena,<br>Punala'u/Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopili'ula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue  |                                |                           |
| Fishing for <i>kala</i>      | Honopou  | N/A                            | 2                         |
| Fishing for <i>pala</i>      | Wailuanui-Ke'anae  | N/A                            | 1                         |
| Fishing for <i>weke</i>      | Honopou,<br>Punala'u/Kōlea,<br>Honomanū, Hanawī,<br>and Makapīpī   | N/A                            | 2                         |
| Fishing for <i>aholehole</i> | Honopou,<br>Punala'u/Kōlea,<br>Honomanū, Hanawī,<br>and Makapīpī,<br>Honopou,<br>Wahinepe'e,<br>Puohokamoā,<br>Ha'ipua'ena,<br>Punala'u/Kōlea,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopili'ula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula, | N/A                            | 7                         |

| Cultural Practice            | Area / Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|------------------------------|---|--------------------------------|--------------------------|
|                              | Hanawī, Makapīpī, and Waiohue   |                                |                          |
| Fishing for <i>moanakali</i> | Honopou, Punala'u/Kōlea, Honomanū, Hanawī, and Makapīpī   | N/A                            | 2                        |
| Fishing for <i>ulua</i>      | Honopou, Honopou, Hanehoi/Puolua, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili'ula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 5                        |
| Fishing for <i>honu</i>      | Honopou, Punala'u/Kōlea, Honomanū, Hanawī, and Makapīpī, Honopou, Hanehoi/Puolua, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu  | N/A                            | 5                        |

| Cultural Practice        | Area / Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|--------------------------|---|--------------------------------|--------------------------|
|                          | Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili'ula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue  |                                |                          |
| Fishing for mullet       | Honopou, Punala'u/Kōlea, Honomanū, Hanawī, and Makapīpī   | N/A                            | 3                        |
| Fishing for <i>omilu</i> | Honopou   | N/A                            | 1                        |
| Fishing for <i>pāpio</i> | Honopou, Punala'u/Kōlea, Honomanū, Hanawī, and Makapīpī, Honopou, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili'ula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 4                        |
| Fishing for <i>uhu</i>   | Honopou, Punala'u/Kōlea, Honomanū, Hanawī, and Makapīpī,  | N/A                            | 5                        |

| Cultural Practice           | Area / Location  | Declarant/Interviewee Comments | Tally of People/Mentions |
|-----------------------------|--|--------------------------------|--------------------------|
|                             | Honopou,<br>Hanehoi/Puolua,<br>Waikamoi, Alo,<br>Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u/Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopili'ula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue |                                |                          |
| Fishing for <i>uau</i>      | Honopou,<br>Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u/Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopili'ula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue                                     | N/A                            | 1                        |
| Fishing for <i>paananui</i> | Honopou  | N/A                            | 1                        |
| Fishing for                 | Honopou,   | N/A                            | 2                        |

| Cultural Practice            | Area / Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|------------------------------|---|--------------------------------|--------------------------|
| <i>‘ū ‘ū/menpachi</i>        | Punala‘u/Kōlea, Honomanū, Hanawī, and Makapīpī  |                                |                          |
| Fishing for <i>aweoweo</i>   | Honopou   | N/A                            | 1                        |
| Fishing for <i>lai</i>       | Honopou, Punala‘u/Kōlea, Honomanū, Hanawī, and Makapīpī   | N/A                            | 2                        |
| Fishing for <i>po‘opa‘a</i>  | Honopou, Punala‘u/Kōlea, Honomanū, Hanawī, and Makapīpī, Wailuaiki and Wailuanui  | N/A                            | 3                        |
| Fishing for <i>kumu</i>      | Honopou, Honopou, Hanehoi/Puolua, Waikamoī, Alo, Wahinepe‘e, Puohokamoa, Ha‘ipua‘ena, Punala‘u/Kōlea, Honomanū, Nua‘ailua, Pi‘ina‘au, Palauhulu, ‘Ōhi‘a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili‘ula Puaka‘a, Pa‘akea, Waia‘aka, Kapā‘ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 3                        |
| Fishing for <i>hinale‘a</i>  | Wailuaiki and Wailuanui   | N/A                            | 1                        |
| Fishing for <i>tako/he‘e</i> | Honopou   | N/A                            | 1                        |
| Fishing for <i>puhi</i>      | Honopou, Punala‘u/Kōlea, Honomanū, Hanawī, and Makapīpī   | N/A                            | 1                        |



| Cultural Practice                        | Area / Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|--|---|--------------------------------|--------------------------|
| Fishing for pelagics ( <i>ahi, aku</i> ) |   | N/A                            | 2                        |
| Fishing for <i>ono</i>                   |   | N/A                            | 1                        |
| Fishing for marlin                       |   | N/A                            | 1                        |
| Fishing for <i>mahimahi</i>              |   | N/A                            | 1                        |
| Fishing for <i>enenue</i>                | Honopou,<br>Hanehoi/Puolua,<br>Waikamoi, Alo,<br>Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u/Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopili'ula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue | N/A                            | 5                        |
| Fishing for <i>u'u</i>                   | Honopou,<br>Hanehoi/Puolua,<br>Waikamoi, Alo,<br>Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u/Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West  | N/A                            | 2                        |

| Cultural Practice                                    | Area / Location  | Declarant/Interviewee Comments | Tally of People/Mentions |
|--|--|--------------------------------|--------------------------|
|  | Wailuaiki, East<br>Wailuaiki, Kopili'ula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue   |                                |                          |
| Fishing for <i>'uku</i>                              | Honopou,<br>Hanehoi/Puolua,<br>Waikamoi, Alo,<br>Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u/Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopili'ula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue | N/A                            | 2                        |
| Fishing for <i>anae</i><br>(specific type of mullet) | Honopou,<br>Hanehoi/Puolua,<br>Waikamoi, Alo,<br>Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u/Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West   | N/A                            | 2                        |

| Cultural Practice                             | Area / Location   | Declarant/Interviewee Comments   | Tally of People/Mentions |
|---|---|--|--------------------------|
|   | Wailuaiki, East Wailuaiki, Kopili'ula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue         |  |                          |
| Fishing for <i>'ama'ama</i>                   |   | N/A  | 1                        |
| Fishing for <i>uouoa</i>                      |   | N/A  | 1                        |
| Fishing for elm                               |   | N/A  | 1                        |
| Fishing for <i>'opakapaka</i>                 |   | N/A  | 1                        |
| Catch squid                                   |   | N/A  | 1                        |
| <b>Hunting</b>                                |   |  |                          |
| Hunting, generally                            |   | "Through subsistence, families attain essential resources to compensate for low incomes...subsistence not only provides food, it also ensures a healthy diet... is a valuable form of exercise and stress reduction and contributes to good physical and mental health. It is also a form of recreation that the whole family can share in." | 4                        |
| Pig hunting                                   | East Maui (generally, and Ke'anae-Wailuanui)  | N/A  | 3                        |
| Axis deer hunting                             | Kaupō (South Maui)  | N/A  | 1                        |
| <b>Environment</b>                            |   |  |                          |
| Healthy streams / <i>wai / Mālama kahawai</i> | Honopou, Honopou, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, | Anthropogenic disruption to continuously flowing streams can decimate endemic stream fauna/overall ecosystem (including loss of fish and other food resources in streams and at ocean)   | 13                       |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui 341

TMKs: Various

| Cultural Practice   | Area / Location   | Declarant/Interviewee Comments   | Tally of People/Mentions |
|---|---|--|--------------------------|
|   | ‘Ōhi‘a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopili‘ula Puaka‘a, Pa‘akea, Waia‘aka, Kapā‘ula, Hanawī, Makapīpī, and Waiohue | (some families break apart dams built others); sugar and cattle too water intensive; can also be impacted by natural disasters (EQs, landslides, etc); families must work to clear their sections of ditches and streams of rocks and debris; loss of ability to follow local traditional life styles; affect on spiritual connection to wai; more flow requires less cleaning; competition between farmers; AMS metering of water flows seen as very important, but this data is not consistently collected or provided to public—no funding, some meters were removed; don’t overharvest stream resources; less water allows vegetation (including invasives like African tulip) to establish along stream banks |                          |
| Mālama ‘Āina / <i>He ali‘i ka ‘āina, He kauwā ke kanaka</i> | Honopou, Honopou, Wahinepe‘e, Puohokamoa, Ha‘ipua‘ena, Punala‘u/Kōlea, Honomanū, Nua‘ailua, Pi‘ina‘au, Palauhulu, ‘Ōhi‘a/Waianu, Waiokamilo, Kualani, Wailua, Waikani           | Families must work to clear their sections of ditches and streams of rocks and debris; holistic; resources are shared  | 10                       |

| Cultural Practice   | Area / Location  | Declarant/Interviewee Comments  | Tally of People/Mentions |
|---|--|---|--------------------------|
|   | (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue |   |                          |
| Use of <i>mauka-makai</i> trails  |  | N/A   | 2                        |
| <b>Culture</b>  |  |   |                          |
| Holistic Hawaiian culture / "cultural kīpuka" / cultural viability (passing down of traditions, continued survival) | Ke'anae-Wailuanui  | "Enclave of Hawaiian subsistence, cultural, and spiritual beliefs, customs, and practices;" represents cultural survival; eroded by increasing lack of water; "The lack of water has caused too much <i>pilikia</i> . When nobody cares, nobody understands our practices and our need to harvest. It pains me. It's very emotional." "Water is life; everything connected to water"; lack of water decreases opportunity to pass down traditions; less water means more times spent finding resources to gather, less time for recreation and ' <i>ohana</i> '; "when those places dry up that adversely impacts the way of life, the cultural practice if you will" | 11                       |
| Recreation (can include spiritual feeling of a place, connection to ancestors)                                      | Wailuanui, Ke'anae, Honopou, Honopou, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea,                                 | When ecosystems are impacted and in bad health, spiritual feeling is lost; ability to enjoy healthy/beautiful surroundings lost;  | 9                        |



| Cultural Practice          | Area / Location  | Declarant/Interviewee Comments   | Tally of People/Mentions |
|----------------------------|--|--|--------------------------|
|                            | Honomanū, Nua‘ailua, Pi‘ina‘au, Palauhulu, ‘Ōhi‘a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka‘a, Pa‘akea, Waia‘aka, Kapā‘ula, Hanawī, Makapīpī, and Waiohue                    | tranquility of sounds and sights naturally flowing water; can get sick swimming in stagnant waters (i.e., leptospirosis, etc.)   |                          |
| Cultural sites-traditional | Pākanaloa Heiau and ‘Ōhi‘a Spring; two <i>heiau</i> ; war temple   | Damage from invasives, littering   | 2                        |
| Cultural sites-historic    | Chinese graveyard in Honomanū and other sites along Pi‘ina‘au Rd including old ditchmen homes; EMI ditch system itself; historic taro terraces (partly mapped by CSH); “Kipapa of Kihapiilani” (early belt road/trail); St. Gabriel’s church | Ditch system features not always seen as a positive (some discussion from a community member as a positive; also discussion from a community member as negative—overgrown and abandoned; another community member added that it is negative because it cuts through sacred forest) | 2                        |
| <i>‘Aumakua</i>            | Maulili(shark) at estuary; general in terms of honoring while collecting resources   | N/A  | 2                        |
| <i>Mo‘olelo</i>            | Ku‘ula and Hina and Ha‘alaea at Wailuanui (1); Kane, Kanaloa (3) -springs; Papaku Makawalu (1); Wailuaiki was the home of the  | Health of reef; abundance of water is what makes this land valuable to its inhabitants; water traverses all three <i>papa</i> ; “story of Laukaieie as told by Moses Manu in   | 4                        |

| Cultural Practice                                  | Area / Location  | Declarant/Interviewee Comments  | Tally of People/Mentions |
|--|--|---|--------------------------|
|  | goddess Kapoma'ilele, the sister of Pele who distracted Kamapua'a with her flying genitals, luring him to Maui (1); story of Laukaieie (1) | Nupepa Ka Oiaio (1894-1895) provides an abundance of rich cultural information about the Ko'olau-Hāmākua region and its traditional and customary practices.... At the core of this, free flowing water is central for creating abundance, life, and growth in the region." |                          |
| Stream baptism                                     | Honopou  | N/A   | 1                        |
| Making of traditional tools and implements         | Honopou Honomanū   | N/A   | 1                        |
| <i>Hula</i> /gathering <i>kinolau</i> in mountains | N/A  | N/A   | 1                        |
| Washing clothes in streams                         | N/A  | N/A   | 2                        |
| Soak <i>hau</i> for rope                           | N/A  | N/A   | 1                        |
| ' <i>Ohana</i> burial                              | Located at St Gabriels (2);  | N/A   | 2                        |

Table 14. Tabulation of Cultural Practices Via Declarations (Anonymous Tally)

| Cultural Practice        | Area/Location  | Declarant/Interviewee Comments  | Tally of People/Mentions |
|--------------------------|--|---|--------------------------|
| <b>Farming/Gardening</b> |  |   |                          |
| Farming, generally       | Waiokamilo and Kualani, Kukuipuka Gulch, Ke'anae, Wailua, Waianu & Pahoa, Hamau Stream, Palauhulu Stream, Honopou  | Farming to feed family; traditional way requires no commercial fertilizers; agricultural homesteads described in numerous native testimonies for LCAs and LGs   | 17                       |
| Kalo farming (wet land)  | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue; [Ka'alaea Valley, Waihe'e Valley and Waiahole (O'ahu)] | "The lack of stream flow is a problem for my family because we cannot grow kalo or gather how our kupuna used to. We are unable to open up new taro patches. We have also lost taro due to the lack of water.... Families cannot support themselves and have to leave the area to make money"; "I want my kids to learn — that's the most important to me. But they can't without the water. My granddaughter asks me, 'Papa, when we going to open up the farm again?'" ; "The lack of water has caused financial setbacks, and it has reduced the quality and quantity of taro. Additionally, not all of the lo'i on my property are opened up. Abandoned lo'i above our patches requires more work and maintenance to get water to our loi." People having to farm | 17                       |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui 346

TMKs: Various

| Cultural Practice       | Area/Location  | Declarant/Interviewee Comments  | Tally of People/Mentions |
|-------------------------|--|---|--------------------------|
|                         |  | areas off their own family land because not enough water. Native testimonies describing <i>lo 'i</i> .  |                          |
| <b>Gathering</b>        |  |   |                          |
| Gathering, generally    | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | "However, we can't get the same amount of these resources as my 'ohana used to be able to. We also need to go further to gather"; "I gather and fish to feed my family and kupuna who cannot go and get food themselves." Each 'ohana has its own traditions. "I gather maybe two or three times a year in order to supply food for 'ohana gatherings on special occasions"; "If there was enough water in the streams, my 'ohana would gather as my kupuna did." | 16                       |
| <b>Gathered Plants</b>  |  |   |                          |
| Gathering <i>pohole</i> | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula   | N/A   | 8                        |

| Cultural Practice       | Area/Location  | Declarant/Interviewee Comments | Tally of People/Mentions |
|-------------------------|--|--------------------------------|--------------------------|
|                         | Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue  |                                |                          |
| Gathering <i>limu</i>   | Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue   | N/A                            | 3                        |
| Gathering <i>pīlali</i> | N/A  | N/A                            | 1                        |
| Gathering watercress    | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 8                        |
| Gathering <i>lū'au</i>  | Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au,   | N/A                            | 4                        |



| Cultural Practice        | Area/Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|--------------------------|---|--------------------------------|--------------------------|
|                          | Palauhulu,<br>‘Ōhi‘a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka‘a, Pa‘akea,<br>Waia‘aka,<br>Kapā‘ula, Hanawī,<br>Makapīpī, and<br>Waiohue   |                                |                          |
| Gathering <i>pepeiao</i> | Honopou, Waikamoi,<br>Alo, Wahinepe‘e,<br>Puohokamoa,<br>Ha‘ipua‘ena,<br>Punala‘u/Kōlea,<br>Honomanū,<br>Nua‘ailua, Pi‘ina‘au,<br>Palauhulu,<br>‘Ōhi‘a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani (Wailuanui),<br>West Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka‘a, Pa‘akea,<br>Waia‘aka, Kapā‘ula,<br>Hanawī, Makapīpī,<br>and Waiohue | N/A                            | 7                        |
| Gathering <i>hāhā</i>    | Wahinepe‘e,<br>Puohokamoa,<br>Ha‘ipua‘ena,<br>Punala‘u/Kōlea,<br>Honomanū,<br>Nua‘ailua, Pi‘ina‘au,<br>Palauhulu,<br>‘Ōhi‘a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani   | N/A                            | 5                        |

CIA for the Proposed Water Lease for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua‘a, Makawao and Hāna, Maui 349

TMKS: Various

| Cultural Practice       | Area/Location  | Declarant/Interviewee Comments | Tally of People/Mentions |
|-------------------------|--|--------------------------------|--------------------------|
|                         | (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue   |                                |                          |
| Gathering <i>hāpu'u</i> | Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue  | N/A                            | 1                        |
| Gathering <i>olena</i>  | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 1                        |
| Gathering <i>wauke</i>  | Honopou, Waikamoi, Alo, Wahinepe'e,  | N/A                            | 1                        |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui 350

TMKs: Various

| Cultural Practice    | Area/Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|----------------------|---|--------------------------------|--------------------------|
|                      | Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u/Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani (Wailuanui),<br>West Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue   |                                |                          |
| Gathering banana     | Honopou, Waikamoi,<br>Alo, Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u/Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani (Wailuanui),<br>West Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue | N/A                            | 5                        |
| Gathering bamboo     | Pi'ina'au, Palauhulu,<br>'Ōhi'a, and Kopiliula  | N/A                            | 3                        |
| Gathering <i>ulu</i> | Honopou, Waikamoi,<br>Alo, Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u/Kōlea,<br>Honomanū,   | N/A                            | 2                        |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui 351

TMKs: Various

| Cultural Practice   | Area/Location  | Declarant/Interviewee Comments  | Tally of People/Mentions |
|---|--|---|--------------------------|
|   | Nua‘ailua, Pi‘ina‘au, Palauhulu, ‘Ōhi‘a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka‘a, Pa‘akea, Waia‘aka, Kapā‘ula, Hanawī, Makapīpī, and Waiohue  |   |                          |
| Gathering <i>kalo</i>   | Honopou, Waikamoi, Alo, Wahinepe‘e, Puohokamoa, Ha‘ipua‘ena, Punala‘u/Kōlea, Honomanū, Nua‘ailua, Pi‘ina‘au, Palauhulu, ‘Ōhi‘a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka‘a, Pa‘akea, Waia‘aka, Kapā‘ula, Hanawī, Makapīpī, and Waiohue | N/A   | 3                        |
| Gathering fruit (e.g., mango, guava, oranges, avocados, papaya) | Honomanū, Wailua, Waikani (Wailuanui), and East Wailuaiki  | N/A   | 3                        |
| Gathering mountain apple  | N/A  | N/A   | 2                        |
| <b>Gathered Proteins</b>  |  |   |                          |
| Gathering <i>hīhīwai</i>  | Honopou, Waikamoi, Alo, Wahinepe‘e, Puohokamoa, Ha‘ipua‘ena,   | “We have to go high in the mountains to find the ‘Opae and hihīwai”<br>“There’s not that much | 15                       |

| Cultural Practice | Area/Location  | Declarant/Interviewee Comments   | Tally of People/Mentions |
|-------------------|--|--|--------------------------|
|                   | Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue  | hihiwai"   |                          |
| Gathering 'ōpae   | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | "We have to go farther, higher in the mountains than we used to to find the 'opae. We also used to go to Honomanū but it's dirty now"; "The water problem combined with the prawns that eat the 'opae really changed the population"; "It takes about four hours to walk to where you can gather ['opae]. Before you could just get out of the car and you would see them. These days there is sometimes nothing and you need to turn around empty-handed"; "I gather 'opae in Piinaau and Palauhulu only. The other streams do not have enough water to support my gathering. I gather maybe two or three times a year in order to supply food for 'ohana gatherings on special | 16                       |



| Cultural Practice         | Area/Location   | Declarant/Interviewee Comments   | Tally of People/Mentions |
|---------------------------|---|--|--------------------------|
|                           |   | occasions”; “Currently, my ‘ohana gathers ‘opae above the diversions in Wailua, West Wailuaiki, East Wailuaiki, Hanawī, Makapīpī, and Waiohue. We have to go above because there is no ‘opae below.” |                          |
| Gathering prawns          | Honomanū, Pi‘ina‘au, Palauhulu, Waiokamilo, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puaka‘a, Hanawī, and Makapīpī; Honopou, Kualani, Wailua, and Makapīpī   | N/A  | 4                        |
| Gathering <i>‘opihi</i>   | Honopou, Waikamoi, Alo, Wahinepe‘e, Puohokamoa, Ha‘ipua‘ena, Punala‘u/Kōlea, Honomanū, Nua‘ailua, Pi‘ina‘au, Palauhulu, ‘Ōhi‘a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puaka‘a, Pa‘akea, Waia‘aka, Kapā‘ula, Hanawī, Makapīpī, and Waiohue | N/A  | 11                       |
| Gathering <i>haukiuki</i> | Honopou, Waikamoi, Alo, Wahinepe‘e, Puohokamoa, Ha‘ipua‘ena, Punala‘u/Kōlea,  | N/A  | 1                        |

CIA for the Proposed Water Lease for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua‘a, Makawao and Hāna, Maui 354

TMKs: Various

| Cultural Practice         | Area/Location  | Declarant/Interviewee Comments | Tally of People/Mentions |
|---------------------------|--|--------------------------------|--------------------------|
|                           | Honomanū,<br>Nua‘ailua, Pi‘ina‘au,<br>Palauhulu,<br>‘Ōhi‘a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani (Wailuanui),<br>West Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka‘a, Pa‘akea,<br>Waia‘aka, Kapā‘ula,<br>Hanawī, Makapīpī,<br>and Waiohue  |                                |                          |
| Gathering <i>pūpūlo‘i</i> | Wahinepe‘e,<br>Puohokamoa,<br>Ha‘ipua‘ena,<br>Punala‘u/Kōlea,<br>Honomanū,<br>Nua‘ailua, Pi‘ina‘au,<br>Palauhulu,<br>‘Ōhi‘a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka‘a, Pa‘akea,<br>Waia‘aka,<br>Kapā‘ula, Hanawī,<br>Makapīpī, and<br>Waiohue | N/A                            | 3                        |
| Gathering <i>wana</i>     | Honopou, Waikamoi,<br>Alo, Wahinepe‘e,<br>Puohokamoa,<br>Ha‘ipua‘ena,<br>Punala‘u/Kōlea,<br>Honomanū,<br>Nua‘ailua, Pi‘ina‘au,<br>Palauhulu,<br>‘Ōhi‘a/Waianu,<br>Waiokamilo,  | N/A                            | 1                        |

CIA for the Proposed Water Lease for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua‘a, Makawao and Hāna, Maui 355

TMKS: Various

| Cultural Practice            | Area/Location  | Declarant/Interviewee Comments | Tally of People/Mentions |
|------------------------------|--|--------------------------------|--------------------------|
|                              | Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue  |                                |                          |
| Gathering <i>pipi</i>        | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 2                        |
| Gathering <i>kupe'e pu'u</i> | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula,                               | N/A                            | 1                        |

| Cultural Practice  | Area/Location  | Declarant/Interviewee Comments | Tally of People/Mentions |
|--------------------|--|--------------------------------|--------------------------|
|                    | Hanawī, Makapīpī, and Waiohue  |                                |                          |
| Gathering frogs    | Pi'ina'au, Palauhulu, 'Ōhi'a, and Kopiliula  | N/A                            | 2                        |
| Gathering goldfish | Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue                         | N/A                            | 3                        |
| Catching crab      | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u/Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 3                        |

| Cultural Practice     | Area/Location   | Declarant/Interviewee Comments   | Tally of People/Mentions |
|-----------------------|---|--|--------------------------|
| Catching lobster      | Kailua, Nua'ailua, Pi'ina'au, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puaka'a, and Hanawī; Punala'u /Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu,, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A  | 3                        |
| <b>Fishing/Diving</b> |   |  |                          |
| Fishing, generally    | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u /Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue  | "However, we can't get the same amount of these resources as my 'ohana used to be able to. We also need to go further to gather"; "I gather and fish to feed my family and kupuna who cannot go and get food themselves"; "There also is not as much fish to eat"; "We would mālama our own ko'a's to make sure that we could keep the population going"; "Back then, fish were big and plentiful. We could catch more fish going a shorter distance by canoe"; "the fish are now scarce so we | 16                       |



| Cultural Practice            | Area/Location   | Declarant/Interviewee Comments   | Tally of People/Mentions |
|------------------------------|---|--|--------------------------|
|                              |   | don't catch very many";<br>"We catch the same kind of fish as our kupuna, just less of them. We have to go further. We also use newer tools than before time." |                          |
| Fishing/gathering for 'o'opu | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u /Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue; Waiolohi, Ching's Pond | "There is no 'o'opu for us to gather."   | 14                       |
| Fishing for kole             | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u /Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea,   | N/A  | 8                        |

| Cultural Practice         | Area/Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|---------------------------|---|--------------------------------|--------------------------|
|                           | Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue   |                                |                          |
| Fishing for <i>'ō'io</i>  | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u /Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 6                        |
| Fishing for <i>akule</i>  | Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u /Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a /Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue         | N/A                            | 6                        |
| Fishing for <i>manini</i> | Kailua, Nua'ailua, Pi'ina'au, Wailua, Waikani (Wailuanui),  | N/A                            | 2                        |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui 360

TMKs: Various

| Cultural Practice       | Area/Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|-------------------------|---|--------------------------------|--------------------------|
|                         | West Wailuaiki, East Wailuaiki, Kopiliula, Puaka'a, and Hanawī  |                                |                          |
| Fishing for <i>moi</i>  | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u /Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 13                       |
| Fishing for <i>kala</i> | N/A   | N/A                            | 2                        |
| Fishing for <i>pala</i> | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u /Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 1                        |

| Cultural Practice            | Area/Location  | Declarant/Interviewee Comments | Tally of People/Mentions |
|------------------------------|--|--------------------------------|--------------------------|
| Fishing for <i>weke</i>      | Puohokamoa,<br>Ha'ipua'ena,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo, Wailua,<br>and West Wailuaiki,<br>Honopou   | N/A                            | 2                        |
| Fishing for <i>aholehole</i> | Honopou, Waikamoi,<br>Alo, Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u /Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani (Wailuanui),<br>West Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue | N/A                            | 13                       |
| Fishing for <i>ulua</i>      | Honopou, Waikamoi,<br>Alo, Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u /Kōlea,<br>Honomanū,<br>Nua'ailua,<br>Pi'ina'au, Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopiliula  | N/A                            | 3                        |

| Cultural Practice        | Area/Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|--------------------------|---|--------------------------------|--------------------------|
|                          | Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue   |                                |                          |
| Fishing for <i>honu</i>  | N/A   | N/A                            | 3                        |
| Fishing for mullet       | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u /Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            |                          |
| Fishing for <i>pāpio</i> | Kailua, Nua'ailua, Pi'ina'au, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puaka'a, and Hanawī. Palauhulu; Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u /Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua,                      | N/A                            | 5                        |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui 363

TMKs: Various



| Cultural Practice      | Area/Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|------------------------|---|--------------------------------|--------------------------|
|                        | Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue   |                                |                          |
| Fishing for <i>uhu</i> | Honopou, Waikamoi,<br>Alo, Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u /Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue | N/A                            | 7                        |
| Fishing for <i>uau</i> | Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u /Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka'a, Pa'akea,   | N/A                            | 1                        |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui 364

TMKS: Various

| Cultural Practice                | Area/Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|----------------------------------|---|--------------------------------|--------------------------|
|                                  | Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue   |                                |                          |
| Fishing for <i>'ū'ū/menpachi</i> | Pi'ina'au and Palauhulu   | N/A                            | 3                        |
| Fishing for <i>aweoweo</i>       | Kailua, Nua'ailua, Pi'ina'au, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puaka'a, and Hanawī; Honopou, Hanehoi/Puolua, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u /Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 3                        |
| Fishing for <i>lai</i>           | Honopou, Wailua, Waikani (Wailuanui), West Wailuaiki, and East Wailuaiki  | N/A                            | 1                        |
| Fishing for <i>po'opa'a</i>      | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa,   | N/A                            | 6                        |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui 365

TMKs: Various

| Cultural Practice            | Area/Location  | Declarant/Interviewee Comments | Tally of People/Mentions |
|------------------------------|--|--------------------------------|--------------------------|
|                              | Ha'ipua'ena,<br>Punala'u /Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue |                                |                          |
| Fishing for <i>kumu</i>      | Punala'u /Kōlea,<br>Honomanū,<br>Nua'ailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopiliula,<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue                | N/A                            | 5                        |
| Fishing for <i>hinale'a</i>  | Honopou, Wailua,<br>Waikani<br>(Wailuanui),<br>West Wailuaiki, and<br>East Wailuaiki   | N/A                            | 1                        |
| Fishing for <i>tako/he'e</i> | Honopou, Wailua,<br>Waikani<br>(Wailuanui),<br>West Wailuaiki, and<br>East Wailuaiki   | N/A                            | 2                        |

| Cultural Practice  | Area/Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|--|---|--------------------------------|--------------------------|
| Fishing for <i>puhi</i>  | Pi'ina'au, Palauhulu, and 'Ōhi'a  | N/A                            | 1                        |
| Fishing for pelagics ( <i>ahi, aku</i> )   | Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u /Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 2                        |
| Fishing for "deep seven bottom fish" ( <i>onaga, ehu, 'opakapaka, kalekale, lehi, gindai, and hapuupuu</i> ) | Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u /Kōlea, Honomanū, Nua'ailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 1                        |
| Fishing for <i>mahimahi</i>  | Waikamoi, Alo, Wahinepe'e,  | N/A                            | 1                        |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui 367

TMKs: Various

| Cultural Practice         | Area/Location   | Declarant/Interviewee Comments | Tally of People/Mentions |
|---------------------------|---|--------------------------------|--------------------------|
|                           | Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u /Kōlea,<br>Honomanū,<br>Nuaailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue |                                |                          |
| Fishing for <i>enenue</i> | Puohokamoa,<br>Ha'ipua'ena,<br>Honomanū,<br>Nuaailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo, Wailua,<br>and West Wailuaiki;<br>Honopou, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, and East<br>Wailuaiki  | N/A                            | 10                       |
| Fishing for <i>u'u</i>    | Honomanū,<br>Nuaailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, and<br>Waiohue  | N/A                            | 1                        |



| Cultural Practice                                    | Area/Location  | Declarant/Interviewee Comments | Tally of People/Mentions |
|--|--|--------------------------------|--------------------------|
| Fishing for <i>anae</i><br>(specific type of mullet) | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u /Kōlea, Honomanū, Nuaailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 7                        |
| Fishing for <i>uouoa</i>                             | N/A  | N/A                            | 1                        |
| Fishing for <i>awa</i>                               | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u /Kōlea, Honomanū, Nuaailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | N/A                            | 2                        |
| Fishing for <i>pakaawa</i>                           | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa,  | N/A                            | 1                        |

| Cultural Practice          | Area/Location  | Declarant/Interviewee Comments | Tally of People/Mentions |
|----------------------------|--|--------------------------------|--------------------------|
|                            | Ha'ipua'ena,<br>Punala'u /Kōlea,<br>Honomanū,<br>Nuaailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue  |                                |                          |
| Fishing for <i>palani</i>  | Kailua, Nuaailua,<br>Pi'ina'au, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopiliula,<br>Puaka'a, and<br>Hanawī; Punala'u /<br>Kōlea, Honomanū,<br>Nuaailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue | N/A                            | 2                        |
| Fishing for <i>pakeawa</i> | Honopou, Waikamoi,<br>Alo, Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,  | N/A                            | 1                        |

CIA for the Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna, Maui 370

TMKs: Various

| Cultural Practice           | Area/Location  | Declarant/Interviewee Comments  | Tally of People/Mentions |
|-----------------------------|--|---|--------------------------|
|                             | Punala'u / Kōlea,<br>Honomanū,<br>Nuaailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopiliula<br>Puaka'a, Pa'akea,<br>Waia'aka, Kapā'ula,<br>Hanawī, Makapīpī,<br>and Waiohue |   |                          |
| Fishing for <i>noho</i>     | Kailua, Nuaailua,<br>Pi'ina'au, Wailua,<br>Waikani<br>(Wailuanui), West<br>Wailuaiki, East<br>Wailuaiki, Kopiliula,<br>Puaka'a, and Hanawī   | N/A   | 1                        |
| Fishing for <i>kūpipipi</i> | Honopou, Wailua,<br>Waikani<br>(Wailuanui),<br>West Wailuaiki, and<br>East Wailuaiki   | N/A   | 1                        |
| <b>Hunting</b>              |  |   |                          |
| Hunting, generally          | Honopou, Waikamoi,<br>Alo, Wahinepe'e,<br>Puohokamoa,<br>Ha'ipua'ena,<br>Punala'u / Kōlea,<br>Honomanū,<br>Nuaailua, Pi'ina'au,<br>Palauhulu,<br>'Ōhi'a/Waianu,<br>Waiokamilo,<br>Kualani, Wailua,<br>Waikani<br>(Wailuanui), West   | "I hunt in most of the<br>areas the streams flow,<br>and I notice there is not as<br>much water in the<br>streams." | 7                        |

| Cultural Practice                                    | Area/Location   | Declarant/Interviewee Comments  | Tally of People/Mentions |
|--|---|---|--------------------------|
|  | Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue  |   |                          |
| Pig hunting  | Puohokamoa, Ha'ipua'ena, Honomanū, Nuaailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Wailua, and West Wailuaiki  | "When my family would hunt wild pig, we would try and let go the pregnant sows and babies to preserve for the future"   | 3                        |
| <b>Environment</b>                                   |   |   |                          |
| Healthy streams / <i>wai</i> / <i>Malama kahawai</i> | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u / Kōlea, Honomanū, Nuaailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue | "Cleaning the above-named streams to help the water flow all the way to the ocean and support the ecosystem we rely on to farm, fish, hunt, and gather"; "Gathering according to the moon and not always going to the same places so we Didn't overharvest the stream"; "The lack of stream flow is a problem for me as a Hawaiian. It hurts me to see the 'āina and its resources suffering"; "My family and I had to leave the area because there was not enough water and that made it harder to continue fanning and gathering"; "Always throwing the small fish back into the ocean"; "also sometimes have to spend money to | 16                       |

| Cultural Practice  | Area/Location  | Declarant/Interviewee Comments  | Tally of People/Mentions |
|--|--|---|--------------------------|
|  |  | provide substitute foods for meals and special occasions, though there really is no substitute for the 'opae I get myself'; "We knew not to overharvest, were mindful of seasonal spawning, and respected the cycle of life"; "Now, we have to go longer distances to catch more fish because of the lack of stream water flowing to the ocean"; "[Traditionally] they didn't have problems that required the same kind of cleaning because there was more flow"; "there has been fighting amongst community members over water needs. This shouldn't be happening"; "If there was enough water in the streams, I would live at home and live off the land we were raised on" |                          |
| Mālama 'Āina / <i>He ali 'i ka 'āina, He kauwā ke kanaka</i> | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u / Kōlea, Honomanū, Nuaailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West | N/A   | 14                       |



| Cultural Practice   | Area/Location  | Declarant/Interviewee Comments   | Tally of People/Mentions |
|---|--|--|--------------------------|
|   | Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue   |  |                          |
| <b>Culture</b>  |  |  |                          |
| Holistic Hawaiian culture / "cultural kipuka" / cultural viability (passing down of traditions, continued survival)       | N/A  | "Families cannot support themselves and have to leave the area to make money"; "The lack of stream flow is a problem for me because we need water so future generations can continue our traditions"; "Because of the lack of stream flow, we are losing our cultural practices"; "If water was returned to the streams, I would appreciate seeing mother nature working as intended"; "also like teaching my son what I learned growing up"; "I don't want my kids eating out of a tin can. I want them to eat natural food." | 14                       |
| Recreation (can include spiritual feeling of a place, connection to ancestors); swimming, enjoying scenery, camping, etc. | Honopou, Waikamoi, Alo, Wahinepe'e, Puohokamoa, Ha'ipua'ena, Punala'u / Kōlea, Honomanū, Nuaailua, Pi'ina'au, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani | "In some places the water is dirty and just sits because there's not enough flow. I got a staph infection four times just swimming in the water"; "Being up in the mountains feels free... There is something spiritual about being around the streams"; "To me, more water means  | 14                       |

| Cultural Practice         | Area/Location  | Declarant/Interviewee Comments | Tally of People/Mentions |
|---------------------------|--|--------------------------------|--------------------------|
|                           | (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puaka'a, Pa'akea, Waia'aka, Kapā'ula, Hanawī, Makapīpī, and Waiohue; Ching's Pond | more beauty.”                  |                          |
| Washing dishes in streams | N/A  | N/A                            | 1                        |
| Bathing in streams        | N/A  | N/A                            | 1                        |

## 6.1 Agriculture and Subsistence

The License Area covers four licensed areas: Huelo, Honomanū, Keʻanae, and Nāhiku. With multiple streams flowing through each license area, it is easy to determine the placement of *loʻi* near these streams for proper irrigation. The wet areas of East Maui provided the perfect environment to cultivate *kalo*. Numerous streams in this region ensured proper filtration and adequate water levels for *kalo* to thrive. Three separate field systems encouraged by community cooperation were evident in the regions of Keʻanae and Wailua Nui. Wet patches were found at lower elevations while dryland *kalo* were planted higher up.

Dry-zone agriculture on the slopes of Haleakalā was utilized where streams were not available and non-existent. These slopes were most suitable for cultivating sweet potato and dryland taro. In this region, both wetland and dryland techniques were used to maximize food diversity and harvests.

In Keʻanae, the peninsula was once a barren lava field. The chief at the time, pressured by growing populations, ordered the people to bring soil from the valley out to the peninsula. This is how Keʻanae is lush and thriving today.

Evidence show that Hāna once produced dryland sweet potato, dryland *kalo*, yams, sugarcane, and breadfruit. The variety of produce can attest to the large population in that region and also the mixture of knowledge required to cultivate the different plants. Hawaiians did take into account the different moon phases and its effect on cultivation and fishing. Plants were known to grow better when planted in certain moon phases and some nights were better than others for fishing.

Nāhiku was intensely cultivated and in addition to *kalo* and sweet potato, the upper region was forested with native trees such as *koa*, *ʻōhiʻa lehua*, and sandalwood. Weapons and canoes were made of *koa* because of its strength and durability and sandalwood became a large export during the time of Kamehameha I. According to Handy et al. (1991), Nāhiku was also a very fertile *ahupuaʻa*. Wetland taro were planted next to streams while dryland taro was planted near house sites. Throughout east Maui, even areas considered too arid for *loʻi* cultivation would be utilized for small scale cultivation.

Mr. Kyle Nakanelua, whose family is from Wailua, remembers not only tending to the family *loʻi* but also gathering from the rivers and streams. An important concept brought up by Mr. Nakanelua to ensure the longevity of food resources in the area is the act of gathering just enough to feed your family. This follows the traditional Hawaiian saying of “*E ʻai i ka mea loaʻa*” (Pukui 1986:31), which translates to being satisfied with what you have and taking only what you need. Another saying, “*He aliʻi ka ʻāina, He kauwā ke kanaka*” (Pukui 1986:62), could be understood as putting the land and its resources before man and his wants.

Mr. Dan Clark from Keʻanae has been farming *kalo* for 15 years. His property is fed by both Piʻinaʻau and Palauhlulu Stream and he says that the best production of *kalo* requires “cool, fast running water”. He also says that low stream flow results in an increase in disease to his *kalo* which ultimately decreases production.

Ms. Lezley Jacintho and her brother Jonah, both native Hawaiian *kalo* farmers from Honopou remember gathering and fishing with her family according to the different moon phases. A

popular calendar taken from old traditions and put together by the Prince Kūhiō Hawaiian Civic Club focuses on fishing and farming practices observed in east Maui. According to *kūpuna* who observed these phases, some nights were good for fishing and farming (Akua, Kaloakukahi) and other nights were not ideal. These nights were spent in prayer until the rise of the next moon when fishing and farming were fair.

## 6.2 Aquaculture

Numerous streams flow from the backside of Haleakalā to the ocean providing not only an abundant supply of fresh water, but an ecosystem for aquatic life, which was and continues to be an important food source for Native Hawaiians (McGregor 2007:109). Over two dozen streams can be found within the License Area, including areas within Huelo, Honomanū, Keʻanae, and Nāhiku.

*Moʻolelo, wahi pana, ʻōlelo no ʻeau, and oli* all attest to the abundance of water, aquaculture, and traditional Native Hawaiian lifestyles dependence of these vital resources. Habitation along the coastal areas of East Maui are estimated at AD 1200 (Haun et al. 2004). This is also where Native Hawaiians depended heavily on access to ocean resources. Native Hawaiian author and historian Samuel Kamakau relates that the people of Koʻolau worshipped sharks “in order to be saved from being eaten by a shark when they went fishing” (Kamakau 1991:78). In the book *Ka ʻOihana Lawaiʻa: Hawaiian Fishing Tradition* by Daniel Kahāʻulelio (2006), the preferred method of fishing was an open ocean style in deep waters off the coast of East Maui. The *kākā* and *kūkaula* methods were favored. The *kākā* method required a hook and line, but no weight was needed. This method was also used at a depth of 200 fathoms. The *kūkaula* method also used hook and line, but was employed at a depth of 50+ fathoms. Land Commission Awards also indicate that claims were made for fresh water and off-shore fisheries. Claims include the sea shore, ocean, streams, *ʻōpae* and *ʻo ʻopu* fishing grounds.

Community participant Kyle Nakanelua spent many summers and winter breaks with his sister and older cousin at his grandparent's home in Wailua Nui. He recalls spending time with his *kūpuna*; working in their *kalo* fields; and gathering food products from the rivers and streams such as *ʻōpae*, *ʻopihi*, *ʻo ʻopu*, and *hīhīwai*. When Mr. Nakanelua was a child, he recalls *ʻōpae* being prevalent in the streams that flow through their property named Lakini. As Mr. Nakanelua began to clean the family property on a regular basis from 1989, he points out that there was some *ʻōpae* because his grandmother would catch and eat. Today there are no *ʻōpae*, but instead prawns. When posed the question if perhaps *ʻōpae* was being over picked by others, he responds with “no” because “we were the only one there.” He also does not believe that prawns are to blame for the decline of the *ʻōpae* population, but instead believes that the flow of water has been impactful. He adds that the *muliwai*, the rivermouth, is an important area as this is where fish spawn.

In addition to freshwater species, Mr. Nakanelua's grandmother fished and gathered for food items *makai*. She fished for *ʻōhua* or young fish. She also gathered baby eels by putting “*palu* in the hand and then the small eels would come in” and grab the bait. The *papa* at Haʻalaea served as a fish breeding ground. The reef served as a home to fish of all species and sizes including *ʻopihi*. Fish usually caught in this area include *kole*, *ʻō ʻio*, *akule*, and pelagics such as *ʻahi* and *aku*.

In terms of preparation, *'opihi* was eaten raw and *hīhīwai* was used for soup. *'O'opu* was steamed. *Limu* was a side dish and used as a condiment. Mr. Nakanelua's grandmother would make *lomi 'ō'io*. The fish was cut open, the soft meat was scraped, and any small bones were picked out by hand. *Inamona* and *limu kohu* were added then kneaded to create the raw dish. Another favored option to dry fish in a dry box. All marine life was taken home, cleaned, then eaten for dinner. Leftovers were eaten for lunch the next day.

Skippy Hau, Aquatic Biologist, has worked extensively with freshwater species including *'ōpae*, *'o'opu*, and *hīhīwai*. His research has taken him into the streams of Maui that have been directly impacted by years of water being diverted. He is an advocate for the positive impacts of properly managed, natural stream flows. In a report written by Mr. Hau, he states, "The lack of flow restricts *hīhīwai* to the estuary...The persistence of juvenile *hīhīwai* recruitment confirms the possibility for restoring native stream population if 'natural flow' is restored. Stream restoration should be based on the needs of the slowest migrating animal such as *hīhīwai*" (Hau 2007:171). He also states that diversions may also be carrying *hīhīwai* larvae away from the ocean. Mr. Hau's research presents statistics that a certain level of stream flow is required to ensure healthy migration and population for *hīhīwai*, *'o'opu*, and *'ōpae*.

Mr. Hau shared that in the 1920s and 1930s, residents who lived near streams would catch *'ōhua*, which he relates as the young stage of the *manini* which has not gotten its stripes yet. The *'ōhua* would be gathered before sunrise, prepared for the dry box, dried, then "eaten like candy" as Mr. Hau described. *Hinana* or the young *'o'opu* would be prepared and eaten the same way. This information from *kūpuna* and older residents of East Maui helped Mr. Hau in figuring out population patterns. He also shared that *'ōpae* could be caught in lower streams, whereas today they are only caught in the mountain areas where the water is much cooler. Although there is still a reasonable population of *'ōpae*, they have adapted to the inconsistent stream flow caused by the water diversions.

Mr. Earl Smith Sr. from Kaupō can recall traditionally gathering *'ōpae*, *hīhīwai*, and *'o'opu* from Hanawī, Makapīpī, and One'o Streams. Today, he can only find them in Hanawī. Near the coast, Mr. Smith would fish for *moi*, *aholehole*, *manini*, and *enenue* but has noticed a depletion of fish. There was once schools of *enenue* at the coast but Mr. Smith has noticed a considerable decrease which could be connected to the lack of stream flow that empties into the ocean.

Mrs. Emily Wendt recalls going to the shoreline by canoe with her older brother to pick *'opihi*. They would typically go near the stream mouths of Wailuanui, Kopiliula, and Waiohue Stream to gather. Mrs. Wendt says gathering from the streams and fishing near the shore was the primary source of her family's diet, as was the pattern in the old days where living off the land was the true meaning of survival.

### 6.3 Habitation

In the story, *Ka Mo'olelo o Hi'iakaikapoliopele*, the young goddess stops at Maui whilst on her quest to retrieve Lohiau. Upon arriving in Wailua Iki, they came across a group of people celebrating *hula* in a *hālau* filled with men, women, and children. This shows the concentration of people in Wailua Iki and also the extent and popularity of *hula*. Hi'iaka first learned how to dance *hula* by her beloved friend Hōpoe in Kea'au, Hawai'i.



The great chief of Maui, Pi'ilani, created an extensive, hand-fitted, basalt block road which extended about 60 ft connecting Wailuku to Hāna. After his death, his son Kihapi'ilani, continued construction extending the road through Kaupō and across Haleakalā. It was called the Alaloa (Long Road) of Kihapi'ilani. The road provided not only an ease of access around the island but a means of trade, commerce, and war time protection for the people of Maui. It allowed the people them to send word of invading forces approaching the island.

During the construction of the Alaloa, it was also believed that Kihapi'ilani constructed Pi'ilanihale Heiau in Hāna. This *heiau* is considered the tallest in the entire archipelago. The size of the *heiau* would suggest a large population in East Maui capable of completing such a great structure. The Alaloa may have been an access way for all able-bodied men of Maui to commute and participate in its construction. The amount of men required for this construction also suggests a large amount of food needed to sustain them.

In addition, Land Commission Awards demonstrate a high concentration of residents along the coast in Huelo and Ke'anae. Residents of East Maui, Mr. Earl Smith (from Kaupō) and Ms. Lyn Scott (from Honopou), remembers a time when they would wash their clothes in the stream. One can assume that washing clothes in the stream not only meant a constant flow of water but, most importantly, clean water. Ms. Lyn Scott also remembers soaking *hau* in the stream in preparation for making cordage. Though she does not go into detail, *hau* is usually soaked in water to remove slime from the bark and to separate the layers of bark. When the bark is dried, it can be twisted to the desired ply.

Mr. Garret Hew mentioned how natural disasters in east Maui had a negative effect on the environment and interrupted the natural flow of water. He spoke with residents of Hāna who shared that an earthquake caused the Mokulehua Stream water to seep into the ground rather than flow down to the ocean. Heavy rains and consequent floods have washed away ponds and in one particular instance, caused a landslide that completely took out a pond adjacent to Hāna Highway. These natural disasters could be clear evidence of habitation patterns in east Maui and areas where residents would avoid due to the possibility of floods or landslides.

Ms. Davianna McGregor has done extensive doctoral research on the condition of Hawaiians in the first 32 years of direct U.S. rule over Hawai'i. She compared the conditions of Hawaiians who lived in urban O'ahu with Hawaiians living in rural communities as on Moloka'i, the area of Hāna, and Waipi'o on Hawai'i Island. Her studies focused primarily on traditional subsistence farming, fishing, hunting, and gathering practices in these rural communities. The practices observed by Ms. McGregor closely mirrored the customs and practices of ancient Hawaiians and though they are location specific, she found those practices to be "resilient and persistent."

## 6.4 *Mo'olelo and Wahi Pana*

Many of the *mo'olelo* and *wahi pana* reflect the abundance of aquaculture in East Maui and the importance of water. In the tale "Hi'u of Ko'olau" the story involves two families in Ke'anae who used to exchange food. The couple who lived *makai* would trade fish to the couple who resided in the *mauka* region for produce and vice versa. One day the woman from the shore gave her sister-in-law a fishtail in exchange for bananas and sweet potatoes. Instead of complaining about the meager trade, the woman took the fishtail home and put it into a calabash. Overnight

the couple dreamed about a shark and when they awoke they found a shark in the calabash. The couple freed the shark in an upland pool and during a heavy rain the shark was washed downstream. Today the shark lives in a cave near Ke'anae wharf (Lueras 1983:92).

In the legend of "Springs of Kāne," the demi-gods Kāne and Kanaloa are in search for water to accompany their appetite for *'awa*. One of the first places they are known to have traveled on Maui is to the mountains of Ke'anae. Kāne inserted his wood staff into the ground and a spring appeared. Author Martha Beckwith places these springs across from 'Ōhi'a Gulch beyond Ke'anae (Beckwith 1970:65). The pair continue to travel east forming springs and fishponds in Luala'ilua, Kaupō, Kīpahulu, Waihe'e, and Kahakuloa.

Mr. Kyle Nakanelua also shares his take on the *mo'olelo* of Kāne and Kanaloa. He refers to the spring as 'Ōhi'a and places it near Pākanaloa Heiau. The *heiau* consists of a couple platforms, but in recent years the area has been choked by *hau*.

Because it was founded and formed by Kāne and Kanaloa. And I'm not talking about those magical, mystical gods. I'm talking about two real guys that actually existed, you know? And for me and my educational base their ancestors that are upon us, ancestors that were so great and from such a time, so long ago, that we have commemorated them to various landscapes across, you know, across this *pae moku*. But definitely on Maui that is one of their places that they have established. And if you think about establishing a spring—the establishment of a spring—it's drinking water. Fresh, pure drinking water that is necessary for people to live. And so if you look at it, there's a spring there, and then above the spring there's a temple complex or let's call it a church complex. Why do you need a church? You need a church because you have people. And people require [loud sigh] spiritual sustenance, you know, as well as food sustenance. So, there was an established ancient village there of where that was the central focal point. And if you look at the societies of the world—and everywhere—the center of society is the religious institution for a lack of a better phrase at this moment in time. So, the temple complex is called Pākanaloa or "the enclosure of Kanaloa" and it oversees and is connected to the well spring called 'Ōhi'a that was established by Kāne and Kanaloa who are notable ancestors that are always paired together.

Author Martha Beckwith adds that Pākanaloa Heiau was erected in a place where violent thunderstorms occur and that this was a form of the god, Kāne-hekili. It is said that Kāne-hekili's human form had one side of his body black and the other side white. Kahekili, the last ruling chief of Maui, was tattooed black on one entire side of his body to show that he belonged to the same family (Kirch 2012:248; Maly and Maly 2001:13).

Mr. Nakanelua also relates the *wahi pana* known as Ha'aluea, a *papa* that extends just off the shoreline of Wailuanui. The reef was the *'awe'awe* or tentacle of the great squid known as Ha'aluea. The *mo'olelo* behind it is that 'Ai'ai had cut off the tentacle, which later became petrified. The story stems from "Ku'ula from Hāna." It is said that Ku'ula and Hina were called upon for assistance in Wailuanui. A *leho* was removed from a gourd that was given to 'Ai'ai, son of Ku'ula. The *leho* was attached to a line then lowered into the ocean where it emitted rich,

beautiful colors that attracted Ha'alua. The large squid came out of its hole and appeared at the surface of the water where men in canoes surrounded Ha'alua. The men were frightened by the size of the squid and Ha'alua had every intention of killing everyone, but instead 'Ai'ai's friend shoved a stone into Ha'alua's head and cut off his arm, which now makes the *papa* today.

Mr. Nakanelua also pointed out that various ponds are dedicated to *mo'o* (lizard, water spirit) and there are ponds specific to *puhi* or eels. He relates:

And there's one stream that's named after a *mo'o* and that stream or that area—stream rivulet is called Waiakakamilo, so “the water of Kamilo.” There's another stream in the area of Waianu, I believe. It's a big one. It's a main tributary and it's called Waiakuna or “the waters of Kuna” and that was a big *puhi* of that place, at that time.

Ms. Kauai Kanaka'ole, an *'ōlapa* (dancer) of Hālau o Kekuhi spoke of her passion of hula and the role it has played in her life as a mother, teacher, and *kumu hula* (hula teacher) . She says:

Hula has taught me about the many facets of our culture, from menial work to ritualistic prayer, from the bloom of a leaf-bud to the cycle of water in the forest, from obeying the request of an older sibling to embracing the transformation into your god-self. Hula has given me an education that cannot be translated into any degree at a university and my family has solidified those teaching and anchored me spiritually and it is this inherited DNA that I pass on to my two children.

Ms. Kanaka'ole mentions the saga of Pele and Hi'iaka, when Hi'iaka arrives at Kauiki in Hāna and chants about the Kauiki hill, Mokuhanu and the freshwater spring of Punahoa. Ms. Kanaka'ole also mentioned stories of the gods Kane and Kanaloa and how they journeyed through east Maui “thrusting their staff” into the ground thus resulting in pools of freshwater across the region. Due to the abundance of freshwater, many people of the area admired and worshipped these gods. She tells the story of Kalemakuakaimano, a man who lived in Pauwalu:

When he lived there, there was no spring, just the water from the river that would flow when there was a lot of rain, however, because he constantly importuned Kane and Kanaloa as his gods, grew and ate the kinolau of these gods, they visited him one day. At that visit he prepared a feast and chewed the awa for his gods and served them. In return Kane and Kanaloa thrust their staff and springs erupted out of the ground with a loud rumble that continued so one of the spring was closed up and the one that was flowing quietly was left.

The countless stories that mention water in the east Maui region show how invaluable it is for the environment and the people who reside there. Ms. Kanaka'ole explains the concept of Papaku Makawalu and how water is present in each level of the Hawaiian universe:

Papaku Makawalu is a Hawai'i ontological knowledge system that assigns the Hawaiian universe to three Papa or houses of knowledge. The first of the three is Papahūhūnua, which includes all of the earthly elements such as the ocean, volcanic processes, and the water cycle. Kane (and Kanaloa for that matter) is a vital component of Papahūhūnua in his occupation as water, Kane is the entity in and of Papahūhūnua that mingles continuously with elements of Papahūlilani

(the second Papa). Papahulilani is the atmospheric elements including the sun, weather, stars, planets, heavenly strata, and seasonality. The third Papa is Papahanaumoku. This papa is comprised of the living components with the biological intelligence of procreation. Those who belong to the house of Papahanaumoku are the direct beneficiaries of Kane. These individuals include everything from plants, to birds, to coral, to fish, to mea kolo (creepers), and kanaka (man). The house of Papahanaumoku also includes the activities that kanaka engage in, including things like hula and caring for the land. Kanaka functions including consciousness and inner conscious are also in the house of Papahanaumoku. Water is one of the few elements that easily traverse all three Papa. It is the nature of the water cycle that make it a part of Papahulihonua when it is on earth in the form of streams, springs, aquifers or even a puddle.

In closing, Ms. Kanaka'ole says the close relationship and dependent energy between element and *kanaka* must be maintained and nurtured so that "our island world lives and prospers."

## Section 7 Summary and Recommendations

CSH undertook this CIA at the request of Wilson Okamoto Corporation. The research broadly covered the entire licensing areas of Huelo, Honomanū, Ke‘anae, and Nāhiku.

### 7.1 Results of Background Research

Background research for this study yielded the following results, in approximate chronological order:

1. The License Area encompass the following *ahupua‘a*: Honopou, Mokupapa, Waipi‘oiki, Waipi‘onui, Hanehoi, West Hanawana, East Hanawana, Pu‘uomālie, Pāpa‘a‘ea, West Makaīwa, East Makaīwa, Honomanū, Ke‘anae, Wailuanui, Wailuaiki, Ko‘olau, and Pa‘akea.
2. Makapipi, Hanawī, and Kapā‘ula in the Nāhiku License Area; Waia‘aka, Pa‘akea, Puakea, Waiohue, Kopili‘ula, Pua‘aka‘a Tributary, East Wailuāiku, West Wailuāiki, Wailuānui (Waikani Waterfall), Kualani (or Hāmau), Waiokamilo, ‘Ōhi‘a (or Waianu), Palauhulu (Hauoli Wahine and Kano Tributaries), Pi‘ina‘au in the Ke‘anae License Area; Nua‘ailua, Honomanū, Punala‘u (Kōlea and Ulunui Tributaries), Ha‘ipua‘ena in the Honomanū License Area; and Puohokamoa, Wahinepe‘e, Waikamoi (Alo Tributary), Kōlea, Punalu‘u, Ka‘aiea, ‘O‘opuola (Makanali Tributary), Puehu, Nā‘ili‘ilihaele, Kailua, Hanahana (Ohanui Tributary or Hanawana or Hanauna), Hoalua, Hanehoi, Huelo (Puolua Tributary), Waipi‘o, Mokupapa, Ho‘olawa (Ho‘olawa ili and Ho‘olawa nui Tributaries), and Honopou (Puniawa Tributary) in the Huelo License Area.
3. According to *mo‘olelo*, in “The Epic Tale of Hi‘iakaikapoliopole,” retold by Ho‘oulumāhie, Hi‘iaka and her friend Wahine‘ōma‘o sail to Maui and travel to the windward side of the island. They stop in Wailua Iki Ahupua‘a where they encounter a group of people celebrating the hula. The *hālau* was filled with men, women, and children (Ho‘oulumāhie 2008:199). Hi‘iaka sees her cousin Kapokūlani (Kapo) in hopes of being invited in to eat and rest. Hi‘iaka offers a chant and this is when Kapo notices her *‘ohana*. It should be noted that Kapo is a goddess of sorcery on Maui where she acts as an *akua noho*.
4. Kihapi‘ilani is the son of the *ali‘i nui* Pi‘ilani. Kihapi‘ilani is known for his *lelekawa* skills and for building a stone paved road around the island of Maui (Beckwith 1970). According to legend, Kihapi‘ilani fled from his brother and took up residence in Makawao but kept his identity a secret. He left Makawao after he was accused of being lazy and stayed in Kalaua‘ama in Ha‘ikū to obtain sweet potato growing skills. He later took his skill set to Kalaniwai and Wailuku.
5. In the legend of Kāne and Kanaloa, the two demi-gods are in search for water to accompany their appetite for *‘awa*. One of the first places the pair travel to is in the mountains of Ke‘anae where Kāne thrusts his *kauila* wood staff into the ground and a spring appears. According to author, Martha Beckwith, two holes can be seen across from ‘Ōhia Gulch (1970:65).



6. 'Ai'ai, son of Ku'ula the Fish God, instructed his friends to venture into the deep waters off of Wailua Nui Ahupua'a and kill the giant *he'e* that lived there. Canoes were drawn and people came down ready. 'Ai'ai brought the *hokeo* and *leho* that his father gave him. The canoes and people sailed out. It was here that Ku'ula and Hina were called upon for their assistance and the *hokeo* and *leho* were taken out and lowered into the ocean. The *he'e* was attracted by the radiance the *leho* brought out but due to its overwhelming size, scared the people. 'Ai'ai's friend brought a stone with him and at the right time, shoved the stone into the head of the squid. The weight of the stone sunk the *he'e* and one of the men cut off one of the tentacles of the squid. When the *he'e* died it turned into stone and a formation resembling a squid can be seen just outside of Wailua Nui (Thrum 1907:234-235).
7. Of the 230 structures that Walker (1931) surveyed on Maui, 39 of the recorded *heiau* (Walker Sites 64 through 102) were documented in this portion of East Maui. Of the 39 documented *heiau* sites, only one lies within the License Area. This *heiau* is named Pu'u o Koholā and was presumed to be located within the current Honomanū License Area. Pu'u o Koholā was listed as "destroyed/not found" by Walker (1931).
8. The Alaloa (Long Road) of Kihapiilani or the Kihapiilani Highway, was constructed during the sixteenth century during the reign of Kihapi'ilani. The chief is credited with completed the paved road from Hāna to Wailuku, which was initiated by his father, Pi'ilani (Fleming 1933). The road provided a means of trade, commerce, and war time protection.
9. Honomanū Valley was once the site of a large Hawaiian community. The residents of this area utilized the bay for canoe fishing and the uplands for agricultural terracing and house sites (Handy and Handy 1978). Another account states that many burials can be found in the upper reaches of the valley (Sterling 1998:109).
10. Ke'anae Peninsula is a lava plain that extends a mile into the ocean from Ke'anae Valley. This area is known for *lo'i* cultivation and still continues to celebrate a traditional Native Hawaiian lifestyle today (Handy 1940).
11. The earliest estimation of occupation along the coastal region of East Maui is approximately AD 1200 (Haun et al. 2004). The abundance of traditional land divisions and place names between Hāmākua Loa and Hāna suggest habitation was extensive after initial establishment.
12. Documentation regarding Native Hawaiian tenancy reveal that ocean resources were just as important as products of the land for sustenance. The preferred method of fishing was open ocean fishing for the people who lived along the coast of East Maui. In waters of ten or more fathoms deep, the favored technique was *kākā* or *kūkaula*.
13. It has been noted that there was some rivalry between the *ahupua'a* of Ke'anae and neighboring Wailua Nui. This rivalry gave way to larger political battles concerning rule of Maui Island between the sons of Pi'ilani (Kamakau 1992:22-29) and later the consolidation of power and unification of the Hawaiian Islands under Kamehameha (Group 70 International Inc. et al. 1995).

14. In 1778, after Captain James Cook’s ships returned from their North American explorations, the crew stopped in Hāna and encountered Hawaiians for the first time on board their ships (Cordy 2000:294).
15. Prior to the establishment of the Hāna protestant mission in 1837, missionaries would visit East Maui once or twice a year. Hāna was considered to be “one of the most isolated places in these islands, remote and difficult to access” (Bishop 1861). The journey was made by horseback to Ke‘anae then traveled by canoe for the remainder of the trip.
16. Māhele documentation exhibits that occupancy was dense in East Maui, especially in the Honopou, Mokuapapa, and Ke‘anae regions. According to records, the land was used for traditional crops including *lo‘i kalo*, *kula*, potato growing, *olonā*, *‘ie*, *wauke*, *koa*, *‘ulu*, and *‘ōhi‘a*. In addition, many streams, *‘auwai*, and *loko i‘a* were claimed as well. A unique trait to this area was that specific areas including the sea shore, *pali*, government roads, and streams that contained *‘ōpae* and *‘o‘opu* were also claimed.
17. The Māhele of 1848 set the precedence of private land ownership across the entire Hawaiian Island chain and Maui was no exception to the age of Western development. The Māhele enabled foreigners and foreign nationals to acquire land for the establishment of ranching and plantation operations, including any infrastructure projects that were to support these land intensive industries.
18. With the decline of the whaling industry in the mid- to late-1800s, the Hawaiian Islands attracted a new generation of entrepreneurs. Samuel T. Alexander and Henry Perrine Baldwin were prominent in this movement. Alexander was credited with using irrigation for improving sugar cane and banana yields (Dean 1950), while Baldwin’s father had been granted 2,675-acres of land in northwest Maui.
19. In 1867, S.T. Alexander proposed a massive construction project to bring mountain water from the streams of East Maui to the Central Maui isthmus, where many sugar crops were experiencing drought (Kuykendall 1967:64). This would later be known as the East Maui Irrigation Company (EMI) ditch system (the EMI Aqueduct System).
20. The digging of the irrigation ditch from East Maui to Central Maui was a great feat. Hundreds of men were employed at a time with food, shelter, and tools supplied to them. The work required brute strength as heavy timber for flumes would need to be transported from the main road to the upper reaches of the forest (Thrum 1877:39-42). The crew dealt with torrential rains and landslides. Sometimes workers hacked their way through the thick forests and were required to descend sheer cliffs by way of rope.
21. In July of 1877, the first water began to flow through the ditch and reached Haiku Plantation 24 hours later. Approximately 60 million gallons of water per day ran through the ditch system. The system cost \$80,000, which was paid for by Castle & Cooke.
22. The EMI Aqueduct System has been in use for over 140? years and continues to collect water today for private and municipal entities. The EMI Aqueduct System contains 50 miles of tunnels, 24 miles of open ditches, inverted siphons and flumes, 388 intakes, eight reservoirs, and a solar powered radio telemetry system to monitor ditch flow. The

catchment begins at roughly 1,300 ft elevation and delivers water to Central Maui at an elevation of 1,150 ft, covering 18 miles from its western to eastern extent (ASCE 2001).

## 7.2 Results of Community Consultation

CSH attempted to contact NHOs, agencies, and community members. Below is a list of individuals who shared their *mana'o* and *'ike* about the proposed Water Lease and the License Area :

1. Dr. Kamana'opono Crabbe, Ka Pouhana – OHA
2. Pomaika'i Crozier. Conservation Manager – Pu'u Kukui Watershed Preserve
3. Skippy Hau, *Kama'āina* (native born) and Aquatic Biologist – Division of Aquatic Resources – State of Hawai'i
4. Garrett Hew, *Kama'āina*, Upcountry Maui farmer, and former East Maui Irrigation (EMI) employee
5. Robert Hobdy, Retired naturalist and forester
6. Roslyn Lightfoot, Director – Alexander & Baldwin Sugar Museum
7. Kyle Nakanelua, *Kama'āina*, Aha Moku o Maui, and *kalo* (taro; *Colocasia esculenta*) farmer
8. Jerry Sakugawa, Upcountry Maui farmer
9. Sandy Takeshita, Upcountry Maui farmer
10. Mahealani Wendt, Nā Moku Aupuni o Ko'olau Hui

In addition, CSH asked permission to use declarations that were made by certain members of the community and members of Nā Moku Aupuni o Ko'olau in connection with the contested case hearing held by CWRM on the Petition for Interim Instream Flow Standards. The declarations were given to CWRM in December 2014, several years prior to CWRM's issuance of its final Findings of Fact, Conclusions of Law and Decision and Order issued on June 20, 2018, which established the current IIFS. Although the declarations are part of the public domain, CSH attempted to contact each individual to obtain approval to include their declarations in the CIA. Below is a list of individuals who approved use of their declaration:

1. Dan Clark
2. Jonah Jacintho
3. Lezley Jacintho
4. Kau L. Kanaka'ole
5. Pualani Kimokeo
6. Davianna McGregor, Ph.D
7. Lurlyn Scott
8. Earl Smith, Sr.
9. Ty Kāwika Tengan

Tabulated results of approved declarations that relay traditional cultural practices, which includes fishing, gathering, hunting, sites, traditional knowledge, and values can be found in Table 13. Tabulated results of declarations that were not approved are arranged anonymously and can be found in Table 14.

### 7.3 Non-Cultural Community Concerns and Recommendations

Based on information gathered from the community consultation, participants voiced the following concerns not related to the cultural context.

Community participant Skippy Hau noted that “not all lands belong to the State” and recommends that private lands should and need to be identified by signs and safe parking areas. In addition, many visitors and tour groups assume that most lands belong to the State resulting in illegal trespassing. Also noted that rental cars regularly block Hana Highway creating and blocking traffic.

1. Mr. Hau states that the EMI Aqueduct System requires mapping that shows the 388 intakes, ditches, dams, pipes, and flumes. Each diversion should be located and identified accurately with GPS coordinates. Elevations should also be recorded. The amount of water moving through the system should be measured at specific locations within the EMI Aqueduct System as well.
2. Other questions and clarifications Mr. Hau had include the following (please note that these questions were asked prior to CWRM's June 2018 decision on the East Maui Interim Instream Flow Standards):
  - a. Is the 20,000 gallons per day for Nahiku and Kula Agricultural Park a minimum?
  - b. Isn't the interim instream flow supposed to maintain a minimum flow for each stream?
  - c. Will EMI property be clearly identified along the boundaries of State land?
  - d. Please identify “settlements” along Hana Highway.
  - e. Please clarify “diversified agricultural uses as it economically feasible.” The term is used but not clearly identified or the need for water.
  - f. The three Department of Water Supply treatment facilities water use should be clearly identified. Please identify actual use, not maximum capacity. The reservoir capacities does not clarify actual water use.
  - g. Please clarify abandoned diversion. Is the diversion and other structures to collect water removed and natural stream restored? Mr. Hau noted that historically structures and associated materials have been abandoned throughout East Maui. He recommends that debris and abandoned structures should be completely removed and/or buried.
  - h. Mr. Hau recommends that concrete walls and control structures that are planned for full and permanent restoration should be completely removed and streams restored to their natural conditions.
3. In addition, Mr. Hau relayed via email that he recommends a five-year lease with constant updates due to the fact that the project description lacks information on the amount of water flowing through the EMI Aqueduct System and the actual amount of water collected at each diversion and/or ditch without the factor of climate change accounted for.
4. Participant Kyle Nakanelua's recommendations for this project was simply, “Follow the law! Support the law! File for your permit. There's a policy and there's procedures. Adhere to the policy and follow the procedures. And stop trying to circumvent it [the law] because you smart. You know, just be honest, be transparent.”

## 7.4 Cultural Community Concerns and Recommendations

Based on information gathered from the community consultation, participants voiced and framed their concerns in a cultural context.

1. Mr. Hau states that native gathering rights should be addressed. The gathering of *‘ōpae* (general name for shrimp), *‘o‘opu* (general name for fishes included in the families *Eleotridae*, *Gobiidae*, and *Blennidae*), and *hīhīwai* (endemic grainy snail; *Neritina graposa*) continue throughout East Maui streams that are being diverted.
2. Mr. Hau adds that State lands should be open to the public for hunting and gathering. The general public should have access for recreational activities such as hiking, scenic viewing, and swimming at waterfalls.
3. Mr. Robert Hobdy voiced his concerns, which include that the EIS study should:
  - a. Provide adequate stream flow to support diversified agriculture in the Hamakualoa and Ko‘olau region.
  - b. Provide adequate stream flow to support indigenous fish, shrimp, and mollusk species in the Hamakualoa and Ko‘olau region.
4. Participant Kyle Nakanelua is concerned with the act of diverting water. He explicitly states that “when those places dry up that adversely impacts the way of life, the cultural practice if you will” and it “adversely impacts the people’s way of life that live there.”
  - c. To support this claim, Mr. Nakanelua states that *‘ōpae* was once prevalent in the streams that flowed through their family property named Lakini. He relates that when he began to regularly clean the property his grandmother would still catch *‘ōpae*. He adds that today there is no *‘ōpae* but there are prawns. When CSH asked if *‘ōpae* was being overpicked, he replied “no” because “we were the only one there.” He also does not think the introduction of prawns are to blame but believes “that the flow of water is impactful” and has seen the water decline since 1989.
5. A 2014 declaration provided by Dan Clark from Ke‘anae stated he needs cool, fast running water for optimal *kalo* production. Due to low stream flow results, there has been an increase in disease to his *kalo*, which decreases production.
6. Jonah Jacintho states in his 2014 declaration that due to a lack of stream flow, fish populations have decreased therefore he cannot fish as much. To increase the population of ocean fish, fresh water is integral for spawning and nutrients. He also added that more water in stream beds would also increase *‘o‘opu*, prawn, and *hīhīwai* populations.
7. In Lezley Jacintho’s 2014 declaration, she states that due to lack of stream flows, her *kalo* production has declined due to root rot and other diseases. She adds that stream flow output is also important in the spawning of different species of fish. The lack of stream flow affects her gathering rights as a Native Hawaiian and her *‘ohana* (family). Native species such as *‘o‘opu* needs fresh water to travel back upstream, which compromises their reproduction. Fish, *hīhīwai*, *‘ōpae*, and *‘o‘opu* populations are also scarce and many families cannot gather these resources causing them to move away. Another concern Ms. Jacintho voiced is stagnate water, which causes leptospirosis and other bacteria.



8. Kau‘i Kanaka‘ole voices in her 2014 declaration the Papaku Makawalu framework, which incorporates traditional Hawaiian knowledge and *mo‘olelo* (stories) and connects it with *wahi* (place). Papaku Makawalu consists of three Papa or houses of knowledge (earth, atmospheric, and the living). In this case, Ms. Kanaka‘ole points out that without water, all three Papa could not exist. She shares *mo‘olelo* on O‘opuola Stream, Makapīpī Stream, Ka‘aiea Stream, and ‘Ōhia Stream. She points out that ‘Ōhia Stream was known for its healing powers and that the people of this area understood that this water was “special, sacred, kapu (taboo) and only to be used in unique circumstances.”
9. Pualani Kimokeo states in her 2014 declaration that due to a lack of stream flow there is an increase in pocket rot and “guava seed,” which she describes as a growth on the taro. There are also apple snails in her *lo‘i kalo*, which she states like the warm water. She points out that farmers in Ke‘anae have to compete for water.
10. In Earl Smith, Sr.’s 2014 declaration, he states that he recalls gathering ‘*ōpae*, *hīhīwai*, and ‘*o‘opu* from Hanawī, Makapīpī, and One‘o Streams. He can only find these species in Hanawī Stream. Near the coast, he would fish for *moi* (threadfish; *Polydactylus sexfilis*), *aholehole* (Hawaiian flagtail; *Kuhlia sandvicensis*), *manini* (reef surgeonfish; *Acanthurus triostegus*), and *enenue* (chub; *Kyphosus bigibbus*) but has noticed a depletion of fish. He attributes this to a lack of stream flow that empties in the ocean.
11. In Edward Wendt’s 2014 declaration, he states that he gathers and fishes in the streams to provide a protein source for his family, neighbors, and *kūpuna* (elders) who may be unable to gather for themselves. He also enjoys teaching traditional fishing practices and values to students. However, due to the lack of adequate stream flow, Mr. Wendt is unable to teach students how to *mālama* (to take care of) streams, fish, and gather. The diminished stream flow has negatively impacted the *muliwai*, fisheries, and his *lo‘i kalo*. Invasive species such as the apple snail and African tulip tree have infringed his *lo‘i kalo*.

## 7.5 Ka Pa‘akai Analysis

The Proposed Action constitutes the issuance of a long-term (30 years) Water Lease from the BLNR for the continued use of water from the Huelo, Honomanū, Ke‘anae, and Nāhiku License Area through the existing EMI Aqueduct System, which supplies water to domestic and agricultural water users. The Water Lease will enable the lessee to continue to go on lands owned by the State in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. It will allow continued operation of the EMI Aqueduct System to deliver water to the County of Maui DWS for domestic and agricultural water needs in Upcountry Maui, including agricultural users at the Kula Agricultural Park, and the 262-acre expansion of the Kula Ag Park, and the Nāhiku community. It will also allow for the continued provision of water to approximately 30,000 acres of agricultural lands (formerly in sugarcane) in Central Maui to supply irrigation water for diversified agriculture.

Article XII, section 7 of the Hawai‘i Constitution obligates the State and its agencies “to protect reasonable exercise of customarily and traditionally exercised rights of native Hawaiians to the extent feasible when granting a petition for reclassification of district boundaries” (*Ka Pa‘akai O Ka‘Āina v Land Use Commission*, 94 Hawai‘i 31, 7 P.3d 1068 [2000]). Under Article XII, section 7, the State shall protect all rights, customarily and traditionally exercised for subsistence, cultural, and religious purposes and possessed by *ahupua‘a* tenants who are

descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights. In *Ka Pa‘akai*, the Hawai‘i Supreme Court set forth the framework for the State to protect these rights, requiring agencies to, when making decisions that may impact cultural, historical, or natural resources or native Hawaiian traditional and customary practices, at a minimum, make specific findings and conclusions on:

1. The identity and scope of valued cultural, historical, or natural resources in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area;
2. The extent to which those resources—including traditional and customary native Hawaiian rights—will be affected or impaired by the proposed action; and
3. The feasible action, if any, to be taken by the [agency] to reasonably protect native Hawaiian rights if they are found to exist.

Based on information gathered from the cultural and historical background, and the community consultation, significant cultural resources were identified within the License Areas as well as outside of the License Area. It should be acknowledged that although some of the impacted cultural resources exist outside of the License Area, what takes place within the License Area directly affects these cultural practices and resources. At present, there is documentation and testimony indicating traditional and customary Native Hawaiian rights are currently being exercised within the License Area. Cultural resources, practices, and beliefs were identified as currently existing within the License Area. In addition, East Maui, which includes the License Area and beyond the License Area, maintains a rich subsistence and cultural history.

The earliest initial occupation in East Maui is estimated at AD 1200 (Haun et al. 2004). The abundance of traditional land divisions and *wahi pana* spanning from Hāmākua Loa to Hāna suggest that habitation continued to increase after initial establishment. Xamanek Researches conducted an AIS in 2000 of a parcel near the *muliwai* of Hanawana Stream. A charcoal sample from the study yielded a radiocarbon date of AD 1425 to 1665. In conjunction with *mo‘olelo* and *ka‘ao*, such material evidence indexes the importance of East Maui and its natural resources in supporting early inhabitants and traditional practices. Throughout this analysis, an effort is made to ground physical evidence within traditional cultural frameworks or knowledge systems. That is, understandings of East Maui’s ecological processes and anthropogenic activities have been informed by various traditional sources, including *mo‘olelo*, *mele*, or *oli*. As pointed out by anthropologist Laura Nader and reiterated by Dr. Kathleen Kawelu, “science is not free of culture; rather, it is full of it” (Kawelu 2015:6; Nader 1996: xiii). Several *mo‘olelo*, unique to East Maui, do indeed provide key insights into the socio-cultural and socio-economic realities of pre-Contact life. *Ka Mo‘olelo o Hi‘iakaikapoliopole* relates how Hi‘iaka stopped in Wailua Iki and stumbled upon a crowd celebrating *hula* in a *hālau* filled with men, women, and children. This *mo‘olelo* exhibits the popularity of *hula* in this area as well as a burgeoning population in East Maui.

Pi‘ilani, *Mō‘ī* of Maui, ordered to have a hand-fitted, basalt block road constructed, which connected Wailuku to Hāna. This road served as a trail for residents and was also accessed during times of war. During the last half of the eighteenth century, war occurred frequently. The road, along with canoe landings and inhabited places, were common sites for robbery and death

for *maka'āinana*. After Pi'ilani's death, his son Kihapi'ilani continued the construction of the road, extending through Kaupō and across Haleakalā. It was called the Alaloa of Kihapi'ilani, also known as the King's Road. The amount of labor that went into the Alaloa suggests that there was a large population of able-bodied men to complete the trail. The caloric demands of such a workforce would have no doubt been significant, suggesting that a large amount of food also was available to sustain the workers.

East Maui was and still is an ideal place to cultivate *kalo* based on the rich soils and the amount of rain that occurs per year. The License Area contains various tributaries. Wet patches were and still exist in the *makai* regions, while dryland *kalo* was planted in the *mauka* areas. Ke'anae and Wailua Nui continue to be thriving regions within the License Area that still practice traditional taro farming.

*Ōlelo no'eau*, *mele*, and *oli* all attest to the abundance of water, in addition to the resources available from the ocean and uplands. However, documents such as Land Commission Awards (LCA) and associated maps exhibit the expansive population of East Maui during The Māhele. Although most of the LCAs are outside of the License Area, it is important to point out that the water that runs through the License Area leads to these *kuleana* parcels, many of which are still *kuleana* properties held by the same families today. Land use was inventoried during The Māhele. Common uses and *kuleana* include residence, farming (*lo'i*, *kula*, *kīhāpai*, *pō'alima*, specific patches for *olonā* and *hala*), associated farm structures (pig pens), water ways (*'auwai*, fishponds, streams, beaches, and the sea), forests, and infrastructure (government road, trails, foot paths). Land use records indicate that almost every property had at least one *lo'i kalo* with some of the highest concentrations in the Huelo and Ke'anae License Areas, the latter still being an active community that continues the practice. Although quantity of water matters for the community, it is also about velocity. Mr. Kyle Nakanelua relates the importance of having "a really crisp and vigorous flow" to the water because "that's what keeps everything stimulated and alive" which contributes to having a healthy stream and flow. Having water that is cold and constantly running are vital components of farming wet land *kalo*.

In addition to *kalo*, *pohole* or the fiddlehead fern is also a staple in the diet for residents of East Maui along with watercress, *'ulu*, bananas, *lū'au*, etc. Traditional subsistence is important to those who live in this remote area of East Maui as it not only is a reliable food source but ensures a healthy diet. Plants such as *pohole* and watercress are aquatic plants, which need an abundant amount of fresh, running water for optimal growth. *Pohole* is a wild plant that needs to be foraged and is widespread throughout the License Area. *Pohole* that is growing in or adjacent to tributaries that have limited and/or diverted water are most likely impacted gathering grounds.

The water source for the East Maui streams came from the backside of Haleakalā, which supplies the streams with fresh water, providing an ecosystem for aquatic life. Fresh, brackish, and ocean resources were and continue to be an important food source for Native Hawaiians (McGregor 2007:109). Habitation patterns model settlement near the ocean, which alludes that Native Hawaiians settled close to their food sources such as the ocean and in areas that were viable for *kalo* growth. Native Hawaiian author and historian Samuel Kamakau relates that the people of Ko'olau worshipped sharks "in order to be saved from being eaten by a shark when they went fishing" (Kamakau 1991:78). The favored method of fishing off of East Maui was the *kākā* and *kūkaula* methods. The *kākā* method required a hook and line and was utilized at a depth

of 200 fathoms. The *kūkaula* method also used hook and line but was employed at 50+ fathoms. Through interviews, informal discussions with community members, and CWRM declarations, it is evident that residents within and in the vicinity of the License Area rely heavily on fresh and salt water resources as a food source.

Many community members stated that they formerly utilized stream fauna as a food source, however, due to the stream water being limited and/or diverted in conjunction with invasive species, it is now deemed an unreliable food source. ‘*O‘opu*, ‘*ōpae*, and *hīhīwai* were staples to East Maui resident’s diets. *Kūpuna* who lived near the streams in the 1920s and 1930s also caught and ate ‘*ōhua* and *hinana*, which were prevalent in tributaries. East Maui residents and those who intimately know the *mauka* regions of East Maui know where to gather these limited aquaculture resources. For example, State of Hawai‘i Aquatic Biologist, Skippy Hau, shared that at one time ‘*ōpae* could be found in streams spanning from *mauka* to *makai*. Today ‘*ōpae* can be found only in the mountain areas where stream water is cooler but have mostly adapted to inconsistent stream flows. Mr. Hau also shared that *hīhīwai*, one of the slowest migrating animals, utilize heavy rains and flash flooding to transport larvae into the ocean, so they can migrate upstream again over a period of time. However, fresh water is also needed to assist in this process. Although, “the natural environment has a built-in capacity to respond and adapt to traumas and shocks (system resilience),” this is not infinite (Minerbi 1975:8). Diverted streams, whereby the *mauka-makai* connection is severed, strain the resiliency of the stream’s ecosystem by inhibiting reproduction rates of freshwater animals as well as growth patterns.

In addition, salt water resources are also being compromised by limited fresh water being emptied into the ocean, which is a vital component for propagation. Mr. Earl Smith, Sr. would fish for *moi*, *aholehole*, *manini*, and *enenue* but has since observed a considerable decline in populations and relates this to the lack of fresh water entering the ocean. Mr. Jonah Jacintho also related that a lack of stream flow inhibits nutrients from *mauka* traveling *makai*, which creates warmer waters and an unfavorable ecosystem for fish, mollusks, and other ocean life to replenish. Although the License Area is not adjacent to the ocean, the ocean is directly affected because the fresh water that runs throughout the License Area is limited and/or being diverted. Modifications to flow, such as diversion, invariably result in a dramatic decline in ocean life by restricting nutrients that are carried via tributaries and emptied into the ocean, which are needed for healthy conditions and growth patterns.

Based on the cultural and historical background presented above, in conjunction with archaeological evidence, oral histories, declarations, and interviews throughout East Maui, it is the finding of the current analysis that there are specific valued natural and cultural resources within the License Area. There is evidence of identified traditional and customary cultural practices associated with natural and cultural resources that are regularly exercised within the License Area, which includes the following activities and resources:

1. Foraging, traditional, and generational gathering of freshwater species for personal consumption. These species include but are not limited to ‘*ōpae*, ‘*o‘opu*, *pūpūlo‘i* (also known as *pūpū Pākē* or Chinese snail), crayfish, prawns, and *hīhīwai*.
2. Foraging, traditional, and generational gathering of plants that may be in or adjacent to tributaries for personal consumption. These species include but are not limited to *pohole* and watercress.



3. Traditional and generational gathering of introduced plants that can be cultivated or foraged. These species include but are not limited to 'ulu, bananas, wild *kalo*, wild *lū'au*, guava, 'uala, 'awapuhi, tī, oranges, *hāhā*, avocado, *puakeniken*i, and medicinal plants for *lā'au lapa'au*.
4. Traditional and generational gathering of plants that can only be foraged. This includes but is not limited to *pepeiao*, various types of ferns (ornamental), and *hau*.
5. Traditional and generational gathering of rocks that are used for traditional food preparation. These activities include but are not limited to *imu* and the production of stone tools for traditional food preparation (i.e., *pōhaku ku'i 'ai*).
6. Traditional and generational fishing and gathering methods utilized for the shoreline and offshore. Species gathered include but are not limited to *limu* (seaweed), 'opihi (limpets), lobster, *enenue*, *kole*, *ulua*, *moi*, *aholehole*, 'anae, *kumu*, *tako*, *moanakali*, 'ōmilu, 'ū'ū/*menpachi* (soldierfish; Holocentridae), 'āweoweo (Bulleye; *Priacanthus meeki*), *pāpio*, *pa'ananu*, 'ō'io, *uhu*, *lae*, *kala*, black crab, *hā'uke'uke*, and *kūpipi*.

These activities and resources are further inventoried in Tables 13 and Tables 14.

## 7.6 Impacts and Recommendations

Once the valued cultural, archaeological, and historical resources within the License Area are identified (discussed above in Section 6, including Tables 13 and 14, and Section 7), the second and third prongs of the *Ka Pa'akai* analysis require the agency to determine how any of the resources may be impacted by the proposed action, and what, if any, feasible measures can be taken to protect the resources.

### Proposed Action

The Proposed Action constitutes the issuance of a long term (30 years) Water Lease from the BLNR for the continued "right, privilege, and authority to enter and go upon" the License Area for the "purpose of developing, diverting, transporting, and using government owned waters" via the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease will enable the lessee to continue to go on lands owned by the State in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System, and will allow continued operation of the EMI Aqueduct System to deliver water to the County of Maui DWS for domestic and agricultural water needs in Upcountry Maui, including the agricultural users at the Kula Agricultural Park (KAP), as well as for the Nāhiku community. It will also allow the continued provision of water to approximately 30,000 acres of agricultural lands in Central Maui. The proposed action is subject to the terms of the Interim Instream Flow Standard (IIFS) established by the CWRM.

Based on information gathered from the cultural and historical background, and the community consultation, CSH identified potential impacts and made the following recommendations:

1. **Impact:** Participants expressed interest in getting clarification on stream flow, water diversion, and climate statistics with the following questions:
  - How much water is being diverted at each location of intakes, ditches, dams, pipes, and flumes?



- How much water is being diverted from East Maui to Central Maui?
- Is climate change accounted for?

**Recommendation:** It is recommended that these questions be addressed by qualified professionals who possess an understanding of stream flow mechanics, water diversion, and climate statistics within the License Area.

2. **Impact:** Several community participants voiced their concern regarding indigenous freshwater species that may be impacted by the act of diverting water. These species include but are not limited to *‘ōpae*, *‘o‘opu*, *pūpūlo‘i* (also known as *pūpū Pākē*, or Chinese snail), crayfish, prawns, and *hīhīwai* (endemic grainy snail; *Neritina graposa*), which are still gathered regularly by residents for personal consumption. Furthermore, community participants shared their concern of water not exiting stream beds and flowing into the ocean. This estuary environment creates an ecosystem where freshwater and saltwater species spawn and travel back upstream (such as *‘o‘opu*) or continue to grow in the ocean. Specific streams mentioned by community participants where this impact is identified include: Wahinepe‘e, Puohokamoa, Ha‘ipua‘ena, Honopou (Puniawa Tributary), Punala‘u (Kōlea and Ulunui Tributaries), Honomanū, Nua‘ailua, Pi‘ina‘au, Waiokamilo, Wailuānui (Waikani Waterfall), Kopili‘ula, Pa‘akea, Kapā‘ula, Hanawī, Makapīpī, Waiohue, Waikamoi (Alo Tributary), Hanehoi, Palauhulu (Hauoli Wahine and Kano Tributaries), ‘Ōhi‘a (or Waianu), Kualani (or Hāmau), East Wailuāiki, West Wailuāiki, Pua‘aka‘a Tributary, and Waia‘aka. It is understood that these streams were subject to the Interim Instream Flow Standards (IIFS) decision.

**Recommendation:** It is recommended that a biologist or similar qualified professional provide an assessment of the impacts of water diversion to indigenous freshwater species (*‘ōpae*, *‘o‘opu*, and *hīhīwai*) within the License Area. The application of the IIFS decision has the potential to reduce or eliminate this cultural impact. Nine of the streams mentioned by community participants where this impact is identified have been fully restored in accordance with the IIFS. These include Honopou (Puniawa Tributary), Pi‘ina‘au, Waiokamilo, Wailuānui (Waikani Waterfall), Makapīpī, Waiohue, Hanehoi, Palauhulu (Hauoli Wahine and Kano Tributaries), and West Wailuāiki Streams.

3. **Impact:** A majority of participants who are taro farmers voiced their concern of the lack of water needed to maintain a healthy and productive *lo‘i kalo* or taro patch. A cold, vigorous flow of water is needed for the production of *kalo*. Without an ample amount of water continuously flowing, many taro crops have been subject to invasive species such as the apple snail, root rot, and growths. Many taro farmers are unable to continue their traditional and generational cultural practice. Specific streams mentioned by community participants where this impact is identified include: Honopou (Puniawa Tributary), Waikamoi (Alo Tributary), Wahinepe‘e, Puohokamoa, Ha‘ipua‘ena, Punala‘u (Kōlea and Ulunui Tributaries), Honomanū, Nua‘ailua, Pi‘ina‘au, Palauhulu (Hauoli Wahine and Kano Tributaries), ‘Ōhi‘a (or Waianu), Waiokamilo, Kualani (or Hāmau), Wailuānui (Waikani Waterfall), West Wailuāiki, East Wailuāiki, Kopili‘ula, Pua‘aka‘a, Pa‘akea, Waia‘aka, Kapā‘ula, Hanawī, Makapīpī, and Waiohue. It is understood that these streams were subject to the IIFS decision.

Recommendation: It is recommended that a botanist, ethnobotanist, or similar qualified professional provide an assessment of the ideal conditions of water flow and water temperature needed for *kalo* growth in comparison to the current water flow and water temperature of impacted areas in order to understand and address the stated impact. The application of the IIFS decision has the potential to reduce or eliminate this cultural impact. Eight of the streams mentioned by community participants where this impact is identified have been fully restored in accordance with the IIFS. Honopou (Puniawa Tributary), Pi'ina'au, Palauhulu (Hauoli Wahine and Kano Tributaries), Waiokamilo, Wailuānui (Waikani Waterfall), West Wailuāiki, Makapīpī, and Waiohue.

4. Impact: While no human burials have been identified by previous archaeological studies within or immediately adjacent to the License Area, historical research indicates that Honomanū Valley and other areas throughout East Maui once held a sizable population. LCA documentation indicates that there were settlements along the coast, however, a pedestrian survey was also conducted where there was evidence of habitation in the higher reaches of the valley (E. M. Fredericksen and Fredericksen 1998b).

Recommendation: It is recommended that any personnel involved in access, maintenance, or any other related activities within the License Area be informed of the possibility of inadvertent cultural finds, including human remains. In the event that any potential historic properties are inadvertently discovered within the License Area, these discoveries should be reported immediately to the State Historic Preservation Division (SHPD). In the event that *iwi kūpuna* and/or cultural finds are encountered, consultation with lineal and cultural descendants of the area is also recommended.

#### No Action Alternative

The No Action alternative is understood as the termination or non-issuance of the subject Water Lease. Under this alternative, A&B would be permitted to 30% of the water from the larger 50,000-acre Collection Area based on previous agreements.

The No Action alternative includes permission to divert 30% of the water from the larger 50,000-acre Collection Area and therefore, impacts related to the diversion of water may apply, but to a lesser extent than the Proposed Action. These impacts, as discussed in detail in relation to the Proposed Action, include: interest in getting clarification on stream flow, water diversion, and climate statistics; concern regarding indigenous freshwater species that may be impacted by the act of diverting water; concern of water not exiting stream beds and flowing into the ocean; and concern of the lack of water needed to maintain a healthy and productive *lo'i kalo* or taro patch in areas where water may continue to be diverted.

Recommended mitigation for the No Action alternative is equal to that of the Proposed Action and would require assessment by qualified professionals who possess an understanding of stream flow mechanics, water diversion, climate statistics, biology, botany, and/or ethnobotany as specified under the recommendation of the Proposed Action. The application of the IIFS decision has the potential to reduce or eliminate cultural impacts of the No Action alternative as many of the streams that are currently in use by community participants where these impacts are identified have been fully restored in accordance with the IIFS.

### Water Sources Alternative

The Water Sources alternative is understood as the decision to obtain water from new sources other than from the diversion of East Maui streams into the existing EMI Aqueduct System. These sources could include new wells, desalinization facilities, and reservoirs located on Maui Island.

The Water Sources alternative has the potential for cultural impacts to the areas where new sources of water are obtained. Potential cultural impacts could be wide-ranging as these new facilities would likely require ground disturbance, land clearing, and/or changes to coastal environments on Maui Island. Impacts related to the diversion of water, as discussed in relation to the Proposed Action would not apply to the Water Sources Alternative, however with the potential of project-related ground disturbance, there is the possibility of impacts to *iwi kūpuna*.

Recommended mitigation for the Water Sources alternative would include a cultural impact study for the specific location or region of Maui Island in which this new infrastructure is installed. Additionally, in the event that any potential historic properties are inadvertently discovered within the Water Sources alternative locations, these discoveries should be reported immediately to the State Historic Preservation Division (SHPD). In the event that *iwi kūpuna* and/or cultural finds are encountered, consultation with lineal and cultural descendants of the area is also recommended.

### Water Lease Volume Alternative

The Water Lease Volume alternative is understood as a modification (reduction) to the volume of water that is diverted from East Maui streams.

The Water Lease Volume alternative has the potential for cultural impacts related to the diversion of water that may apply to a lesser extent than the Proposed Action. These impacts, as discussed in detail in relation to the Proposed Action, include: interest in getting clarification on stream flow, water diversion, and climate statistics; concern regarding indigenous freshwater species that may be impacted by the act of diverting water; concern of water not exiting stream beds and flowing into the ocean; and concern of the lack of water needed to maintain a healthy and productive *lo'i kalo* or taro patch in areas where water may continue to be diverted.

Recommended mitigation for the Water Lease Volume alternative is equal to that of the Proposed Action and would require assessment by qualified professionals who possess an understanding of stream flow mechanics, water diversion, climate statistics, biology, botany, and/or ethnobotany as specified under the recommendation of the Proposed Action. The application of the IIFS decision has the potential to reduce or eliminate this cultural impact as many of the streams that are currently in use by community participants where these impacts are identified have been fully restored in accordance with the IIFS.

### Lease Terms Alternative

The Lease Terms alternative is understood as a modification to the length of the proposed lease term for the "*right, privilege, and authority to enter and go upon*" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "*purpose of developing, diverting, transporting, and using government owned waters* through the existing EMI Aqueduct System. The Proposed

Action constitutes the issuance of one long term (30 years) Water Lease, and this alternative considers either a shorter or longer lease term.

The Lease Terms alternative has the potential for cultural impacts related to the diversion of water that may apply to an equal extent as the Proposed Action. These impacts, as discussed in detail in relation to the Proposed Action, include: interest in getting clarification on stream flow, water diversion, and climate statistics; concern regarding indigenous freshwater species that may be impacted by the act of diverting water; concern of water not exiting stream beds and flowing into the ocean; and concern of the lack of water needed to maintain a healthy and productive *lo'i kalo* or taro patch in areas where water may continue to be diverted.

Recommended mitigation for the Lease Terms alternative is equal to that of the Proposed Action and would require assessment by qualified professionals who possess an understanding of stream flow mechanics, water diversion, climate statistics, biology, botany, and/or ethnobotany as specified under the recommendation of the Proposed Action. The application of the IIFS decision has the potential to reduce or eliminate this cultural impact as many of the streams that are currently in use by community participants where these impacts are identified have been fully restored in accordance with the IIFS.

#### Management Alternative

The Management alternative is understood as a change of the entity that manages the diversion of water from East Maui streams.

The Management alternative has the potential for cultural impacts related to the diversion of water that may apply to an equal extent as the Proposed Action. These impacts, as discussed in detail in relation to the Proposed Action, include interest in getting clarification on stream flow, water diversion, and climate statistics; concern regarding indigenous freshwater species that may be impacted by the act of diverting water; concern of water not exiting stream beds and flowing into the ocean; and concern of the lack of water needed to maintain a healthy and productive *lo'i kalo* or taro patch in areas where water may continue to be diverted.

Recommended mitigation for the Management alternative is equal to that of the Proposed Action and would require assessment by qualified professionals who possess an understanding of stream flow mechanics, water diversion, climate statistics, biology, botany, and/or ethnobotany as specified under the recommendation of the Proposed Action. The application of the IIFS decision has the potential to reduce or eliminate this cultural impact as many of the streams that are currently in use by community participants where these impacts are identified have been fully restored in accordance with the IIFS.

## Section 8    References Cited

---

### **Alameida, Roy Kakulu**

- 1993    Land Tenure and Land Use in Kawaihapai, O‘ahu. Master’s thesis in History. University of Hawai‘i at Mānoa, Honolulu.

### **Andrews, Lorrin**

- 1922    *A Dictionary of the Hawaiian Language; Appendix – Hawaiian Place Names*. By Thomas G. Thrum. Territorial Board of Commissioners of Public Archives, Honolulu

### **ASCE**

- 2001    *Historic Civil Engineering Landmark Nomination East Maui Irrigation System*. Prepared for American Society of Civil Engineers, Honolulu, Hawaii. ASCE Hawaii Section, Honolulu, Hawaii.

### **Ashdown, Inez**

- 1970
- 1971    *Ke Alaloe O Maui (The Broad Highway of Maui)*, edited by I. Kama‘aina Historians. Ace Printing Company, Wailuku, Hawai‘i.

### **Bartholomew, Gail and Bren Bailey**

- 1994    *Maui Remembers, A Local History*. Mutual Publishing, Honolulu, Hawai‘i.

### **Beckwith, Martha W.**

- 1970    *Hawaiian Mythology*. University of Hawaii Press, Honolulu.

### **Beck, Juanita Aguerrebere and Michael Dega**

- 2003    *Archaeological Inventory Survey of Approximately 3.5 Acres of Land Located in the Ahupua‘a of Ho‘olawa, Makawao District, Maui Island, Hawai‘i [TMK:2-9-02:16]*. Honolulu, Hawai‘i.

### **Bishop, S. E.**

- 1861    *Report to the Board of Sandwich Islands Mission*. Honolulu, Hawaii.

### **Bushnell, K.W. and Hallett H. Hammatt**

- 2001    *Archaeological Inventory Survey for Proposed Kahui Po No L.L.C. Roadway Access Easement and 15 Acre Parcel, Ho‘olawaahupua‘a, Makawao District, Island of Maui (TMK 2-9-02:017, -21, -35)*. Kailua, Hawai‘i.

### **Chinen, Jon J.**

- 1958    *The Great Mahele Hawaii’s Land Division of 1848*. University of Hawaii Press, Honolulu, HI.

### **Chun, Allison and David D. Dillon**

- 2008    *Archaeological Inventory Survey Report for a 5.128 Acre Lot in Ha‘ikū, Maui Ho‘olawa Ahupua‘a, Hāmākualoa District, Maui Island TMK (2) 2-9-003: 028*. Makawao, Hawai‘i.



- 2009 *Archaeological Inventory Survey Report for A 2.0 Acre Lot in Huelo, Maui Honokala Ahupua'a, Hāmākualoa District, Maui Island TMK (2) 2-9-002: 041.* Makawao, Hawai'i.
- 2010 *Archaeological Inventory Survey Report for a 3.75-Acre Lot in Ha'ikū, Maui Ho'olawa Ahupua'a, Hāmākualoa District, Maui Island TMK (2) 2-9-002:011.* Makawao, Hawai'i.
- 2014 *Archaeological Assessment Report for a 3.65-Acre Lot in Ha'ikū Ho'olawa Ahupua'a, Makawao District, Maui Island TMK (2) 2-9-002:020.* Makawao, Hawai'i.
- Cipolla, Craig N.**  
2013 Native American Historical Archaeology and the Trope of Authenticity. *Historical Archaeology*. Vol. 47:3:12–22.
- Clark, John R.K.**  
1989 *The Beaches of Maui County*. University of Hawaii Press, Honolulu.
- Conde, Jesse C.**  
1993 *Fowler Locomotives in the Kingdom of Hawaii*. The Narrow Gauge (Special Issue of the Narrow Gauge Railway Society).
- Connolly, Robert D. III**  
1974 State Register of Historic Places Form for Site 50-50-06-1223, DLNR Files.
- Conte, Patty J.**  
2003 *Limited Archaeological Inventory Survey of a Designated Access Easement Through the Huelo Hui Partition, Honopou Ahupua'a, Hamakualoa District, Maui, Hawai'i TMK (2) 2-9-01: 4, 18, and 19.* Makawao, Hawai'i.
- 2004 *Archaeological Inventory Survey and Passive Preservation Plan for the Souza Property, TMK (2) 2-9-01:009, Honopou Ahupua'a, Makawao District, Maui, Hawai'i.* Makawao, Hawai'i.
- 2005a *Archaeological Inventory Survey of the Bolles Property TMK (2) 2-9-07:052, Puolua Ahupua'a, Makawao District, Maui, Hawai'i.* Makawao, Hawai'i.
- 2005b *Archaeological Inventory Survey of TMK (2) 2-9-01:075, Ho'olawa Ahupua'a, Makawao District, Maui, Hawai'i.* Makawao, Hawai'i.
- Cordy, Ross**  
2000 *Exalted Sits the Chief*. Mutual Publishing, Honolulu, Hawaii.
- Cushing, Robert L.**  
1985 *The Beginning of Sugar Production in Hawaii*. Hawaiian Journal of History 19:22.
- Daily Honolulu Press.**  
1883 "Reminiscences of Honolulu." Daily Honolulu Press, Saturday 10 February.1, Honolulu, Hawaii.

**Daniel, Howard E.**

- 1995 "A&B, Land & Sea, One Hundred and Twenty-Five Years Strong" in *Ampersand*, a magazine of Alexander & Baldwin, Inc., Honolulu.

**Daws, Gavin**

- 1968 *Shoal of Time, A History of the Hawaiian Islands*. University of Hawai'i Press, Honolulu, HI.

**Dean, Arthur L.**

- 1950 *Alexander & Baldwin, Ltd. and the Predecessor Partnerships*. Alexander & Baldwin Ltd. and Advertiser Publishing Company, Honolulu, Hawai'i.

**Dega, Michael**

- 2003 *Archaeological Assessment Report on a 3/4-Acre Portion of a Total 7.55-Acres of Land, A Portion of Land Grant 2041: Apana 1, in Paia Honokala Ahupua'a, Hamakualoa District, Island of Maui, Hawai'i (TMK:2-9-05:10)*. Honolulu, Hawai'i.

**Department of Land and Natural Resources / Bureau of Land Conveyances**

- 1845-1926 *Liber. (Land Record Books)*. Territory of Hawai'i: Commissioner of Public Lands.

**Dodge, Rowland B.**

- 1916 Maui No Ka Oi. In *The Mid-Pacific Magazine*. Vol. XI. Ford, Alexander Hume, Honolulu, Hawaii.

**Donham, Theresa K.**

- 1993 *Field Inspection of Revised Road Easement for Mike Adams, Wailua, Koolau, Maui*. Honolulu, Hawai'i
- 2005 *Archaeological Assessment of Two Proposed Use Areas Within TMK Parcel 1-2-01: 04, Kaliae Ahupua'a, Hana (Ko'olau) District, Maui*. Kihei, Hawai'i.

**Duensing, Dawn E.**

- 2001 National Register of Historic Places Registration Form. Hana Belt Road. Manuscript.
- 2005 *Historic American Engineering Record: Hana Belt Road. HAER HI-75*. Prepared for U.S. Department of the Interior, HI-75. National Park Service, 1849 C Street NW Washington, DC 20240-0001.

**Emerson, Nathaniel B.**

- 1909 *Unwritten Literature of Hawaii*. U.S. Bureau of American Ethnology, Bulletin 38.
- 1915 *Pele and Hi'iaka*. 'Ai Pōhaku Press, Honolulu.
- 1965 *The Unwritten Literature of Hawaii: The Sacred Songs of the Hula*. Collected by Nathaniel B. Emerson. Charles E. Tuttle Company, Rutland, Vermont and Tokyo.

**Esri, Inc.**

- 2009 Map Image Layer. Esri, Inc., Redlands, California.

**Evening Bulletin**

1892 Proclamation, pp. 2. Evening Bulletin, Honolulu, Hawaii.

**Fleming, Martha Foss**

1933 *Old trails of Maui, being the research of Martha Foss Fleming*. [n.p.].

**Foote, Donald E., Elmer L. Hill, Sakuichi Nakamura, and Floyd Stephens**

1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the University of Hawai'i Agricultural Experiment Station. U.S. Government Printing Office, Washington, D.C.

**Fornander, Abraham**

1880 *An Account of the Polynesian Race, its Origins and Migrations, and the Ancient History of the Hawaiian People to the Times of Kamehameha I*. Vol. II, 6 Vols, edited by J. F. G. Stokes. Trubner & Co., London.

1916 Legend of Kana and Niheu. In *Fornander Collection of Hawaiian Antiquities and Folklore*. vol. IV, Part III. Bernice Pauahi Bishop Museum, Honolulu, Hawaii.

1918 Legend of Kihapiilani. In *Fornander Collection of Hawaiian Antiquities and Folk-Lore the Hawaiians' Account of the Formation of Their Islands and Origin of Their Race, with the Traditions of Their Migration, Etc., as Gathered from Original Sources*, Vol. V, Part I, edited by T. G. Thrum, pp. 176-182. Bishop Museum Press, Honolulu, HI.

1919 Fornander Collection of Hawaiian Antiquities and Folklore, T.G. Thrum editor, Memoirs of the Bernice Pauahi Bishop Museum (Vol. V), Bishop Museum Press, Honolulu.

1969 *An Account of the Polynesian Race, Its Origin and Migrations and the Ancient History of the Hawaiian People to the Time of Kamehameha I*. Tuttle and Co., Rutland, Vermont.

**Fredericksen, Demaris L.**

1996 *Limited Archaeological Inventory Survey on the Marquard Ho'olawa Parcel (TMK: 2-9-02: 14 por.) Ho'olawa Ahupua'a, Makawao District, Maui Island*. Pukalani, Hawai'i.

**Fredericksen, Demaris L. and Erik Fredericksen**

2003 *Phase 2 of an Archaeological Inventory Survey of a Parcel of Land in Hanawana Valley, Hanawana Ahupua'a, Hamakualoa Moku, Makawao District, Maui (TMK: 2-9-11: 18)*. Pukalani, Hawai'i.

**Fredericksen, Erik**

2000 *Phase 1 of an Archaeological Inventory Survey of a Parcel of Land in Hanawana Valley, Hanawana Ahupua'a, Hamakualoa Moku, Makawao District, Maui (TMK:2-9-11: 18)*. Pukalani, Hawai'i.

**Fredericksen, Erik and Demaris Fredericksen**

- 2004 *Archaeological Monitoring Report for the Ke'anae Park Restroom Improvements Project, Ke'anae Ahupua'a, Hana District, Maui Island (TMK: (2) 1-1-03: 01).* Pukalani, Hawai'i.

**Fredericksen, Erik M.**

- 1998 *Letter Report on the Discovery of Additional Human Remains located on the proposed Nahiku Ocean View Lot Subdivision, Nahiku, Maui, Hawaii, (TMK: (2) 1-2-02:26).* Pukalani, Hawai'i.
- 2007 *An Archaeological Monitoring Report for Individual Wastewater System Improvements at Pua'a Ka'a State Wayside Park, Nakapehu Ahupua'a, Hana District, Maui Island (TMK: (2) 1-2-01: 03) (Job No: F00CF59A).* Pukalani, Hawai'i.

**Fredericksen, Erik M. and Demaris L. Fredericksen**

- 1998 *Archaeological Inventory Survey on a 26.967-Acre Parcel, Located in Makapipi Ahupua'a, Ko'olau Moku, Hana District, Maui Island (TMK: 1-2-02:26).* Xamanek Researches, Pukalani, Hawaii.
- 1998 *Archaeological Inventory Survey of Ho'olawa Ranch Property, Ho'olawa Ahupua'a, Makawao District, Maui Island (TMK: 2-9-02: 14).* Pukalani, Hawai'i.
- 2000 *An Archaeological Inventory Survey on Lot 7-B of Huelo Hui Partition Subdivision, Honokala Ahupua'a Makawao District, Maui Island (TMK: 2-9-02: por. 05).* Pukalani, Hawai'i.

**Fredericksen, Walter M. and Demaris L. Fredericksen**

- 1978 *Archaeological Survey in a Conservation District in Upper Nahiku, Eastern Maui, Hawaii.* Pukalani, Hawai'i.
- 1980 *Report of Research on Hanawi Stream Maui.* Pukalani, Hawai'i.

**Freeman, Otis Willard**

- 1927 *The Economic Geography of Hawaii.* Research Publications No. 2. University of Hawai'i, Honolulu, HI.

**Freeman, Sallie D.M., Holly J. Formolo and Hallet H. Hammatt**

- 2004 *An Archaeological Monitoring Report for Hāna Highway Improvements Huelo to Hāna, M.P. 4.20 to 23.70 Districts of Makawao (Hāmākualoa and Ko'olau) and Hāna, Island of Maui.* Kailua, Hawai'i.

**Giambelluca, Thomas W., Q. Chen, A.G. Frazier, J.P. Price, Y.L. Chen, P.S. Chu, J.K. Eischeid and D.M. Delparte**

- 2013 *Online The Rainfall Atlas of Hawai'i, Bull. Amer.Meteor. Soc., University of Hawai'i at Mānoa, Honolulu, <http://rainfall.geography.hawaii.edu>. (last accessed 17 April 2018).*

**Giambelluca, Thomas W., X. Shuai, M.L. Barnes, R.J. Alliss, R.J. Longman, T. Miura, Q. Chen, A.G. Frazier, R.G. Mudd, L. Cuo and A.D. Businger**

- 2014 Evapotranspiration of Hawai'i. Final report submitted to the U.S. Army Corps of Engineers—Honolulu District, and the Commission on Water Resource Management, State of Hawai'i, University of Hawai'i at Mānoa, Honolulu, <http://climate.geography.hawaii.edu/>. (last accessed 17 April 2018).

**Google Maps**

- 2018 Google Maps online database.

**Green, J.S.**

- 1857 "Editorial." *The Pacific Commercial Advertiser*, Thursday 5 November.1, Honolulu, Hawaii.

**Griffin, Agnes**

- 1987 *Report on a Field Inspection of Hana Ranch Inc. Construction Site*. Prepared for Hana Ranch, Wananalua Ahupuaa. State Historic Preservation Division, Department of Land and Natural Resources, Honolulu, HI.

**Group 70 International, Inc., Davianna McGregor and Inc. Cultural Surveys Hawai'i**

- 1995 *Kalo Kunu O Ka 'Āina A Cultural Landscape Study of Ke'anae and Wailuanui, Island of Maui*.

**Hammatt, Hallett H. and David W. Shideler**

- 2004 *Archaeological Assessment in Support of Streamgage Relocation at Wailua Iki, Ko'olau District and Waihe'e, Wailuku District, Maui (TMK 1-1-02: por. 1 and TMK 3-2-14: por. 1)*. Kailua, Hawai'i.

**Hana Picnic Lunch Co.**

- 2018 Coral Miracle Church, edited by Annabel.

**Handy, E.S. Craighill**

- 1940 *The Hawaiian Planter*. Bishop Museum Bulletin Volume 1, No. 161. Bernice Pauahi Bishop Museum, Honolulu.

**Handy, E.S. Craighill, Elizabeth Green Handy and Mary Kawena Pukui**

- 1991 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Revised ed. Bernice P. Bishop Museum Bulletin 233. Bishop Museum Press, Honolulu, Hawai'i.

**Hatch, Frederick**

- 1922 *Moody's Manual of Railroads and Corporation Securities*. Poor's Publishing Company, New York, N.Y.

**Hau, Skippy**

- 2007 *Hīhīwai (Neritina granosa Sowerby) Recruitment in 'Īao and Honomanū Streams on the Island of Maui, Hawai'i*. Biology of Hawaiian Streams and Estuaries. Bishop Museum, Honolulu..



**Haun, Alan and Jack D. Henry**

2003 *Archaeological Inventory Survey TMK: 1-1-008:015, 023 Land of Pauwalu, Hana District, Island of Maui.*

**Haun, Alan, Dave Henry and Maria Orr**

2004 *Archaeological Inventory Survey Wai'anapanapa State Park, Lands of Honokalani, Wakiu, and Kawaipapa, Hana District, Island of Maui.* Haun and Associates, Keaau, Hawaii.

**Hawaii State Archives**

1891 Department of Interior, Land, May 12, 1891

**Hawaii Web Group**

2017 Road to Hana: Hana Town.

**Hawaiian Gazette**

1906 "Eighteen Feet of Tree in Fourteen Months." *Hawaiian Gazette*, 23 March 1906.6, Honolulu, HI.  
<https://www.newspapers.com/image/49682378/?terms=koolau%2Brubber%2Bcompany#>.

**Hill, Robert, Tanya L. Lee-Greig and Hallett H. Hammatt**

2008 *Archaeological Monitoring Report for the Cesspool Conversion Project at Ke'anae School, Kali'i Ahupua'a, Hāna District, Maui Island TMK: (2)1-1-08:020.* Cultural Surveys Hawai'i Inc.

**Honolulu Republican.**

1901 "An Enterprising Chinese." *The Honolulu Republican*, September 22.9, Honolulu, Hawaii.  
<https://www.newspapers.com/image/71003142>.

**Honolulu Star Bulletin.**

1914 "Koolau Rubber Company Nears Its Last Days." *Honolulu Star Advertiser*, 26 October 1914. Honolulu, HI.  
<https://www.newspapers.com/image/290284210/?terms=koolau%2Brubber%2Bcompany#>.

1917 "Mortgagees" Notice of Intention to Foreclose and of Forclosure Sale." *Honolulu Star Bulletin*, Monday, 4 September 1917.10, Honolulu, Hawaii. Main Edition edition.

1925 "Luau at Opening of Keanae Road." *Honolulu Star Bulletin*, Friday, June 5.21, Honolulu, Hawaii. <http://www.newspapers.com/image/275029205>.

1943 "Walter E. Shaw Was Pioneer In Island Rubber." *Honolulu Star Bulletin*, 24 July 6, Honolulu, HI.  
<https://www.newspapers.com/image/275618378/?terms=nahiku%2Bsugar%2Bco>.

1949 "Keanae Miracle Church Is Being Reconstructed." *Honolulu Star-Bulletin*, Tuesday, December 13.16, Honolulu, Hawaii.  
<http://www.newspapers.com/image/259020105>.

- 1969 “Education Week: With a Visit to the Smallest School in State-20 Pupils in Eight Grades.” *Honolulu Star Bulletin*, Saturday, November 15.43, Honolulu, Hawaii. Main edition. <http://www.newspapers.com/image/271075988>.

### **Ho‘oulumāhiehie**

- 2008a *Ka Mo‘olelo O Hi‘iakaikapoliopele*. Awaiaulu Press, Honolulu.
- 2008b *The Epic Tale Of Hi‘iakaikapoliopele*. Puakea Nogelmeier, translator. Awaiaulu Press, Honolulu.

### **Hopkins, Jamie Uluwehi**

- 2012 *Hānau Ma Ka Lolo, For the Benefit of her Race: A Portrait of Emma Ka‘ilikapuolono Metcalf Beckley Nakuina*. University of Hawai‘i at Manoa, Honolulu.

### **Huapala.org**

- 2018 Hawaiian Music and Hula Archives. Online at [huapala.org](http://huapala.org).

### **James, Van**

- 2001 *Ancient Sites of Maui, Moloka‘i and Lāna‘i*. Mutual Publishing, Honolulu.

### **Judd, Albert F., II, Bernice Judd, Barbara S. Wilcox and Elizabeth G. Alexander**

- 1969 *Missionary Album*. Sesquicentennial Edition. Hawaiian Mission Children's Society, Honolulu.

### **Kahā‘ulelio, Daniel**

- 2006 *Ka ‘Oihana Lawai‘a Hawaiian Fishing Traditions*. Translated by M.K. Pukui. Bishop Museum Press, Honolulu.

### **Kamakau, Samuel Manaiakalani**

- 1961 *Ruling Chiefs of Hawai‘i*. Kamehameha Schools Press, Honolulu.
- 1991 *Tales and Traditions of the People of Old: Nā Mo‘olelo a ka Po‘e Kahiko*, edited by D. B. Barrère. Translated by M. K. Pukui. Bernice P. Bishop Museum Special Publication 51. Bishop Museum Press, Honolulu, Hawai‘i.
- 1992 *Ruling Chiefs of Hawai‘i*. Revised ed. The Kamehameha Schools Press, Honolulu, Hawai‘i.

### **Kawelu, Kathleen L.**

- 2015 *Kuleana and Commitment: Working Toward a Collaborative Hawaiian Archaeology*. Univeristy of Hawai‘i Press, Honolulu.

### **Kennedy, Joseph**

- 1986 *Archaeological Investigations for Proposed East And West Wailuaiki Hydroelectric Project*. Honolulu, Hawai‘i
- 1990 *Archaeological Reconnaissance Report Concerning TMK: 01-3-7:16, Located Near Kainalimu Bay, Hana Maui*. Haleiwa, Hawai‘i.

**Kennedy, Joseph, Patrick Trimble, Laura Reintsema and MaryAnne B. Maigret**

- 1992 *Archaeological Inventory Survey with Subsurface Testing Report at TMK: 2-9-103; West Hanawana Ahupua'a, Makawao District, Island of Maui.* Kihei, Hawai'i.

**Kirch, Patrick V.**

- 1996 *Legacy of the Landscape: An Illustrated Guide to Hawaiian Archaeological Sites.* University of Hawaii Press, Honolulu, Hawai'i.
- 2000 *On the Road of the Winds: An Archaeological History of the Pacific Islands before European Contact.* University of California Press, Berkeley and Los Angeles, California.
- 2012 *A Shark Going Inland is My Chief: The Island Civilization of Ancient Hawai'i.* University of California Press, Berkeley, California.

**Kouneski, Elena and Joseph Kennedy**

- 2006 *An Archaeological Assessment for a Property Located at TMK (2) 1-2-02:50 in Nahiku Homesteads, Ko'olau District, Island of Maui.* Archaeological Consultants of the Pacific, Haleiwa, Hawaii.

**Kuykendall, Ralph S.**

- 1931 "Who Was Builder of the King's Highway?" in *Honolulu Star Bulletin*, June 20, 1931,4.
- 1967 *The Hawaiian Kingdom 1874-1893: The Kalakaua Dynasty.* Vol. III. University of Hawaii Press, Honolulu, Hawaii.

**Landgraf, Anne Kapulani**

- 1994 *Nā Wahi Pana O Ko'olau Poko: Legendary Places of Ko'olau Poko.* University of Hawai'i Press, Honolulu.

**Lindsay, D. C.**

- 1907 Rubber in Hawaii. *The Hawaiian Forester and Agriculturalist* IV(October 1907).

**Linnekin, Jocelyn**

- 1985 *Children of the Land.* Rutgers University Press, New Brunswick.

**Lucas, Paul F. Nahoa (editor)**

- 1995 *A dictionary of Hawaiian legal land-terms.* Native Hawaiian Legal Corp. : University of Hawai'i Committee for the Preservation and Study of Hawaiian Language, Art, and Culture, Honolulu.

**Lueras, Leonard**

- 1983 *On the Hana Coast.* Honolulu: Emphasis International Ltd.

**Lum, Arlene.**

- 1969 "With a Visit to the Smallest School in State - 20 Pupils in Eight Grades." *Honolulu Star-Bulletin*, November 15, 1969.43 Honolulu, Hawai'i. The Star-Bulletin Saturday Magazine edition.

**Lyman, Kepa and Michael Dega**

- 2015 *An Archaeological Inventory Survey of the Rohr Family Access Road in the Ahupua'a of Honopou, Makawao District, Maui Island, Hawai'i [TMK: (2) 2-9-002:019 (por.)]*. Honolulu, Hawai'i.

**Madeus, Jonas and Erik M. Fredericksen**

- 2006 *Archaeological Inventory Survey of a 0.84 Acre Parcel in Honolulunui Ahupua'a, Ko'olau Moku, Hana District, Island of Maui (TMK [2] 1-2-01:26)*. Xamanek Researches, LLC, Pukalani, Hawaii.

**Madeus, Jonas K. and Erik M. Fredericksen**

- 2008 *Archaeological Inventory Survey of a 3.136 Acre Parcel in Hanawana Ahupua'a, Hamakualoa Moku, Makawao District, Island of Maui (TMK: (2) 2-9-011: Parcel 17)*. Pukalani, Hawai'i.

**Madeus, Jonas K. and Hallett H. Hammatt**

- 2017 *An Archaeological Monitoring Report for the Hāna Highway Emergency Road Repairs, Keōpuka, Honomanū, and Ke'anae Ahupua'a, Hana District, Maui Island, TMKs: [2] 1-1-001:022, 023 (por.), 044, 999 (por.), and 1-1-002:002, 012 (por.)*. Wailuku, Hawai'i.

**Maly, Kepa and Onaona Maly**

- 2001 *Volume I Wai o ke Ola: He Wahi Mo'olelo no Maui Hikina: A Collection of Native Traditions and Historical Accounts of the Lands of Hāmākua Poko, Hāmākua Loa and Ko'olau, Maui Hikina (East Maui), Island of Maui*. Prepared for East Maui Irrigation Company, Pā'ia, HI. Kumu Pono Associates, Hilo, HI.

**McCurdy, Todd D. and Hallett H. Hammatt**

- 2010 *Archaeological Inventory Survey Report for the Kolea Reservoir Decommissioning Project, Kolea Ahupua'a, Hana District, Maui Island, TMK: [2] 1-1-001:050*. Prepared for Oceanit Laboratories, Inc. Cultural Surveys Hawaii, Wailuku, HI.

**McCurdy, Todd D., Tanya L. Lee-Greig and Hallett H. Hammatt**

- 2014 *Literature Review and Field Inspection for the Proposed Hana Highway Improvements, Huelo to Hāna, Phase II, Project, Makaīwa Ko'olau Ahupua'a, Hāna District, Maui Island TMK: [2] 1-1-001:999; [2] 1-1-002:999; [2] 1-1-007:999; [2] 1-1-008:999; [2] 1-1-009:999 and [2] 1-2-001:999 (pors)*. Cultural Surveys Hawaii, Wailuku, HI.

**McGregor, Davianna Pomaika'i**

- 1996 *Nā Kua'āina: Living Hawaiian Culture*. University of Hawai'i Press, Honolulu.

**Meares, John**

- 1791 *Extracts from: Voyages Made in the Years 1788 and 1789 From China to the Northwest Coast of America, with an Introductory Narrative of a Voyage Performed in 1786, from Bengal, in the Ship "Nootka"*. Translated by B. Cartwright. Hawaiian Historical Society Reprints. Legographic Press, London.

**Mifflin, Thomas**

1983 *Schooner from Windward*. University of Hawaii Press, Honolulu, Hawaii.

**Minerbi, Luciano**

1975 *Identifying and Managing the scenic Resources in Hawaii's Coastal Zone*. State of Hawaii Department of Planning and Economic Development by the Pacific Urban Studies and Planning Program, Honolulu, Hawai'i.

**MKE Associates LLC and Inc. Fung Associates**

2013 *Hawaii State Historic Bridge Inventory and Evaluation*. Hawaii.

**Moffat, Riley Moore and Gary L. Fitzpatrick**

1995 *Surveying the Mahele: Mapping the Hawaiian Land Revolution*. Palapala'āina. Editions Limited, Honolulu, Hawai'i.

**Nader, Laura, editor**

1996 *Naked science: Anthropological inquiry into boundaries, power, and knowledge*. Routledge, New York.

**Nagamine Okawa Engineers Inc. and Inc. Fung Associates**

2015 *Hana Highway, Route 360 Bridge Preservation Plan*. Hawaii.

**Nakuina, Emma**

1893 *Ancient Hawaiian Water Rights*. Hawaiian Annual.

**Nakuina, Emma M.**

1994 *Nanaue The Shark Man & Other Hawaiian Shark Stories*. Kalamakū Press, Honolulu.

**Nellist**

1925

**Nishimoto, Robert T.**

2010 *RE: Request For Stream Flow Estimates for H50 and H70 and the Division of Aquatic Resources' Position Statement on Minimum Habitat Flows*. State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources.

**O'Rourke, Laura C. and Christopher M. Monahan**

2003 *Archaeological Inventory Survey of Approximately 0.75 Acres of Land Located in the Ahupua'a of Ho'olawa, Makawao District, Maui Island, Hawai'i [TMK:2-9-02:42]*. Honolulu, Hawai'i.

**Oceanit Laboratories, Inc.**

2000 *Hana Highway Rockfall Mitigation Plan*. Oceanit, Honolulu, HI.

**Palama, Stephen**

1981 *Archaeological Field Inspection*, Wailua, Hana, Maui, Makawao, Hawai'i.

**Pauketat, Timothy R.**

2001 *The Archaeology of Traditions*. University Press of Florida, Gainesville, Florida.



**Penkiunas, Daina**

1992 *National Register of Historic Places Submission Form: Keanae School*. Honolulu, Hawaii.

**Perry, Antonio**

1912 *A Brief History of Hawaiian Water Rights*. Honolulu.

**Perzinski, David, Tina Bushnell, William Folk and Hallett H. Hammatt**

2002 *An Archaeological Inventory Survey of an Approximately One-Acre Parcel in West Hanawana Ahupua'a, Makawao District, Island of Maui (TMK 2-9-11 :04 & 5)*. Kailua, Hawai'i.

**Pestana, Elizabeth and Michael Dega**

2005 *An Archaeological Assessment Report for 11.15-Acres of Land in Huelo, Puolua Ahupua'a, Honokala/Hamakualoa District, Island of Maui, Hawai'i [TMK 2-9-05:23]*. Honolulu, Hawai'i.

**Pignataro, Anthony**

2017 *RIP Former Hawaii and Maui Resident Jim Nabors*, edited by M. Time. Maui Time, Wailuku, Hawaii.

**Pukui, Mary K.**

1983 *ʻŌlelo Noʻeau: Hawaiian Proverbs and Poetical Sayings*. Bishop Museum Special Publication No.71. Bishop Museum Press, Honolulu.

1995 *Na Mele Welo: Songs of Our Heritage*. University of Hawai'i Press, Honolulu.

**Pukui, Mary K. and Samuel H. Elbert**

1986 *Hawaiian Dictionary*. Second edition. University of Hawaii Press, Honolulu.

**Pukui, Mary K., Samuel H. Elbert, and Esther Mookini**

1976 *Place Names of Hawai'i: Revised and Expanded Edition*. University of Hawai'i Press, Honolulu, Hawai'i.

**Pukui, Mary Kawena and Laura C.S. Green**

1995 *Folktales of Hawai'i*. Bishop Museum Press, Honolulu.

**Real Geeks**

2013 *Celebrities in Maui Hawaii*, edited by W. R. Group.

**Richards, William, Lorrin Andrews and Jonathan Green**

1829 *A Tour of Maui*, edited by ABCFM. The Missionary Herald, Proceedings At Large of the American Board of Commissioners for Foreign Missions with a General View of Other Benevolent Operations. Crocker and Brewster, Boston.

**Richards, William and Charles Samuel Stewart**

1825 *The Missionary Herald*. Vol. 21, edited by ABCFM. The Proceedings At Large of the American Board of Foreign Missions with a General View of Other Benevolent Operations. Crocker and Brewster, Boston.

**Schmitt, Robert C.**

1977 *Historical Statistics of Hawaii*. University Press of Hawaii, Honolulu, Hawai'i.

**Schoofs, Robert**

1978 *Pioneers of the Faith. History of the Catholic Mission in Hawaii (1827-1940)*. Sturgis Printing Co, Honolulu.

**Siddall, John Williams**

1917 *Men of Hawaii: Being a Biographical Reference Library, Complete and Authentic*. Vol. I. Honolulu Star Bulletin, Honolulu, Hawaii.

**Sinoto, Aki and Jefferey Pantaleo**

1992 *Archaeological Inventory Survey of the East Maui Waterline Project, Wailuku and Makawao, Maui Island (TMK 2-5-03 thru 05; 2-7-03; 2-7-07 thru 11; 2-7-13, 2-7-16 thru 20; 3-8-01; 3-8-06 thru 07, 3-8-59; 3-8-61, 3-8-71)*. Aki Sinoto Consulting, Honolulu, Hawai'i.

**Sinoto, Aki, Lisa Rotunno-Hazuka and Jefferey Pantaleo**

2001 *An Archaeological Inventory Survey of a 26-Acre Ocean Front Parcel Nahiku 'Ili, Ko'olau Moku, Hana, Maui (TMK (2) 1-2-03:21)*. Aki Sinoto Consulting, Honolulu, Hawaii.

**Smith, Jared G.**

1943 "Nahiku Rubber." *Honolulu Advertiser*, 19 January 1943. Honolulu, Hawaii. <https://www.newspapers.com/image/259718830/?terms=nahiku%2Brubber%2Bcompany%2Bcloses>.

**Soehren, Lloyd J.**

1963 *An Archaeological Survey of Portions of East Maui, Hawai'i*. Bernice Puahi Bishop Museum, Honolulu, Hawai'i.

2002-2010 Nupawai o Kukuiopiikea [Web Page], Ulukau: The Hawaiian Electronic Library. (last accessed April 2015).

**Speakman, Cummins E.**

1978 *Mowee: An Informal History of the Hawaiian Island*. Peabody Museum of Salem, Salem, MA.

**State of Hawaii**

2008 *Instream Flow Standard Assessment Report Island of Maui Hydrologic Unit 6034, Honopou*. Department of Land and Natural Resources, Commission on Water Resource Management. Electronic document.

2015a *Hana Forest Reserve Unit A* [map].

2015b *Koolau Forest Reserve Unit B* [map].

2018 State of Hawaii, Division of Forest and Wildlife: Outdoor Recreation.

**State of Hawai'i Court of Appeals**

- 2012 *In RE Petition to Amend Interim Instream Flow Standard for Waikamoi, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Waiohue, Paakea, Kapaula, & Hanawai Streams.* Electronic document, [http://www.courts.state.hi.us/docs/opin\\_ord/ica/2012/nov/CAAP-10-0000161mopada.pdf](http://www.courts.state.hi.us/docs/opin_ord/ica/2012/nov/CAAP-10-0000161mopada.pdf)

**Sterling, Elspeth P.**

- 1998 *Sites of Maui*. Bishop Museum Press, Honolulu.

**Stokes, John F.G.**

- 1916 Maui Heiau. Department of Anthropology. Manuscript. Bernice Pauahi Bishop Museum. Honolulu, Hawai'i.

**Sullivan, J.**

- 1926 *A History of C. Brewer & Co.*, Honolulu.

**SWCA Environmental Consultants**

- 2019 *Terrestrial Flora and Fauna Technical Report for the Proposed East Maui Water Lease*. Bishop Square ASB Tower, 1001 Bishop Street, Suite 2800, Honolulu, Hawaii 96813. SWCA Environmental Consultants, Honolulu, HI.

**Taylor, Frank J., Earl M. Welty and David W. Eyre**

- 1976 *From Land and Sea: The Story of Castle and Cooke of Hawaii*. Chronicle Books, San Francisco, California.

**The Hawaiian Gazette.**

- 1871 "Death of L. L. Torbert." *The Hawaiian Gazette*, Wednesday, 23 August 1871.2, Honolulu, Hawaii.
- 1907 "First Rubber Convention Held on American Soil." *The Hawaiian Gazette*, Friday, 18 October 1907.2, Honolulu, Hawaii.
- 1908 "In the Nahiku Rubber Groves." *The Hawaiian Gazette*:2, Honolulu, Hawaii.

**The Hawaiian Star.**

- 1897a "Big Prices." *The Hawaiian Star*, December 19, 1898. Vol. V No.:4, Honolulu, Hawaii. 2061 edition.
- 1897b "Hana's Future." *The Hawaiian Star*, February 2, 1897. Vol. III No.:5, Honolulu, Hawaii. 1186 edition.
- 1906a "Homesteads Opened on Maui." *The Hawaiian Star*, May 26, 1906.5, Honolulu, Hawai'i.
- 1906b "Liquor Traffic in Koolau, Maui." *The Hawaiian Star*, May 26, 1906.5, Honolulu, Hawai'i.
- 1906c "News in a Nutshell." *The Hawaiian Star*, Saturday, 8 December 1906.8, Honolulu, Hawaii. <https://www.newspapers.com/image/49617807>.

- 1907 "Rubber Lands at Nahiku a Surprise." *The Hawaiian Star*, 14 October 1907.5, Honolulu, Hawaii.

### **The Honolulu Advertiser.**

- 1901a "A Chinaman's Rice Junk Makes a Trip." *The Honolulu Advertiser*, September, 2.11, Honolulu, Hawaii. <http://www.newspapers.com/image/258843047>.
- 1901b "The House Excited: Humphreys Latest Plot Roundly Scored." *The Honolulu Advertiser*, 26 June.9-14, Honolulu, HI. <https://www.newspapers.com/image/258822000/?terms=nahiku%2Bsugar%2Bco>.
- 1902 "Protest of Maui: Boyd Explains the Nahiku Water License, Homesteaders Have Rights." *Honolulu Advertiser*, 6 January 1902.2, Honolulu, HI. <https://www.newspapers.com/image/258222004/?terms=nahiku%2Bsugar%2Bco>.
- 1908 "Hevea Rubber Trees Doping Exceptionally Well." *The Honolulu Advertiser*, Friday, 1 May 1908.5, Honolulu, Hawaii.
- 1910 "Through the Hana District of Maui." *The Honolulu Advertiser*, 4 September 1910.13, Honolulu, Hawaii. <http://www.newspapers.com/image/258541235>.
- 1914 "The "Ditch Country"--A Wonder Land--By Jack London." *The Honolulu Advertiser*, Saturday, 28 November 1914.10, Honolulu, Hawaii. <http://www.newspapers.com/image/267770412>.
- 1978 "Mixing H with 3 R's." *The Honolulu Advertiser*, Wednesday, April 26.1, Honolulu, Hawaii. <http://www.newspapers.com/image/261659312>.
- 2010 "Nonprofit aims to establish charter school in East Maui" *The Honolulu Advertiser*, June 2, 2010.14, Honolulu, Hawai'i.

### **The Maui News**

- 1900 Selected Article, 31 March 1900.
- 1902 Selected Article, 29 March 1902.
- 1906 "Rubber Has Bright Prospects." *Maui News*, 19 May 1906. Vol. Volume XII No. Wailuku, HI. <https://www.newspapers.com/image/64200102/?terms=koolau%2Bbrubber%2Bcompany#>.
- 1907 "Makawao Lines." *Maui News*, 28 December 1907. Vol. Vol. XIV, Number 47 No.:1, Wailuku, Hawaii. <https://www.newspapers.com/image/49594829/?terms=Nahiku%2Bsugar%2Bco%2Bbrubber>.
- 1912 "Hawaiian Rubber: Experiment Give Encouraging Results Says Expert Wilcox." *The Maui News*, Saturday, 10 August 1912.1, Wailuku, Hawaii.

- 1926 "Valley Isle May Be Proud of Officials." *Maui News*, December 4. Wailuku. Industrial Special Edition edition.

### **The Pacific Commercial Advertiser**

- 1862 "Passengers." *The Pacific Commercial Advertiser*, Thursday, 25 September 1862.2, Honolulu, Hawaii. Advertiser 1862
- 1869a "Around East Maui." *The Pacific Commercial Advertiser*, September 4, 1869.3 Honolulu, Hawaii.
- 1869b "The Epidemic." *The Pacific Commercial Advertiser*, October 2, 1869.3 Honolulu, Hawaii.
- 1910 "Three Hundred Thousand Trees Approaching the Tapping Stage - Managers View Prospect with Optimism." *Pacific Commercial Advertiser*, 02 September 1910.9-12, Honolulu, HI.  
<https://www.newspapers.com/image/258540521/?terms=koolau%2Brubber%2Bcompany>.

### **The Polynesian**

- 1850 "Agricultural Meeting." *The Polynesian*, Saturday, 24 August 1850.2, Honolulu, Hawaii.
- 1851a The Best Quality of Irish Potatoes in any Quantity, at the Lowest Prices, on the Shortest Notice by L. L. Torbert at Honuaula, East Maui, pp. 3.
- 1851b "For the Polynesian." *The Polynesian*, Saturday, 7 June 1851.1, Honolulu, Hawaii.
- 1852 "Report of the Committee to Award Premiums." *The Polynesian*, Saturday, 5 June 1852.2, Honolulu, Hawaii.
- 1853a *The Polynesian* November 19, 1853. Vol. 10 No. 2 Honolulu, Hawaii. 28 edition.
- 1853b "For the Polynesian." *The Polynesian* December 24, 1853. Vol. 10 No. 2 Honolulu, Hawaii. 33 edition.
- 1854 *The Polynesian* January 21, 1854. Vol. 10 No. 2 Honolulu, Hawaii. 37 edition.
- 1855a "To the President and Gentlemen of the Royal Hawaiian Agricultural Society." *The Polynesian*, Saturday, 23 June 1855.2, Honolulu, Hawaii.
- 1855b "Will Be Sold At Auction..." *The Polynesian*, Saturday, 28 July 1855.2, Honolulu, Hawaii.

### **Thompson, W.J.**

- 1902 Hawaii. vol. 37. Louisiana Planter and Sugar Manufacturer Company, New Orleans, Louisiana.

### **Thrum, Thomas G.**

- 1907 Hawaiian Folk Tales: A Collection of Native Legends. A.C. McClurg & Co., Chicago.
- 1908 Hawaiian Almanac and Annual for 1909. Thomas G. Thrum, Honolulu.



1917 Hawaiian Almanac and Annual for 1918. Thomas G. Thrum, Honolulu.

### **TripAdvisor LLC**

2018 Road to Hana Tours: Tours and Tickets Hana.

### **U.S. Department of Agriculture**

2001 Soil Survey Geographic (SSURGO) database. U.S. Department of Agriculture, Natural Resources Conservation Service. Fort Worth, Texas. <http://www.nrcg.nrcs.usda.gov/products/datasets/ssurgo/> (accessed March 2005).

### **U.S. Geological Survey**

1991 *Kilohana quadrangle, Hawaii* [map]. 1:24,000. United State Department of the Interior, USGS, Reston, VA.

1992a *Haiku Quadrangle* [map].

1992b *Hana Topographic Quadrangle* [map].

1992c *Keanae quadrangle, Hawaii* [map]. 1:24,000. United State Department of the Interior, USGS, Reston.

1992d *Nahiku Quadrangle* [map].

### **Ulukau**

2010 *Hawaiian Place Names*. Available online at <http://ulukau.org/cgi-bin/hpn?e=p-0mahele--00-0-0--010---4-----0-0l--1en-Zz-1---20-about---00031-00110escapewin-00&a=d&cl=CL1>.

### **Ulupalakua Ranch**

2017 Ulupalakua Ranch History, pp. synopsized history of the ranch. vol. 2017.

### **Vizenor, Gerald**

1999 *Manifest Manners: Narratives on Postindian Survivance*. University of Oklahoma Press, Lincoln, Oklahoma.

### **Waihona 'Aina**

2002 Mahele Database, Waihona 'Aina Corporation, <http://www.waihona.com/>. (last accessed December 8th, 2015).

### **Walker, Winslow**

1931 Archaeology of Maui. Manuscript. Bernice Pauahi Bishop Museum. Honolulu, Hawai'i.

### **Way, Carl M., Albert J. Burky, Juliana M. Harding, Skippy Hau, William K.L.C. Puleloa**

1998 *Reproductive biology of the endemic goby, *lentipes concolor*, from Makamaka 'ole Stream, Maui and Waikolu Stream, Moloka'i*. Environmental Biology of Fishes. Kluwer Academic Publishers, Netherlands.

### **Webmaster**

2017 Hana Cultural Center and Museum.

**Wenkam, Robert**

1970 *Maui: the Last Hawaiian Place*. Friends of the Earth, San Francisco.

**Westervelt, W.D.**

1910 *Legends of Ma-ui - A Demi-God of Polynesia and of His Mother Hina*. The Hawaiian Gazette Company, Honolulu.

**Wikimedia**

2016 Maui, Keanae School, edited by P. Joel Bradshaw. Wikimedia Commons.

**Wilcox, Carol**

1996 *Sugar Water: Hawaii's Plantation Ditches*. University of Hawai'i Press, Honolulu, Hawai'i.

**Wilson Okamoto & Associates, Inc.**

2001 *Final Preservation Plan for County of Maui Bridges Within the Hana Highway Historic District*. County of Maui, Department of Public Works and Waste Management.

**Wood, Paul**

2003 Hanna's Heritage,. In. Hawaii Magazine, March-April 2003, Honolulu.

**Wright, J. C.**

1974a *Hawaii Register of Historic Places Submission Form: Keanae Church*. Bureau of Conveyances, Honolulu, Hawaii.

1974b *Hawaii Register of Historic Places Submission Form: Li Hing Society*. Honolulu, Hawaii.

**Youngblood, Ron, Leonard Lueras, Carl Lindquist, Beverly Creamer and Ka upena Wong**

1983 *On the Hana coast : being an accounting of adventures, past and present, in a land where the hand of man seems to rest lightly*. 1st ed. The Wanderer. Published by Emphasis International Ltd. and Carl Lindquist, Honolulu, HI.

**Yucha, Trevor and Hallett H. Hammatt**

2017 Archaeological Inventory Survey Report for the Proposed Nahiku Community Center Project, Nahiku Ahupuaa, Hana District, Maui Island, TMK: [2] 1-2-002:023 (por.). Cultural Surveys Hawaii, Kailua, Hawaii.

**Yucha, Trevor M. and Hallet H. Hammatt**

2017 *Archaeological Inventory Survey Report for the Hana Highway Rockfall Mitigation Mile Post 12 Project, Honomanū Ahupua'a, Hāna District, Maui Island, TMKs: [2] 1-1-001:021 por., 044 por., and [2] 1-1-001 (Hana Highway Right-of-Way)*. Cultural Surveys Hawaii, Inc., Wailuku, Maui.

## Appendix A Kyle Nakanelua Transcription

---

**Cultural Impact Assessment, East Maui Irrigation Water Lease renewal Project, Cultural Surveys Hawai'i (CSH) interview with Kyle Nakanelua (KN), at the Kahului Starbucks, on 13 April 2018**

**CSH: CSH Researcher**

**KN: Kyle Nakanelua**

CSH: Alright, I got it starting. Hope it doesn't pick up too much of this outside stuff. Okay so, let's start with your name.

KN: Kyle Nakanelua. Kyle K. Nakanelua.

CSH: Ok. And your birth date?

KN: Tenth September, 1959.

CSH: And where were you born and raised?

KN: Born and raised Honolulu, Hawai'i. Seventeen years. Four years military service. 1982 moved to Maui.

CSH: What part of Maui?

KN: Wailuku.

CSH: Ok.

KN: And yeah, been here ever since.

CSH: Can you tell me a little bit about your parents? Your mom, your dad?

KN: My mom is Barbara Jean Rodrigues born and raised on O'ahu. Her father is from Kokomo, Maui. Her mother was born in Portugal and came over on the boat and was raised in Maui. And my father is Paul Hanai Nakanelua, Jr. Born and raised Wailua Village on Maui. The greater area called Wailua Nui.

CSH: Ok, alright do you have siblings?

KN: I have an older sister and I have a younger sister.

CSH: Oh ok, right smack dab in the middle. Surrounded by women.

KN: Yeah. Only boy, black sheep, the whole deal.

CSH: Ok you were saying you're a...ok let's back up a little bit. So, you went to military and after the military you went to like a fire academy or something?

KN: No, I got a job. I was in the fire academy in the military. And then I got a job here on Maui for DOT - Airports Division as a fireman. Did 30 years and retired.

CSH: Nice. Ok...so tell me about your connections to this area.

KN: To this area. Ok.

CSH: ...Or to the project area.

KN: So, the moku, so the project area or the moku which is an ancient land division, so there are 12 on Maui, 12 moku. And one of those moku is Ko'olau and it is that whole project area falls within this land division called Ko'olau. And within the Ko'olau there are all these ahupua'a and then one of which is the Wailua-Keanae land division, from mauka to makai. Um, my connection to this place is through my dad, through his mother, through her ancestors. And we go back to, going through my notes...before the Kamehameha dynasty, we lived in that area. I spent summers and winter breaks with my grandparents and my sister and my older cousin. Spending time with the old people, working in the taro fields.

CSH: Oh, so grandma and grandpa put you to work?

KN: Oh yeah [laughing].

CSH: Wow.

KN: Well it wasn't work, it was a way of life! For them it was. So, working the taro fields...going, gathering...gathering food products from the...from all the rivers and streams 'ōpae, 'opihi, hīhīwai.

CSH: Oh, you guys have hīhīwai?!

KN: Oh yeah.

CSH: I'm jealous! Yummy.

KN: Yeah. Pohole just all the natural food products that exist out there. We gathered and that was a way of life.

CSH: You guys caught 'o'opu too?

KN: Caught 'o'opu.

CSH: Ate that too?

KN: 'O'opu it used to be more prolific in this area,,but not as much as it used to be. And I've seen it. As a young child, 'o'opu was like prevalent in the streams

CSH: Yeah.

KN: And now it ain't. I believe there still their there but I used to see them before I don't see them anymore.

CSH: Sad. So, what was the typical day like when you were with grandma and grandpa? You guys wake-up . . .

KN: Yeah, get up, clean up, house chores, and then...yard chores or farm chores. The farm was away so it's either weeding the taro patch, cutting the grass, pulling the taro, helping clean up all the – you know when you harvest the taro there's always left-over work, right? There's - you got to move the roots, you got to move the cut huli, just all of these...just farming tasks. Yeah. So, we would participate in. Everything is manual labor. Nothing was machines. So, there was always [laughing] work to do.

CSH: Do you know what varieties of kalo?

KN: Basically, we knew the two major varieties of Lehua and Moi.

CSH: Ok.

KN: There's many other varieties that I can name but those - I mean, when we were growing up - those were pretty much the varieties we had.

CSH: And then, did you guys go fishing? Makai?

KN: Yeah, so the fishing that we went to was my grandmother and them did the fishing. We weren't fishers.

CSH: Ok.

KN: They fished for the little fish, the 'ōhua.

CSH: Oh, ok. Yeah, yeah, yeah.

KN: They fished for little eels the way they did it. How they put the palu in the hand and then the small eels would come in and they would grab them and stuff like that. We participated in picking 'opihi.

CSH: Ok.

KN: And certain types of limu.

CSH: How would you guys, like if you...would you eat it for lunch or dinner?

KN: Yeah, take it home clean it and then have it for dinner and then what was ever leftover we would have it for lunch the next day.

CSH: How would you guys prepare it? Would you guys fry it?

KN: 'Opihi was raw. Hīhīwai was soup.

CSH: Oh.

KN: Um, the fish was dried or fried. 'O'opu was steamed, yeah.

CSH: Interesting. What about the limu? For poke?

KN: Just on the side. Just as a condiment. You just add them in.

CSH: Cool. Do you know of any mo'olelo of the area - like myths, legends?

KN: There's a lot of them. So there are various ponds that are dedicated to the mo'o and there are various streams that are dedicated to puhi. And there's one stream that's named after a mo'o and that stream or that area--stream rivulet is called Waiakakamilo, so "the water of Kamilo." There's another stream in the area of Waianu, I believe. It's a big one. It's a main tributary and it's called Waiakuna or "the waters of Kuna" and that was a big puhi of that place, at that time.

CSH: Did you guys ever swim in those or was it like, kapu? Because...

KN: No, below the waters of Waiakuna is a pond called Lala'au, AKA Ching's Pond. We swam in that one. But we didn't swim too much in the ponds because the land that we take care of, my grandmother's ancestral lands, there's little ponds in there so we just swam in those.



CSH: Nice, nice. Yeah, yeah. Ok. Any trails in the area?

KN: So, there's the muliwai, which is the water that is left over at the bottom - that whole area is called the muliwai. It's at the end of the village road and from that place to Wailua Iki which is that little harbor on the opposite...right around the corner from the muliwai there is a trail called Kamapua'a out there. Also there's another mo'olelo about big papa or reef area that exists just off of the shore line, outside of Sammy Akina's place. It's called Ha'aluea and that was the 'awe'awe or the tentacle of the great squid called Ha'aluea and it was cut off and then became petrified by 'Ai'ai. And that is associated to the mo'olelo called "Ku'ula from Hāna"

CSH: Ok. Yeah. Did you guys...

KN: And that is Ha'aluea is...it's a.... traditionally, we call it a papa, but it's a big shelf. It's a reef and it looks like a big arm

CSH: Yeah.

KN: It's a fish breeding ground - that's what it is. It's because it's a reef system you got little fish, and bigger fish, and bigger fish, and 'opihi and everything is out there. And it's like...

CSH: Is there like an outlet from the stream that goes out there? Or springs?

KN: Well, the muliwai is here so it feeds this area with that fresh brackish water.

CSH: Ok, so it is a....

KN: And then Ha'aluea is outside of that so the thing is just one big feeding ground and it's where they breed, its where they spawn...it's where -they just grow. You know and when the growth gets so big then they move on to the next. Yeah and they just keep moving on.

CSH: Nobody fishes over there though?

KN: All the people over there fish over there.

CSH: They do fish over there?

KN: Yeah.

CSH: Ok.

KN: They take their zoris out and yeah pretty much. But the people that go there, they're the ones that go there. Nobody...I don't go there [laughing].

CSH: Yeah, yeah. Got you. Alright. Ummm. Let's see, what about any archaeological sites or cultural, or historic sites, burial sites?

KN: I think the major archeological site is the heiaus that are behind the school and the name of that heiau complex- it is actually a complex, yeah - there are couple of platforms but it's called Pākanaloa and it oversees - if you clear all the hau and all that rubbish out there, it will oversee this little gulch like where the Hāna road passes through and it's the Redo property. The Redos' live there now. They have a watercress farm, but on that farm, they have the spring called 'Ōhi'a and that spring is, I would say it's an archaeological site as well - you know - that's [inaudible] generations old. Because it was founded and formed by Kāne and Kanaloa. And I'm not talking

about those magical, mystical gods. I'm talking about two real guys that actually existed, you know? And for me and my educational base they're ancestors that are upon us, ancestors that were so great and from such a time, so long ago, that we have commemorated them to various landscapes across, you know, across this pae moku. But definitely on Maui that is one of their places that they have established. And if you think about establishing a spring - the establishment of a spring - it's drinking water. Fresh, pure drinking water that is necessary for people to live. And so if you look at it, there's a spring there, and then above the spring there's a temple complex or let's call it a church complex. Why do you need a church? You need a church because you have people. And people require [loud sigh] spiritual sustenance, you know, as well as food sustenance. So, there was an established ancient village there of where that was the central focal point. And if you look at the societies of the world - and everywhere - the center of society is the religious institution for a lack of a better phrase at this moment in time. So, the temple complex is called Pākanaloa or "the enclosure of Kanaloa" and it oversees and is connected to the well spring called 'Ōhi'a that was established by Kāne and Kanaloa who are notable ancestors that are always paired together. So, I think yeah if that ain't an archaeological I don't know what is [laughing].

CSH: Do people still go up there or it's choked with hau?

KN: It's choked with hau there's - it's on what they call hui land there are numerous family owners of which my grandmother was one of them...um...and the place does still exist. It was cleaned maybe about 10-15 years ago. There was this guy from Kīhei rounded up a bunch of people - I don't know if they were hooked up with the Sierra Club or anything- they went inside, they cleaned everything up. I helped cleanup a couple of times and it opened it up pretty good. I don't know the state that it is in now but it's just you know you have to go through the school, State of Hawai'i Department of Education school property you got to go into everybody else's property, you know.

CSH: Oh, ok, ok. So, there's no easement or anything? It's just. . .

KN: Well the easement is as it always was, right? Well I mean everyone had access to these kinds of areas and you were careful about how you entered and how you exited.

CSH: Yeah.

KN: You were careful about what you did when you were there. You know, trying to get - in this system of things we live in now in order to go in places you gotta get permits, you gotta get insurance. Who the hell can afford insurance?

CSH: Yeah.

KN: You know, this liability stuff because if they get hurt no one like be liable and all this stuff so the system is setup to not support the re-institution of these kinds of cultural treasures.

CSH: Yeah.

KN: Yeah.

CSH: Do you know if those people who cleaned up the complex mapped it or anything?

KN: I believe it was mapped by Walker them. You know in that book "Sites of Maui" and stuff. It's all mapped out inside there.

CSH: Ok...umm...let's see. So, we talked a little bit about gathering. Mauka, makai. Um. I'm trying to think...what about hunting or surfing?

KN: I gathered shrimp, 'ōpae in the streams. There used to be a lot of 'ōpae in the streams that flow through our property and that's all but declined. It's all but gone.

CSH: When did you see that decline?

KN: When I was a kid, when we used to go there as kid, there was always 'ōpae in the streams. Always. We used to get 'ōpae for eat dinner. I definitely, there was....when I came back in '89 and started to clean the area there was some...still yet, cause my grandmother would go into the bush and she would get 'ōpae for use to eat and...there isn't any now.

CSH: None?

KN: None, none. There's some prawns.

CSH: Those big ones?

KN: Big ones. There's prawns now but I - there's no 'ōpae. There's no small 'ōpae.

CSH: So, do you think the decline is because of over picking or overusing?

KN: Nah. No, there's no way you could over pick that place. No way. We were the only ones there.

CSH: [Laughing] Or the prawns? Do you think it was the introduction of the prawns or...?

KN: I mean, I heard people say that. I heard people say that, you know that possibly. But I don't know who tested that and...there was so much 'ōpae. I don't think those - you know when we talk about prawns how many was in this pond that I saw today that's this big right here? Five. So those five prawns ate all that 'ōpae...

CSH: Yeah.

KN: I don't think so. You know? I do know that the flow of water is impactful on there and I have seen the flow of water decline from when I started in 1989 till today, I have seen it decline.

CSH: In grandma's patch or just all over?

KN: Well. All over, yeah? I mean coming as kids, all the streams were always full of water. But when I came back in '89 I noticed that maybe two flowed. When I started working in '89 in the - going back to the patches, consistently, at least three times a week - Honomanū, never flowed. You know I thought that was pretty unusual but it never flowed unless it was like torrential rains.

CSH: Torrential rains?

KN: You know. That's the only time I saw it flow.

CSH: Wow.

KN: But now ever since the release order, it's been flowing regularly.

CSH: Ok.

KN: There's been a nice flow so several other streams have been flowing nicely ever since the release order. Puohokamoa I know is one, um, Waikamoi is another one. Our place...maybe a little bit more than when I first went out there. But I'll tell ya, I remember going out there in '89. It was definitely less than when I was a kid.

CSH: Yeah.

KN: And then I started to see it go down even more after that, and then I don't know I guess it's kind of reasonable now.

CSH: Yeah.

KN: But it's not like it was when I was a kid and at those particular points. And I came here in the summer.

CSH: Yeah. Oh yeah?

KN: No rain...

CSH: No rain?

KN: ...and in the winter! And I spent more summer time here and that water was always flowing in the summer. It was a significant flow, yeah? So, it's not about, it's not about the kahawai being 6 feet wide and 4 feet deep and there's water in it. It's about the water in it has a velocity behind it.

CSH: Yeah/

KN: So it's not that its 6 feet wide of water and 4 feet deep. Its X amount wide and X amount deep but there's a really crisp and vigorous flow to it. You know, and that's what's important. That's what keeps everything stimulated and alive - that I've seen. If you talk about a healthy stream flow, that was a healthy stream.

CSH: Well that's also vital for the farming of lo'i kalo.

KN: Yeah, absolutely.

CSH: So, you guys need that too, right?

KN: Absolutely.

CSH: Did you guys do dry land?

KN: No, I just do wet land.

CSH: Why, because you guys have the water right? [Laughing] It only makes sense.

KN: [Laughing] Or even beyond that, that is what was handed to me. They gave it to me and said here. Tag, you're it. So ok.

CSH: So, you still mālama that place?

KN: Oh yeah.

CSH: And your 'ohana comes with you? Your sisters go out there? Your cousins?

KN: No mostly it's me. Once in a while - so my daughters in school on O'ahu, my son is trying to develop a life for himself out here. Once in a while they come back and you know we go and we do the work - continue the work.

CSH: Yeah. Do you have mo'opuna too?

KN: No, no.

CSH: Not yet [laughing]. But eventually if you do they'll make their way there too.

KN: If - you know it's definitely their prerogative. I think, I think their parents will have in a say in their going to have to [CSH laughing].

CSH: Yeah.

KN: I think so. And who wouldn't?

CSH: Yeah.

KN: Especially in this day and age. Maybe in my time when I was growing up it was like who would want to. But nowadays there's a whole different value system on those kinds of things. There is actually a desire to go out there and do those things.

CSH: Yeah, absolutely.

KN: In my time the last thing you wanted to do was go work on a farm. You know.

CSH: Yeah. So, no one lives at the house and stuff over there?

KN: So...so the property where the farm is at there used to be a house on it. That was my grandmothers'- grandmothers' house - or grandparents' house. When she got older she bought another property below in the village and that property belongs to my cousin.

CSH: Oh, okay.

KN: And they do not live there, so I basically take care of the old family homestead.

CSH: Yeah. So, you still get your kalo from there and you pound poi or. . .

KN: No, I use grinder.

CSH: Oh, ok, ok, ok.

KN: [Laughing] Use grinder.

CSH: So, you make poi and pa'i 'ai?

KN: Yeah I, um....Aloha Poi is my taro outlet where I send all my taro to. Whenever I have it.

CSH: Ok.

KN: I am looking for...I have used other sources. I've been on a two year ...it's been a two-year non-production of taro because I have been inundated with feral hogs.

CSH: Ohhhh. Wow.

KN: Wiped out the whole place. Everything, everything. One acre of all taro, all gone.

CSH: [Gasps] Oh my gosh.



KN: For two years, so I'm just making a comeback. I have a crop that's...that I'm going to harvest within about a month or two. But the rest is just growing back. Yeah, they destroyed everything. So, I had to fence off the whole property.

CSH: You have neighbors?

KN: No.

CSH: No? Ok, ok.

KN: So – we - this property is at a place that the inside people know. The name of the property is called Lakini and its our family homestead. And it's on the ridge of Wailua. Above the village yeah? About what, I don't know--what is that about 300 feet, 400 feet above the village?

CSH: I'm sure other people must have the same issue with the pigs though?

KN: Oh yeah, they're all in the village right now.

CSH: Oh ok.

KN: They're eating peoples whatever they're growing down there. They're eating the baby goats. They attack baby goats yeah? And they'll eat them.

CSH: I didn't know that.

KN: Avocados, trees, the - yeah, it's bad.

CSH: So, is that also affecting like the pōhole as well?

KN: Well yeah, they'll run right through the pōhole. You know? And these, these feral hogs have been inseminated with Russian boar...um, what would you call it – they've cross-breed. People brought Russian boar out there and they've cross breed all these pigs.

CSH: What?!

KN: So, they're more aggressive now, they're bigger. They got big heads, they got big jaws. They're really aggressive.

CSH: Like it was just in somebodies like somebody domesticated them and. . .

KN: Well the hunters I guess they needed one bigger charge, ah? They needed more wild animals for - you know that's the mo'olelo.

CSH: Yeah.

KN: That's the stories that's going around that people know how did they get here. I don't know, how did the mongoose get here? [Laughing] How did that happen, right? But it happened.

CSH: Yeah.

KN: How did those wallabies get loose in Kalihi, right [laughing]? So, somebody brought them in and it done and okay too late now. Apple snails.

CSH: I know.

KN: Same shit.

CSH: Do you guys have that at your – well...

KN: Down at the bottom they have. We no more on the top. We had.

CSH: How did you get rid of it?

KN: Ducks. Ducks.

CSH: Oh ok, good.

KN: Someone went above me and somehow it got loose up there and it flowed into my patch and it just started getting on. So, we put the ducks in - the Cayugas - they ate them all. Took about three years and because there was no one going up again and continuing that process and there was a good water flow at the time. That year was a pretty wet year. It kind of I guess washed the whole system out and then the ducks took care of the rest and that was pretty much it.

CSH: How's your water flow now? For your lo'i?

KN: Well with the previous rain it's been really good.

CSH: Yeah. Today it's beautiful!

KN: Yeah so, but the last week.

CSH: Yeah, you guys had a major storm come through.

KN: Yeah, there was but they never announced a flash flood alert you know. But there was a big flood inside. I bore witness to it, big waters. So, like any big water after the big push after the initial brown water push, you get a really nice steady flow of good, clear water. Then it will kind of subside down a little bit.

CSH: Good.

KN: Yeah, cause it fills up the aquifers yeah, then all the springs in the mountains gush it all out and as long as it keeps going then it's good.

CSH: Ok. Um, let's see. Besides yourself, people in that area, in the ahupua'a. Um, any cultural practices that they practice?

KN: Um, you know, we got to define what is cultural practice, yeah. Because the buzz phrase now is cultural practice. The - in my grandparent's time, it was just life.

CSH: Way of life, yeah.

KN: It was way of life. So, I learned stuff like that but it was way of life, it wasn't one cultural practice. You never practice anything, you just did the work. So, I would virtually say yeah there are - everyone in that valley is a cultural practitioner.

CSH: Yeah.

KN: So, yeah so are there cultural practitioners? I will say...every one of those people that live in there are cultural practitioners. If you're planting food, if you're gathering food, if you do these things that is what is classified now a days as a cultural practice.

CSH: Yeah. Ummm....wow, I feel like we've already hit everything.

KN: Yeah.

CSH: Pretty much. I wanted to ask what kind of fish did you guys catch makai?

KN: [Sighs].

CSH: And what's your favorite fish?

KN: [Laughing] My favorite you can't get over there. So, the fish that we used to eat was o'opu, 'opae. I'll consider that a fish. Kole. And I never fished for them but there were the men and the younger men that fished for um and then they gave to my grandparents. Because they were the old people.

CSH: Wow. Yeah.

KN: So, anytime that there was a fish thing going on...they would always feed the old people.

CSH: Well that's how, right?

KN: Yeah, that's how. [Laughing] My grandmother would always make it a point to put money in their pockets and that was a big fight. You know, and which they would always lose. Yeah, but it was important for her to reciprocate in a fashion. And that was the way...and I'm talking about when I was in my 30s and 40s. At that time her ability or way - she was like in her 80s and 90s, and that was her way of reciprocating them. She knew that she had, um, not a lot of money, but enough money to share as they people would share. They didn't have that much money but they had a lot of fish and a lot of 'opihi and a lot of 'ōpae and a lot of that stuff. Getting back to the favorite fish, when that happened akule, dried akule. I like dried akule. And 'ō'io, raw 'ō'io.

CSH: I know [laughing] and grandma would lomi that?

KN: Oh yeah, yeah, it was lomi.

CSH: How she do? She scrape or she....she....?

KN: Oh no, scrape. Cut um open, scrape, scrape, scrape.

CSH: Did she do cheesecloth too? To get all the bones.

KN: No, she picked the bones out with her fingers.

CSH: Wow, she's one nice lady.

KN: Oh yeah, Lady Aloha [inaudible, wind blowing].

CSH: And then what she put inamona? How would she prepare it?

KN: Hawaiian salt. If she had limu kohu she would put limu kohu inside little bit, not too much. Yeah.

CSH: What about pelagics?

KN: What's that?

CSH: Like deep sea, like ahi, aku.

KN: Aku, my favorite. Dried aku. I can eat dried aku and poi every day. Forevah! That's all I like to eat.

CSH: Okay, I picked right then, yeah?

KN: Yeah picked right. That's why I said, "Oh girl you know how!"

CSH: Ok, ok, alright! Ok so....

KN: So, once in a while there are a couple of deep sea fishermen over there. They go to the buoy. And there was that time when she was alive that when they hit the big ones they would stop by and deliver that.

CSH: Nice. Yeah, yeah, yeah.

KN: And so that was her favorite fish dry aku. And dried aku that was her favorite.

CSH: And she dried them herself? She had dry box and all that?

KN: Yeah kaula'i.

CSH: Yeah, yeah. Was it all onshore or little bit offshore fishing?

KN: That we did?

CSH: Yeah, that you guys did. Or net?

KN: Definitely the little that I did with them was onshore. Um yeah.

CSH: Ok. We're kind of coming down the wire here. So, do you have any concerns?

KN: Yes.

CSH: I guess related to way of life, cultural practices, way of life, how the project will impact that.

KN: Yeah. From Nāhiku, which is where the moku of Ko'olau ends and the moku of Hāna begins. Down at the Nāhiku end that's where we go pick hīhīwai.

CSH: Ok, let me get my map so I can kind of get an idea.

KN: And 'opihi and that was where my grandmother was. So that was going to [inaudible].

CSH: Like this area or are you talking about this area?

KN: Ok, where's Nāhiku?

CSH: Nāhiku is on this side.

KN: So, in this area. Right in here.

CSH: Ok.

KN: So that's where we went to go. We picked 'opae in certain streams over there. And certain areas that were dry [inaudible]. When my grandmother was younger that's where they used to go [inaudible]. So, when those places dry up that adversely impacts the way of life, the cultural practice if you will. So, taking water, diverting water in the copious amounts that has been going on for the past hundred years, adversely impacts the people's way of life that live there. It does.

CSH: Ok. Do you have....are you still on that thought, do you have more to share?

KN: Yeah, pretty much on that thought.

CSH: Where's Waikapū?

KN: Waikapū is out – you see that mountain over there? Right through those trees?

CSH: That mountain?

KN: Yeah. See this big mountain right here? Come down see this stop light look through this puka of two trees and you see the stop light you see that mountain? Right inside there.

CSH: Yeah, yeah, yeah.

KN: That's Waikapū.

CSH: Ok, ok.

KN: So that water belongs to Na Wai 'Eha. Those guys are getting water that is diversified agriculture.

CSH: So that's 'Īao, like Happy Valley?

KN: Yeah that's 'Īao, Waikapū, Waiehu side. That's all that stuff. That doesn't have anything to do with this east side Ko'olau water system. And there are no diversified agricultural projects going on for this side right here. Now Mayor Alan Arakawa told me, his mouth to my ear, said they want to take Kīhei's water consumption off of the Wailuku aquifer and they want to supplement that with 10 million gallons a day from the Ko'olau water system. That's his mouth from my ears, no bullshit. You know the whole problem with this is for the past 150 years they've been circumventing the law. They've been violating the law. And the administrators have allowed it to occur. So when you guys talk to people out there and you tell them, oh we had to stop all the water at this impacts us adversely because the Ke'anae and the Wailua town farmers have filed one suit or one injunction to Native Hawaiian Legal Corp and they're adversely impacting the thing so and that was their narrative. And that's how they got BLNR to let them go on for another 30 years or something like that - or that's what their applying for - but they went on scot-free. You know, and that was the wrong narrative. And what we were saying is there needed to be addressed and restitution for the past 150 years of violations.

CSH: Yeah.

KN: So that's my concern, when you ask me what concerns I have. That's my concern [laughing] enough already.

CSH: So, do you have any recommendations?

KN: Yeah, follow the law! Support the law. File for your permit. There's a policy and there's procedures. Adhere to the policy and follow the procedures. And stop trying to circumvent it because you smart. You know, just be honest, be transparent. Yeah, go take your time, you got to go through the steps, no different from me. If I get land and I like one water meter it going take me 5-6 before I can get the water meter. How come I don't have the privilege of snapping my finger and then all of a sudden, I'm going Alan give me the back-door opening. You know shit, I wish I was part of that team [laughing].

CSH: Um, do you have any referrals? Like other community members?



KN: The Wendts, the Wendts are pretty akamai about all of these water issues. I don't know how much they will be able to divulge because of the ongoing case. However, I do think they should say something. I don't know what they would say, but they should be at least asked. And let them say 'due to extenuating circumstances or the case at hand we are unable to reveal [inaudible].' And maybe they can get somebody else. Cause the court documents will be public record as well?

CSH: I'm not sure. I do have testimonies from them but they're old. Um, anyone else besides the Wendts?

KN: You know I'd like to give plenty names

CSH: Yeah.

KN: ...but I don't know how'd they feel if I gave their names. I think the Kanoas would be good, Gladys Kanoa. She's pretty akamai and open about what's necessary.

CSH: Ok. Is there anything that you would like to share or anything that like I didn't touch on.

KN: Nah, I'm good. Nah. It's good? It's just the whole thing about at this point in time there's enough for everyone. Especially...look traditionally the administrators and the mangers knew about land management, they knew, or at least they know people who knew. And it wasn't about circumventing the system. It was about honest management and care and concern for the natural resources because we live on one island! In the middle of the sea! So, you had to be careful about the management of these life-giving resources, so they established rules and regulations. When you can go fish for the ahi and when you cannot fish for the ahi because their spawning. You fish for the akule.

CSH: Yeah.

KN: We got them in reverse right not that's why we're screwing shit up. We're supposed to be doing 'um the other way around. So, they knew that so there are these basic rules that nature dictates to us. So, if we just follow the rules we're going to be good as a people. We going to be able for share. That's how you live on one island. You got to share. So that's all we got to do we just got to share with each other. Stop freaking taking so much. And it's always the guys that get plenty that do most of the taking. Think about it - think about the people who get plenty you try and take a real hard look at them and see if their taking more than they really need.

CSH: Ok.

KN: Ok.

CSH: Good? Ok. Alright.

[End 56:23]

## Appendix B Skippy Hau Transcription

---

**Cultural Assessment, East Maui Irrigation: Cultural Surveys Hawai'i (CSH) interview with Skippy Hau (SH), Aquatic Biologist for DLNR Maui on February 16, 2018 in Maui.**

**CSH: CSH Researcher**

SH: That's why they made that bypass, you know that right lane that goes off...that's what they call the Pā'ia Bypass. What happened is they, the businesses were concerned that they're gonna skip Pā'ia and then they gonna lose business and they didn't want the bypass to go through so what they did was they did a lease with the plantation and then they put in the bypass and at one time they locked the gate and then they would use it only during work hours.

CSH: [Laughing]

SH: And then now they got it 24 hours at the pull off.

CSH: Right.

SH: But I said, you know, it's kinda silly because, um, they're gonna still come, just the growth in tourism.

CSH: Yeah.

SH: So Maui...there's alot more, that's also why our gas prices are always the highest.

CSH: Uh-huh.

SH: Because the competition and stuff so we gotta pay high gas prices. Out of all the islands, this is the one...the most influenced by tourism.

CSH: Right, right.

SH: That's also why when we go out and I do work in the field and stuff...but it's interesting because you can see when there's no tourists then basically all the economy just shrinks.

CSH: Yeah.

SH: Because we're so dependent on tourism now that if the tourists don't come, they're not gonna stop places to go buy stuff too. Yeah, so little bit like the Big Island but I like Big Island 'cause they get the break and they get the cane haul road so you can pull off and I said oh, that, that, that's real good for the engineers but also good thing got the Volcanoes National Park.

CSH: Yeah.

SH: Over here, if it wasn't for Haleakalā National Park, um, we wouldn't get the, the major funding in terms of the bigger highways.

CSH: Right, right.

SH: Yeah. So you live Hilo then?

CSH: Yeah, I live in Hilo.

SH: Oh, ok. Originally from where?

CSH: I'm, I'm from Hilo. I was born and raised in Hilo.

SH: Okay. Waiakea or Hilo?

CSH: Yeah.

SH: What high school you grad?

CSH: Oh! Kamehameha!

SH: Oh, Kamehameha, ok.

CSH: Yeah up in Kea'au.

SH: Oh, ok, ok, I see but you guys the new generation that's why.

CSH: Yeah. So I was the first graduating class in, on Big Island.

SH: Ok, so, so even Maui too that's why I'm so glad that they were able to get the campuses on the different islands.

CSH: Uh-huh.

[Passing vendors on the side of the road in Ha'ikū]

SH: So these guys used to be back there. What they wanted to do was they tap on the people that wanna go visit the turtles and stuff.

CSH: Oh, what do they sell?

SH: Well what happened was when we had the big north shore swell, they closed the park.

CSH: Oh.

SH: So they moved out here and that's why they kinda have the, like the fruits and vegetable and stuff.

CSH: Oh I see.

SH: They tryna catch the tourists and stuff.

CSH: Yeah, I've been to...the campus is in Pukalani yeah?

SH: Oh, ok.

CSH: The Kamehameha campus. Yeah, I've been there a couple times.

SH: So I've worked with the Ipu Kukui and the Ho'olauna programs.

CSH: Oh, cool!

SH: And then so normally East Maui would divert water, this is the first one, this is Maliko stream. So Maliko is the first one, see over here is a boat ramp.

CSH: Oh yeah.

SH: What's also interesting is that it's not private, it's not State land. It's just...they kinda do it but I don't know how they get the funds but they kinda take care of the boat ramp here but it's not government lands and stuff...but we have a boat ramp here.

CSH: Oh that's cool.

SH: So, but Maliko is the first, from here on all the way to Makapipi Stream is where they divert.

CSH: Uh-huh.

SH: So this is where EMI starts to divert the streams.

CSH: Ok.

SH: So this one, I don't know if you read the history, this is where, I guess, um, who is that? Was that Baldwin or one of the A&B? But the one, he lost an arm and so supposedly he swung and then basically guys were afraid of working here and then so he went with the rope and da kine, he showed the workers, "I only got one hand," and then tell the workers to do it because they have siphon pipes and stuff. But they divert the water on top. But some of the other things too when you look at some of the irrigation ditches, um, there are up to four irrigation ditches.

CSH: Ok.

SH: So some of the streams, like Honopou, I think I'll stop at Honopou first. Honopou, what happens is, you have four different diversions at four different elevations. But nobody has thought about measuring how much water gets diverted from each of the streams.

CSH: Uh-huh.

SH: So that's why I noticed in the comments and I think also some other folks also commented, they want more clarification as to how much water they diverted from the stream and how much water, uh, is allowed to stay.

CSH: Yeah.

SH: And most of the time when they divert, they divert all the water.

CSH: Right.

SH: Yeah.

[Pause]

SH: So this has been diverted for over 100 years and stuff and it's kinda interesting but the, I've been disappointed because even EMI...and what happened was we also had, uh, um, it was supposed to be somebody who was supposed to, uh, be like caretaker, uh, to at least go and work, work on some of the water and stuff.

CSH: Uh-huh.

SH: And then it was interesting because they had the land agent here being the person to watch things and then they were doing a real good job and then all of a sudden you got...the position got taken away from him and then they got 'um a person from Honolulu...somebody in land management took over.

CSH: Oh.

SH: And they never came out to come look at the streams or come look at the diversions or measure water and stuff so that's one of the things that I've asked for. This is Ha'ikū Community Center.

CSH: Oh, ok.

SH: So like the Pā'ia one, they have this. So you know like for parties and stuff?

CSH: Uh-huh.

SH: But also...bathroom. [Laughing] If you need a place to go bathroom, you know, at least you can count on, ok I can go bathroom over there. Public bathrooms and stuff...besides the parks and stuff.

[Pause]

CSH: So where do you live on Maui?

SH: I live in Wailuku, I actually bought a condo... so I live in a condo.

CS: Nice.

SH: And I bought a condo thinking oh well, if I get a chance maybe if I buy a house but yeah, no. Um, the problem with the property and the lands...

CSH: Uh-huh...

SH: [Inaudible] ...the land got stolen.

CSH: Oh, yeah.

SH: When the plantations took over...so you know, real interesting because some of them too even from even Hāna and the ranch and stuff like that, people had safes... "Oh come, we go put your deed into our safe" and then all of a sudden the plantation owned it and the ranches took over the deeds...because the people didn't know right, private property.

CSH: Right, right.

SH: But they took over people's lands that way. That's why a lot of the folks they got the award, land awards.

CSH: Uh-huh.

SH: They basically, when they were stuck in the valleys and stuff, that's what the plantation did they cut 'um off. So they cut them off from...because they used to live inside the valleys and raise taro.

CSH: Uh-huh.

SH: That's why what's so interesting is now they're trying to go back and raise taro...like a whole bunch of taro patches and stuff, to raise and then to show that if you put taro then you maintain the integrity of the stream.



CSH: Right.

SH: Water gets used in the taro patches but the water is allowed to flow back into the stream and flow to the ocean, so you maintain the ecosystem, the stream ecosystem and stuff. Whereas the other way, you divert water and then the water never comes back into the stream.

CSH: Uh-huh.

SH: It just gets used and taken to other, uh, ahupua'as and then [inaudible]. They don't officially acknowledge it but they don't do anything...of the traditional way. So that's why you get more of a western, change in western concept. So that's also why one of the things that I present when I talk to students, I explain to them that what happens is, now it goes from...also, even the definition, the thing got changed so water diver...diverted water now they say it's water that's supposed to be for agriculture. Agriculture, at the time, now you had sugar and pineapple just starting to come in so but they talked about big plantation agriculture not taro.

CSH: Yeah.

SH: So in the original documents that I got, this is from, uh, Pat Tummons...went through the archives and stuff so, um, water, um, water use and stuff according to... this is Emma Nakuina. So she's related to the Metcalfe family, but what she did was she wrote about Hawaiian water rights and stuff and when you read her original document it says, basically she's saying water is for taro, taro being the principle.

CSH: Right.

SH: And the whole thing, the concept for Hawaiians for water is basically, you know, to raise taro.

CSH: Yeah.

SH: And I get that from her first paper and then when you look later on then when this guy Justice Perry sites her paper he changes the definition now in Hawai'i that water is for agriculture, not for kalo.

CSH: Not for... yeah.

SH: Yeah cause you don't have...but Hawaiians specifically was kalo and for, now him as Justice reviewing this and citing her but then saying that water is for agriculture at the time...sugar, pineapple.

CSH: Oh, funky.

SH: But she also says that, um, sugar cane was not a priority for water.

CSH: Yeah.

SH: It's indirectly but not cause they knew, also [inaudible] you had all the pressure from the King because they wanted the water to raise sugar. But then that's how, they cut 'um and [inaudible].

CSH: Right.

SH: So, historical stuff.

CSH: Yeah, interesting.

SH: And some of that stuff too I can send it to you if you want.

CSH: Ok, yeah, thank you.

SH: [Stutters] That's also why [inaudible] all the references and other people's research also...um, but that's why it's so disappointing that I submitted or the Aquatic Resources submitted stuff for the animals and the gathering and yet on the decision you don't see Water Commission saying anything about gathering.

CSH: ...Or taking that into consideration.

SH: And even then they just come up with a number.

CSH: Uh-huh.

SH: But a lot of times the number is below...what we recommend is 64% median flow which basically would, 64% median flow would restore 90% of the stream habitat.

CSH: Wow!

SH: So, but that was what we did in the study and then we submitted that but nobody looked.

CSH: Nothing happened?

SH: No. They just come up with a number and...but it's like one-third. You know when they did the 'Nā Wai 'Ehā' return of the water and stuff, so the water that they returned in, like, in 'Īao Stream, 10 million gallons. Basically I went back over and I [inaudible] ...no I recommend 30 million gallons be released, so I have a memo in house. I basically, I wanted to do that before the storm because what it is, I knew that the water is not being released, the 10 million gallons...

CSH: And with the big storm it's gonna look like there's a lot...

SH: Um, basically no, no it got washed away and what happened was...the intake got covered, got buried.

CSH: Oh.

SH: The Wailuku Water Company unburied it and redirect the stream over the intake but then they're taking the water and selling it to the County. [Laughing] So that's the politics part that nobody really acknowledges, yeah. So how are you on time and stuff I know you said you have a 6 o'clock flight tonight and that, um, so we're good...and then yesterday it was just pouring.

CSH: Oh yeah?!

SH: I tried to come out this way, it was just like wasn't gonna stop so actually I turned around and came back down. I was gonna try and get samples, probably some fish or something but I just didn't wanna come down [laughing] the water was all high.

CSH: Yeah, Uncle, and I'm sure you would know more than I would know about the traffic going back so...

SH: Oh, yeah, yeah. [Pause] See what is, is everybody tries to charge in, the other tourists, ok, and after they do the Hāna Highway stuff then when they're coming back, yeah, been there done that and they just wanna get back to their hotel.

CSH: Yeah.

SH: But when they're going in then some people don't wanna pull on the side and just let you pass. That's when you gotta watch because the residents will drive in the middle of the road or try to pass cars when they have the chance. That's when sometimes they're driving dangerously. It's so weird because now they're saying that the storm going come back again and when the trades go back again, so then the same storm going come back and going give us more rain.

CSH: Yeah, yesterday was pouring in Kona which makes sense.

[Pause]

CSH: What area are we in right now?

SH: Ok um, so we're past Ha'ikū, um, I'm gonna be heading towards Honopou. Honopou Stream. I don't know if you got to look on the map.

CSH: Yeah, I brought a map too.

[Long Pause]

SH: So what we did is... from Honopou Stream we went all the way from the ocean and then came up and did surveys in this stream.

CSH: Uh-huh.

SH: Yeah, also, access, that's why I figured we stop over here and then show you what it looks like.

CSH: Nice.

SH: Oh, good thing we came now, they going gate um. Wow, interesting. So one of the original folks who filed suit was, da kine, Beatrice Kekahuna.

CSH: Uh-huh.

SH: And then her sister passed away first and then she just passed away. But they've never commented their need for water, for their taro patches below. So I'll show you some of the modifications they did.

CSH: But people live down here?

SH: Yeah, they live downside. [Inaudible] so if you see that name, Beatrice Kekahuna...so she lives on the down side right next to the ocean.

CSH: Oh wow.

SH: And they have taro patches but they're not getting enough water so their fight was to get water so East Maui Irrigation did modifications and things. I go park over here and then we can walk down to the diversion. So this is easiest...the other we gotta go hike in. So this is what the diversion looks like.

CSH: Oh ok.

SH: Did you need a GPS or anything? Oh, you got GPS on that phone?

CSH: I don't... I don't actually.

SH: Yeah, I have...you can have.

CSH: Okay.

[End of Recording]

[Transcription File 13]

[At the Honopou Stream diversion, Figuring out GPS]

SH: ...determines the accuracy to 66 ft.

CSH: Ok.

SH: So what you can do is you can hit mark and the mark will create the GPS.

CSH: Like, push the button?

SH: Yeah, push mark okay and then there. Latitude, longitude.

CSH: Oh.

SH: Yeah, you can have that...or you can either do that or you can clear, when you clear it won't save it. Ok, but you hit this when you wanna save then you hit done. You hit the enter and then it'll save it.

CSH: Ok.

SH: Ok.

CSH: Yeah. Well I've never used GPS before so...

SH: Oh! Ok.

CSH: At all.

SH: Ok. So yeah, so this one you can just leave it on.

CSH: Ok.

SH: Yeah. Let me know if no more battery, I get double A.

CSH: Ok.

SH: So now they take two, before they used to take four but now what's interesting is that this is also recording Russian satellites.

CSH: Really?!

SH: So they're more accurate in when we do our stream work. Before we would go into blind spots and then it wouldn't get GPS coordinates, yeah.

CSH: Uh-huh.

SH: So like I said, so what they did was, you can take a look, this is what EMI did. They did all of this. They'll come in and what they'll do is remove all of the, da kine, sediment.

CSH: Yeah.

SH: But it is controlled by this gate here.

CSH: And that...that is still working?

SH: Oh yeah, yeah, yeah. All of these work. Yeah, so you can see all the other stuff but this one is modified. So when I came here, I also came here when there wasn't this ditch but then they put in this after [inaudible].

CSH: Uh-huh.

SH: There used to be one pipe, then they added two pipes and then now they let the water flow over that way. So what they did was when they put this metal then what they were worried about was all the back splash so now they put the back and the water goes down. [Inaudible] But still takes most of the other water.

CSH: Yeah, so this is all the water that's going to...

SH: Big water would go into the irrigation ditch.

[Pause]

SH: So this is Honopou...and like I said Ha'ikū Bridge. Just watch your step.

CSH: Yeah.

SH: When you walk, uh, there's algae and stuff on the rocks.

CSH: Okay.

SH: So do you go into the stream? Get 'ōpae or anything?

CSH: Do I go?

SH: 'Ōpae or hīhīwai and stuff?

CSH: No, I do not.

[Pause, Walking back to the car]

CSH: Do I keep the GPS on?

SH: Oh yeah, you can keep it on. Did you save a point?

CSH: Do we save it when we're down there?

SH: You can save it and it'll start. Yeah, yeah, I think maybe except for one place. I think when I was at home I just marked it. That's why, waypoint 1, or you can clear 'um all and we can start again.

CSH: I just click mark and done, right?

SH: Mark and then, yeah.



CSH: Or enter?

SH: Enter.

CSH: Oh, cool.

SH: So we'll do that...and normally what we'll do is we also do water and so water quality. Surveying water temperature, conductivity...and then we also do measurements. So we do flow and then how much water [inaudible] and we estimate flow but we do that after we do our surveys. Yeah. [Pause] So I think what is happening too is a lot of visitors would come here. So what happens is, da kine, it's like the beach. Yeah, with all these visitors. Get too much visitors.

CS: Mm-hmm.

[Pause]

SH: I didn't even know they were gonna put the gate up and stuff. It said March 1st.

CSH: Yeah.

SH: Yeah. So, but yeah, that's the kind of stuff, private property and everything so...So have you worked with EMI? No?

CSH: No.

SH: Ok.

CSH: Not ever.

SH: There's a Mark, yeah...um, I think Mark is the one in charge. The other name is um, Garrett Hew. He used to be in charge until he moved up and then this other person retired and now Garrett, I think, I don't know if he retired yet but they went, moved up, yeah. They'd be the guys to call and you can just get a verbal from them and then, you know, you do that and then they can tell the EMI workers, "oh, the State going come up" and kinda let them know so that they don't lock us in. [Laughing]

CSH: Yeah. [Laughing]

SH: They give us the key but sometimes they give us the wrong key. Then I gotta come all the way back to Pā'ia then they give me the key.

CSH: Yeah, I've heard of, like, growing up, I've heard of, like, the water issues here but I've never heard of East Maui Irrigation until just recently when I started working with Nicole.

SH: Oh, ok so East Maui Irrigation is on this side and then Wailuku Water Company, Avery Chum Lee, Avery Chum Lee, also, I guess is one of the big guys at the Tropical Plantation and stuff. So what they did was they started selling off the lands except for where the intake is so it's kinda interesting. So we get a right of entry to go work in the streams and stuff and then, um, but at one time the County was proposing to buy the intakes from them and then then they were gonna take over the water.

CSH: The County?

SH: Yeah, the County. But then now I guess the County doesn't wanna, well the Mayor is gonna be going so...He's ending his term and stuff. You know, sometimes is better but when they're older, just shut your mouth.

CSH: [Laughing]

SH: So he had to make these comments and stuff...and I was like, how stupid can you be? All these people remember and you know they also have theories... don't forget you have skeletons in the closet.

CSH: Yeah.

SH: ...and stuff. It's dark and you never gonna get rid of those.

CSH: Where are all these people going?

SH: Um. This is Ho'olawa. So they go to Ho'olawa Stream and I'm not sure what they...before used to have so much people used to have a pasture and then people used to...you know with cattle and stuff, but I don't know if now they make it a visitor attraction. I don't... they divert the water. It's like the little bit of water that we see...but don't forget now you get, um, three more diversions up top yeah, above, so that tells you how much more water would have been allowed to flow down. Yeah. So that is Honopou Stream and then the other one would be, um, I think when I pass by I'll let you know.

CSH: Ok.

SH: So a lot of these, yeah, we [stutter] had a project for two years we flew in by helicopter.

CSH: Oh wow!

SH: We worked, we monitored the stream on the lower side and then we had the middle side. Rarely do we have a higher side....

CSH: Uh-huh

SH: So we were doing stream work as well as the US Geological Survey was also doing work in the streams too. So it's kind of interesting because they...they disbanded. They had a team of researchers and it's kind of interesting I guess they kinda saw the politics so, why hold these guys on staff? And they just reassigned them to other locations. So they're not doing local streams anymore. Kind of interesting and I don't blame 'um.

SH: It's actually coming in right after they paved and now they put this...I guess guys who are either drunk driving or....

CSH: Right, to wake 'um up a little.

SH: Yeah but now you hate to cross because now it has the bumps and yeah so it keeps you awake but sometimes, yeah, even the residents they just drive in the middle of the road. Just to freak out the tourists sometimes but that's why I always give the highway guys, they're the ones that take care of this but it's just constant, always blowing and you know, when they get landslide they come in and clean 'um. Almost immediately. They have an assignment... they have a...they have an on-site crew but most of the guys in Ke'anae and then Hāna also. But they

take care of Hāna Highway and stuff to make sure it's clear. You don't get car sick, do you? I don't think we're gonna be going any fast.

CSH: I do a little...I do a little. This is the Hāna Highway that we're on right now?

SH: Yeah, it is the Hāna Highway, yeah. So this is Hanehoi Stream. So like with Honopou and Hanehoi, this also has people living here. There's a church just down there. So we met with residents and they're trying to get water back in. But their water system is also dependent on over here getting water. So that's why even some of their water being returned is only for a lot of it... they're asking for water returned for taro so that's why those streams that got selected with the Water Commission is so the taro growers can get water returned.

CSH: Uh-huh.

SH: So at one time what I did was I, knowing that the guys retired from EMI, they retire and they live in Ke'anae, so basically what I was telling them because at the time they were, um, that's why I know there were four licenses. So what I kinda suggested was that I said, you know, you guys are retired and stuff, you guys can go take care of the Ke'anae one. Go bid on the Ke'anae lease and then, you know, if they were organized and stuff and then take over the lease and then they can control the water for Ke'anae.

CSH: Uh-huh.

SH: ...Ask the taro growers out there. But you know they're older too yeah so their retirement come from EMI so they don't wanna rock the boat but I suggested it to them anyway. They had all these guys retired and stuff and they know the system. They don't need all the other ones, they just do the Ke'anae one and then they can take care of that and take care of their water too.

CSH: Yeah.

SH: I also understand you know because even coming from another island and stuff because I don't full complete, da kine...but I say I grew up local and stuff, but oh, you know, you never grew up on Maui kind of deal.

CSH: Yeah.

SH: But I say yeah but I know the issues and I just stay away. But you see all of this, Highways clear so da ting no get overgrown.

CSH: Yeah.

SH: Not too cold?

CSH: No, no it's good.

SH: I can take um off. So I used to drive this twice a month before and I used to do backside. So the fun stuff was when I used to go in Hāna and then I'd work and go to the streams behind. It was a lot of fun. So what happened is that, so people would cancel on the cabin so State Parks' secretary would let me know and tell, "Oh these guys canceled you want the cabins?" And they didn't have internet and stuff so they would let me go. So I'd go in on the weekend and then I'd stay the next week and I go work the backside streams.

CSH: Oh, nice!

SH: Yeah, but I worked out of the cabins so I can save time. Takes a whole hour to get into Hāna and stuff and then I just work from there into the backside.

CSH: Uh-huh.

SH: It's always been fun. I learned a lot but just get to go take look the streams...but sometimes very dangerous so that's why I also...I guess people need to understand cause some of the places that I've seen people get crushed or they were hiking...

CSH: What do you mean, crushed?

SH: Yeah.

CSH: Like landslide kine crush?

SH: Under one boulder or da kine, they're walking on these big boulders and stuff, similar like Big Island but this was unstable and stuff and then they had somebody walking and then they got pinned by the boulder and basically they had to come out and then the rescue guys came in to recover the body.

CSH: Oh my god.

SH: So there's a Alelele and a Lelekea stream. The Lelekea stream I'll always remember because we used to also fly in by helicopter. So we fly in, we were just about to land and you hear, "Oh, cancel. Plan B." What happened was we were flying over and we can see pakalolo. I couldn't see it but the pilot could and then but what it is it might be booby-trapped and stuff so we don't wanna go in pakalolo streams. And that's the only time we had to cancel and go to Plan B and so we did that and we had to go to another stream.

CSH: Pakalolo? Wow.

SH: Yeah. They were hovering over and so I just took a picture. I gotta go back and look at the picture and stuff and I have no idea what pakalolo looks like but yeah. So the pilot knew and he had to go to Plan B. That's the only time they had to cancel but what it is too it's like we have a team gut feeling knowing that somebody doesn't feel right with flying or, da kine, to basically speak up and they cancel. We'll have an alternative site or another stream to go to. So you see all this? [Inaudible]

CSH: Yeah, it's nice and open.

SH: So hopefully it doesn't cover but it'll get overgrown later. They'll come in with the pick that chops all the vegetation and stuff. You have that and sometimes the signs say "No Spray Poison."

CSH: Yeah, yeah.

SH: Cause the highway guys like to use to RoundUp.

CSH: On Big Island too.

SH: So the problem is also the wedelia, yeah. They introduced it as a plant and so wedelia will come into the streams and then it's wedelia that gets washed down and it's growing in the streams. You know which one...the yellow flower yeah.

CSH: The yellow flower?

SH: Yeah. It's wedelia. It's actually a plant that if you look good it has yellow flowers. So get that and banyan and [laughing] torch ginger.

CSH: Yeah, I'm kinda surprised at how many banyan trees are around here.

SH: Yeah and the eucalyptus. The eucalyptus is way bad because they thought the 'ōhi'a were dying so then all the CCC programs were supposed to go... this is all the East Maui Irrigation. This is in Kailua. This is their base yard over here. So over here will be Kailua Stream. So what you see later on is that all the different islands all get one Kailua, Mokulē'ia...again you can kinda get the same name and stuff but they use it on different locations on the island. So that's why a lot of times you gotta also know which island you talking about because if you say one thing, each island has their own. Yeah. So we have a project with the hau and stuff. They're supposed to cut back on O'ahu in Kahana. The hau got so thick and they wanted it cut back to kinda open it up because what was happening it would kinda like block the stream and stuff. This guy comes here, he puts his parrots and lets people take pictures. He can make money, yeah.

CSH: Yeah, easy kine money.

SH: So they say, and it's a long name, Nā'ili'ili Ha'ele. This is where most of our rescues come from. Two things, people go topless over here and they go nude sunbathing and stuff.

CSH: Like, they walk down there?

SH: The tourists and stuff...you'll see where the cars are parked on the side and they attract other tourists and even though the day is rainy, guys still go and then the rescue gotta come in. Sometimes the guys get their clothes all washed away and stuff.

CSH: So they get rescued all naked?

SH: Yeah. You know, not just that but, oh! what about the car key? [Laughing] You know not too bad, you can get back but when the car key get washed down. So all these cars over here, see look at these guys. These the guys I wish they would just tag um...but they're tourists and they not going pay the ticket.

CSH: Yeah.

SH: Cause they going be gone. That's what over here is popular for and always get this sign, 'DO NOT BLOCK GATE' and the guys still block the gate and everything. So over here I guess they get rainbow eucalyptus. So what happens, all the tourists guys they stop by and actually this is supposed to be barbed wire but the guys cut through and they walk up over here. So they park here and they walk there and take pictures over there. But that's what I was telling you about, so not all of this is State. They make this assumption that it's public and they make this assumption that oh, it belongs to the State and not really. This is private land. So that one is private but guys still, the tourists still go over there and take pictures. So just to illustrate some of the, 'cause they



make this assumption oh, that it must belong to the State but not everything belongs to the State so I was saying if they can mark it out that would be nice to mark.

CSH: So much bamboo.

SH: So yeah, they come over here to take pictures next to this one and the tour vans and everybody will stop but at least they can see the rainbow eucalyptus. It's just a eucalyptus! [Laughing] I mean everybody stops so everybody going stop too and then, oh man! So this is wedelia over here. I don't see the flower but it's all on the side but when you go down into the stream you can see on the side. Pieces break off along the stream and starts to grow. So do you know your plants? I don't know what your specialty is or da kine?

CSH: Not really

SH: So this is wedelia.

CSH: Oh, these ones right here?

SH: Yeah, the ones with the yellow flower. Those are wedelia.

CSH: I'm surprised to see a lot of hala on this side. We passed a lot when we were coming in.

SH: A lot of it was sick too. That's why I stopped collecting from Hāna. Wai'ānapanapa I used to go and collect. Yeah, I told my mom when I was weaving and stuff, oh, the baskets take too much and then I gotta keep doing that, every week I gotta go and collect leaves. So after I made couple baskets for my mom I said, nope, I just going stick to bracelets. [Laughing] Cheap dat kine. You know like place mat holders and stuff.

CSH: Yeah!

SH: I just make 'um for my cousin's kids and stuff. Then they go college and stuff and I just give them lauhala and stuff.

CSH: Nice.

SH: Were you involved with the Ipu Kukui or the Ho'olauna program? I know they have the Explorations at Kamehameha.

CSH: Yeah, no. No I didn't. I didn't go...and I only went there from 10th grade. 10th till I graduated. That's the watershed? Is there a watershed called Ipu Kukui?

SH: Um, Ipu Kukui would be on the top of Mauna Kahalawai, what they call West Maui Mountains, other side. Yeah, by 'Īao Stream. Up above. Ipu Kukui is supposed to be the wettest spot.

CSH: I have a friend that works there.

SH: Oh really?

CSH: Oh well he just started for couple years, maybe a year.

SH: Oh, ok.

CSH: So he's new.

SH: So he may know Pōmaika'i Crozier.

CSH: Maybe. His name is Jonny Pestana...or Kainoa Pestana but he's from O'ahu and he moved here couple years ago.

SH: So good thing they cut this back. It was actually coming out.

CSH: No, yeah it's right over the guard rail right there. Bushy.

SH: So Big Island get bamboo that they harvest for bamboo shoot, no?

CSH: I don't believe so, no.

SH: Over here some of the old timers go pick bamboo shoot and stuff, in fact, I don't know, if you get time maybe we go up where get bamboo shoot on the bamboo trail and stuff.

CSH: Ok.

SH: Oh, so what I was thinking of doing is kind of more heading in and then we go the farthest away and then that way we come back, when get time we just stop.

CSH: Ok.

SH: Just take our time.

CSH: Yeah, I normally get car sick but I'm surprised that I'm, I'm being pretty good right now.

[Laughing]

SH: Oh, while you're busy so yeah. If you're just riding and then we get behind tourists, it's the tourists that don't wanna stop. You see the guys go past and atleast....

CSH: Oh yeah, they're blocking the road already...hello.

SH: Yeah. It's like an afterthought. Oh, yield. [Laughing]

CSH: Oh that's what that red sign is.

SH: So actually up here too is a nice little waterfall over here. It's a shallow hike. I just went to go look what's back there. [Inaudible] I'm so glad they're knocking back the bamboo and stuff cause it gets so thick. So just like that other vehicle, I guess somebody doesn't like abandoned vehicles cause what they do is they torch 'um then the County is stuck with trying to remove it.

CSH: Oh wow.

SH: Plus you have to make sure your car no break down. [Laughing] Yeah you see, this is all wedelia. You see how high it grows and how thick. B Highways brought it in as a, da kine, you know, landscaping vegetation and now they can't control it.

CSH: [Laughing] That's always the case.

SH: Yep. All these things that got brought in and people don't know, same like with the ginger. I'm glad Hilo got strong Hawaiian Studies programs and stuff.

CSH: Yeah! I know lot of... a lot of people come from other islands.

SH: You know what it is also, get away from Mānoa.

CSH: Yeah.

SH: And then, that's why at one time I know they were proposing to move agriculture to Big Island. I wish they did. The Tropical Ag. Move everything over to Big Island because not everything has to be at UH Mānoa.

CSH: Yeah.

SH: You see, residents.

CSH: Yeah, whipping 'um.

SH: So over here is Waikamoi Trail. It's a popular place. Actually, on that gate it said 'DO NOT BLOCK' so they're blocking it. [Laughing] So there was a [inaudible] who used to work for EMI. So he was the one, before he died, I remembered him getting interviewed so he said it was Waikamō'ī, so I guess Water of the King.

CSH: Uh-huh.

SH: [Inaudible] So that was his definition. So like I said I remember him saying that. So right over here you'll be able to see a waterfall that's why everyone is stopped on the side. Down here get mosquito fish and swordtails [Laughing] [Inaudible] You see the pool? [Inaudible] See most of the cars if they go slow and they stay on this side... [Inaudible]

[End of Recording]

[Transcription File 14]

SH: That's why by doing that, then also your nori stays crispy.

CSH: Mm-hmm. [Laughing] Alright, that makes sense...if not, going be all mushy with the rice.

SH: No, no, no...but it's like origami and stuff you know you gotta take the time but yeah. Would be 'ono. It's all Japanese. That's why I gotta give credit to 7-11 but even then when you see and they get spam musubi...I wonder if they do that and take it to the mainland or other places and stuff.

CSH: Yeah.

SH: Guys have no problem eating spam, you know, just the mainland you know. You know during the war and everything everybody ate spam. They get the view of the shoreline then all these people wanna get their cameras out and slow down. See like that? That's Ke'anae the peninsula.

CSH: Oh!

SH: So what they did was...

CSH: This is the only way to get to Ke'anae?

SH: Mm-hmm, but what happened is, um, forester Bob Hobdy was telling me he said he thinks they found the caves where the guys they used to pass by gourds. The dirt got transported onto the peninsula and then they raised taro over there. So that's why when you look at all the taro

patches, the taro patches actually go back...way back. They had to bring the dirt onto the peninsula.

CSH: Why though? Why would they grow kalo on there?

SH: No, no cause they got water from the streams and they were able to raise the taro on the taro patches. Later I'll show you the taro patches from up top. Was pretty neat because they have the forest to confirm. Good thing they found the caves where, um, they probably had to form lines. You know like how sometimes even rocks and stuff.

CSH: Yeah.

SH: People had to form lines to go pass rocks for heiau and stuff. So this, of all the streams, I wanted this as priority one to get water restored.

CSH: Which one is this?

SH: This is Honomanu...and the reason I recommended Honomanu is because public access. People come here to go get fern and go gathering and stuff so they'll come here and they'll also fish, they'll also surf. So the public has access to be able to see the stream. All these other places all would be locked up and then they lock up the gates and then the public really won't be able to see the stream. So over here the water gets diverted yeah, but the trickle comes down here. That one is Punalau Stream and that one is Honomanu. So remember I told you, the other streams I had to find by helicopter?

CSH: Mm-hmm.

SH: So this one is accessible so you can drive down to the beach and stuff. If we get time maybe we stop by when we're coming back out. So the stream will flow over here and get the hīhīwai lines and stuff, I would pick them up down here.

CSH: That's cool.

SH: Yeah. So water flows over here and then there's a bridge over here...[Pause] The water is nice and clear. Yesterday it was brown. Yeah, you see [inaudible].

CSH: Yeah.

SH: I had lines before up here actually, that would be summer time. So just about now they're starting to recruit. So now got people now wanting to ride bike. So what it is, I think people come in and then they help bring in the bikes and then they drop 'um off and then they ride off.

CSH: Like as a tour thing?

SH: Yeah. See over here get little bit land slide but down here got the road. That's the one that goes to the beach. So the other month had the tree came across and thank goodness that guys cleared away the trees. They just came last week. Resident [Laughing] They don't slow down for nobody [Laughing]

CSH: Dangerous this bike thing.

SH: Yeah. I don't recommend this highway to ride bike. The west side would be better, less cars. This one is too congested.

CSH: Yeah, especially with the locals just whipping it down here.

SH: You know it's not like a Sunday bike ride or something. It's just congestion and too much cars cannot mix. That's why I feel for the kids... you know before at least when we were growing up, you could ride bike, I said but now it's not safe for the kids to ride bike. Had one big landslide, they're trying to stabilize. I think they're gonna put concrete on the side.

CSH: Oh. Oh yeah.

SH: Yeah, you see. They're putting rebar in.

CSH: This whole thing came down that's why?

SH: Yeah, yeah. See this came down and I'll show you the other one that they fixed before, before we get to Ke'anae.

[Pause]

SH: So your family from the Big Island then?

CSH: Um, my parents are originally from O'ahu.

SH: Oh ok.

CSH: They both grew up in Waimānalo.

SH: Oh Waimānalo, really?

CSH: Yeah.

SH: You wouldn't happen to remember Waimānalo Snack Bar, do you?

CHS: Oh, not me, no.

SH: Ok, yeah so my Aunt used to run Waimānalo Snack Bar next to Mel's Market. Where the McDonald's is.

CSH: Yeah, yeah, yeah.

SH: So my Aunt used to run Waimānalo Snack Bar next to the barbershop and stuff. [Laughing] They were the McGinley's and now my cousins all live on the mainland. [Laughing]

CSH: I'm sure my parents would remember but...

SH: Yeah ask them if they remember Waimānalo Snack Bar.

CSH: Yeah!

SH: Yeah, they used to be next to Mel's Market and stuff because I remember we used to work with my Aunt, they used to get da kine, oh, "Put it on my tab" and they would write it down on a piece of paper and stuff and then later on they'd pay for their meals. But my Aunt also used to make laulau and stuff. Funny because I have a....John Kahiapo, he's the Education Specialist on Big Island, yeah?

CSH: Uh-huh.



SH: But he also works with DoCARE and then but his family is Kahiapo and it's funny because over here when we passed East Maui, there's a Kahiapo Road.

CSH: Oh.

SH: But yeah, his family. But when I told him about...he knows my cousins and stuff because there used to be a Sherwood Forest and stuff and the guys break in cars and stuff like that over there. Guys go surfing and go to the beach and stuff. So my cousins went to Kailua and it's so funny that you hear about Kailua...used to have a Kailua bunch and then the Waimānalo guys.

CSH: Yeah.

SH: [Laughing] So I used to take Eddie Wine and his sister is Kristina and I took them to do hīhīwai stuff.

CSH: Oh cool.

SH: So we've seen when the hīhīwai would just cover the rocks and everything. So their grandmother is still on O'ahu and stuff and they go back to visit. So I said yeah, I go back, I go China Town buy stuff and then I bring 'um back. So this is the other one had the big landslide so I don't know why people always stop over here just to take picture.

CSH: Right!

SH: So they built this...it's a stone wall and all of this was all exposed. The whole thing came down. They had to go back and rebuild. Now it's all overgrown again.

CSH: Uh-huh.

SH: But that used to be like how the other one...all that got wiped out and then they torch 'um again. In a matter of time, they burn um. You see they're stunned because there's no middle line. [Laughing] [Inaudible] So this is da kine, Ke'anae. Get the Highway guys over here. So these the guys in the middle, so they catch it on both sides but they always maintain the highway. This is the "Y" over here...Ke'anae Y. Camping and stuff. Over here is the Arboretum. So got two streams, this one they call Pi'i Na'au Stream and then the other one is called Palauhulu.

CSH: These people...

SH: Yeah. The Arboretum. So had a Aunty Sarah Ka'auamo, when she was living she used to live in this house over here. It's all boarded up now but Pi'i Na'au Stream comes this way, Palauhulu comes the other side and behind her house that's where the two streams join in. So over here.

CSH: Ka'auamo?

SH: Ka'auamo. Yeah. So Aunty Sarah Ka'auamo. So one time when I was coming out, remember when I was telling you I was staying like in Waianapanapa...

CSH: Mm-hmm.

SH: So I'd bring my lunch and I'd have sandwiches and I get drinks and everything but I always bring my ice chest and then this French couple...French couple was stuck in Honomanu. They went slam the door and the door was locked...air conditioning on and everything...and then I

went bring the wife and she went go call the rental car. She had to pay \$200 something dollars or something...

CSH: Oh boy!

SH: But the 2-3 hours we had to wait for them to come out, I went go make sandwiches for them and stuff. French couple. Poor thing they were stuck... they slammed the door and then they're out there, air conditioning, car on everything so I went take her and we went to call the rental car....This is Ke'anae.

CSH: Is there like a general store here? Or like, where would these people shop for food or...

SH: Oh, they shop outside and come in, yeah. The main store, yeah, or da kine, Costco and stuff then come in. Get the Wal Mart...Foodland...Safeway. So over here got that and got one ATM and then banana bread and shave ice and stuff.

[End of Recording]

[Transcription File 15]

SH: 'Aha Moku.

CSH: Yup, yup, yup. I know the son, Pololū.

SH: Oh, ok, ok. So up here, all the taro patches over here still get the Chinese snail.

CSH: Chinese?

SH: Cause get the apple snail, yeah? But this the one, my mom grew up and was eating that kine snail.

CSH: Oh wow!

SH: That one doesn't eat the taro but they still had 'um so if you look inside the freshwater book that's the one I had them take pictures of but they have 'um over here and they're still raising 'um.

CSH: Oh cool!

SH: Yeah. So...

CSH: I didn't know that.

SH: I guess the Chinese name is "tinure" or something and then my mom told me she used to eat 'um when she was growing up and that's why it's kinda good to know cause I guess the Chinese had all this other stuff. 'Cause later on what happened was the Chinese also started planting rice that's why they talk about how they raise rice in addition to raising taro and then they had like um, they raise and they grew their own rice, not coming from California but used to be raised over here in the islands. They used to make their own rice. So one time too, had somebody went spear one eel and that was the unagi, you know, anguila and then that came from look like 'Alelele Stream on the back side.

CSH: Oh.

SH: I wasn't able to confirm but it was back side. They speared it when they were spearing for prawns, they saw the eel so they speared 'um and when they looked at the eel, you know what, can I get permission, I'm gonna send it to Bishop Museum. So Bishop Museum, uh, did some genetic testing and they were able to confirm that it was anguila.

CSH: Oh wow!

SH: Yeah, so that was a [inaudible] we got a paper audit and a theologist followed up and then so they made a paper audit but it was the first, at least we collected him in the wild. At one time they wanted to, there was a guy Richard Matsuura when he was senator of Big Island wanted to bring in, wanted to do unagi aquaculture...

CSH: Uh-huh

SH: ...in the islands and then they shot him down. No, they weren't gonna bring 'um. But what's interesting was that when they, I talked to the guys at Bishop Museum they said that in the 20's and 30's had, so you know how people used to raise koi ponds?

CSH: Yeah.

SH: They used to raise eels at home.

CSH: Oh!

SH: Yeah but when you think, just like when we talk about sushi.

CSH: Yeah.

SH: So they, they made their own unagi and then da kine, don't forget they had to also make their own nori. So they had to go collect and I have a documented case at Maliko.

CSH: Mmm. Nori?

SH: Two ladies and a son died from picking, da kine, nori. Yeah. All the others are always picking 'opihi but this one I documented and followed up. What happened was the, the Wildlife Biologist, his uncle went out to help retrieve the body and that's how he knew. And then so before he retired he told me about that story. So I looked and I found it in the paper, 1950.

CSH: Oh.

SH: Yeah. You see these crazy guys trying to climb down and you know they're in regular clothes...not even hiking. You know what I mean? Then when they get hurt then what?

CSH: Uh-huh! Always the case though.

SH: Yeah. But they're on vacation. Invincible. [Laughing] So we go West Wailua Iki and then maybe we go do that walk first.

CSH: Ok.

SH: So you read the book Sugar Water...by Carol Cox?

CSH: No. No I haven't.

SH: They have some photos in there and stuff. Carol Cox is uh, she's from uh, Carol Wilcox, she's Kaua'i...the Wilcox family. It's funny cause it's like, oh, I know all these people. [Laughing] How are you doing? You ok?

CSH: I'm good. I'm good. Yeah.

SH: Ok, yeah.

CSH: Surprisingly! I'm surprising myself!

[Pause]

SH: So get the different Wailuas. So that was Wailua Nui and now we're going to the Wailua Iki's. There's a west and a east. [Pause] So West Wailua Iki is coming up.

CSH: This almost reminds me of the horseshoe turns on Hāmākua...on Big Island.

SH: Actually that's why the same guys who developed the irrigation ditches they went to Kaua'i and they went Big Island too.

CSH: The same, yeah?

SH: So when I talk with the forestry guy, oh yeah, I guess when they, way back in the Civilian Conservation Corps, so they went to the islands to go plant trees and stuff.

CSH: Yeah, yeah.

SH: And then they had their own baseball team or something with weekend tournaments and stuff. So this is lower. Where we're going we going hike up above. There's another waterfall. So what you gotta think, the 'ōpae and stuff all have to come up and so the fishes climb the waterfall. See right over there get one space. I came on Friday, last Friday, and then I came and the tourists was over here. Coming back, I let two cars come up and then one tourist came and then parked, blocked my way. [Inaudible] But get 'ōpae when we go up, where we did our study site.

CSH: Whoa, that's scary.

SH: Wait till you see the gas truck coming out of Hāna [Laughing] I think they go in twice a day and probably the same thing with the beer truck too. [Whispering, Inaudible]

CSH: Wailua Iki.

SH: I'll turn around.

CSH: Oh, a car just parked over there.

SH: Yeah, no, I going park the other side.

CSH: Oh.

SH: It's safer. The cars...when they whip around I wanna make sure they can see me. I going park over here. [Laughing] That way we can turn this way and watch the traffic here.

CSH: Yeah.

[Parked at Wailua Iki]

[End of Recording]

[Transcription File 16]

SH: To the waterfall or we'd go hiking and things like that, yeah. 'Cause right now I think they may come under the assumption that if they get this license then they can just keep everything locked out for only EMI access and control. If it's only just for maintenance for the irrigation then you know, I mean to make sure that its clearly worded that way. And not for them to get total access and then prevent other people from getting in. EMI will keep like parks and wildlife when their looking at endangered plants, yeah. They didn't cooperate with them.

CSH: Really?

SH: They didn't want them listing endangered plants.

CSH: Oh well of course.

SH: They lose access. But it's not for them to determine. Once it gets declared then it kind of prevented access for other researchers to get the data and possibly nominate more endangered species. That's why it's interesting because if you look at like the maintenance but you don't see any justification, or explanation, or restoration of streams or say endangered species habitats. Yeah, there's not – it wasn't even discussed in the determination. So, all these roads all used to be nothing but EMI before.

CSH: Oh. So it doesn't look like anyone has been on it in a while.

SH: Yeah, [inaudible]. The road passed this way. I tried the freshwater – the Corbicula. Yeah, I made them da kine. Just boiling with salt water, little bit black bean, and then garlic salt and butter. 'Ono [laughing].

CSH: Sounds 'ono.

SH: Yeah. So that's what they did too, see over there how they controlled the water? they build a damn and then a control gate. So down that, over that.

CSH: Right.

[End of Recording]

[Transcription 17]

[Exploring Wailua Iki]

SH: So a lot of other places just like this.

CSH: Is this stream on the map? The map that you have.

SH: That would be like a tributary, with Wailua Iki. But that's the main stream and then we have da kine-- when you get to the valleys so then on the side. So this one isn't as big but they still tap it, you know.

CSH: Yeah.



SH: Yeah. So, what's interesting is also the ditches also go into the mountains and so when they came in they did that as well as -- what they did is that they used dynamite that's why they probably lost people, so all these immigrants. So, for EMI looks like they hired I guess an engineer was Japanese engineer. and he basically da kine, plotted da kine. This is what the EMI do too, they did not only that but then also put it in an elevation where you don't have to do any pumping. It's just all gravity fed. It's, for engineering, it's you know spectacular.

CSH: Yeah.

SH: But for the ecosystem they are just cutting it. But then those things were not addressed by the Water Commission. They kind of implied that they are going to take all this information so...that's why you get the Water Commissioner asking questions and that's why -- it's already been a done deal. So anyway, the kūpuna kind of prepared me when I do my own studies and things. I do anything they tell me to [inaudible] still make mistakes [inaudible]. They going to make all these promises and then 20 years later it's still going to be the same. And that's what happened and now it's like 30 years later all this stuff, all these people, all these ties, all this stuff that they promised no one remembers what they said.

CSH: Yeah.

SH: This is what I do, I pick [inaudible].

CSH: What is this?

SH: That's Job's Tears. Those are Job's Tears, they grow like weeds. But there are different kinds.

CSH: There's furry ones, right?

SH: What's that?

CSH: Furry like, some of 'um.

SH: Oh no, no, no those belong to the clidemia and that's not. This one you can use for crafts, like make leis and things.

CSH: Oh, uh-huh.

SH: Yeah, they're called Job's Tears. White and black and all kinds, gray, all kinds, designs and stuff.

CSH: Oh wow.

SH: You're going to learn over time like 'oh interesting'. But then all this clidemia is everywhere. This is what you were talking about. Yeah, yeah, yeah. That's the seed. We're not going to get rid of it. See all the little green ones. [Inaudible]

CSH: Yeah, it's beautiful.

SH: Imagine all the rain, now there -- they're always drying out you know- oh boy. So it rained I guess, good timing on the rain now everything kind of green again. Big Island too, were you in drought? I don't think so, yeah. You guys got some big rains.

CSH: Yeah, yep definitely wouldn't say we are in drought.

[Separate recording at diversion]

SH: Other places when you go in east Maui what they'll do is they tap off the trickle and put PVC pipes in the water close to the stream. Help add water to the intake. So, nobody enforces it so they just keep adding. [Pause] Did I tell you [inaudible] [laughing]

CSH: I got you uncle, I got you.

[End of Recording]

[Transcription File 18]

SH: When they go bathroom and they gotta... so you'd rather have them go, rather do it in a portable potty, rather than everybody pissing and taking a dump all over the place and toilet paper and everything so. And it just...

CSH: 'Cause that already happens in so many places.

SH: This is East Wailua Iki. Yeah but, you know, it's so interesting because I gotta blame the Visitor's Bureau, they are the ones trying to hype up the numbers. Need more tourists, more planes, more flights. Um and yet they haven't increased the servicing of public or the state parks, you know. Like we going to a state park go look, no more hand towel, no more soap. [laughing] We try and call us would class tourism and stuff. It's such a shame, it's so sad.

CSH: They advertise for it but they can't accommodate the numbers.

SH: Yeah, yeah I mean they have this vision and they thinking that they world class and it sucks. I said unless you go to a— next to a hotel and stuff, then you go the bathroom and stuff, you know cause the bathrooms are well maintained by the hotels, but the hotels are taking it upon themselves because the State and the Country don't have it – adequate facilities, you know. It's kind of sad.

CSH: Umm-hmm.

SH: So now nobody like look if anybody coming in that direction.

CSH: And there's a gas truck that comes down here?

SH: Yeah.

CSH: Dang.

SH: Standard station down in Hāna. So, I think at least once a day. But you would think with tourism it would be even twice. That and everybody gotta back up and stuff. [Pause]

SH: So, this name is Haipua'ena, get one waterfall.

CSH: Pua'ena?

SH: Haipua'ena.

CSH: Haipua'ena.

SH: Haipua'ena Stream. We can look on the map after. So, this one actually that water comes out here at the tunnel and then the water goes through there. That's why they talking about mixing over here. 'Cause they don't want to have to do an isolated, keep them separate from the system.

So, what they do is they actually divert the water from the stream and so you get mixing. So, in case you get invasive species and stuff the possibility of introducing. This is the irrigation ditch over here. Oh well maybe I can pull later on when we coming back out and everyone else stop to take a look. But the water going to be low because they not directing. remember I told you they pulled the gates?

CSH: Uh-huh..

SH: So, but the irrigation ditch flows through the mountain.

CSH: But normally it's always high when the gates are closed?

SH: Yeah, yeah. So but they pulled the gate in so, since they close then the water has been flowing...and then but the 'ōpae, the numbers are spectacular.

CSH: Nice!

SH: Yeah. So that's why I always tell them, 'oh got to go check the 'ōpae' you know. Now you can go gathering and stuff and I said yeah, totally different. Because before I got – yeah you go over there but once you fish them out then you probably cannot come back for maybe a year or so. So, we going park the other side and then what we going to do is when we come up to the EMI, I'll show you which gate. So wayside park called Pua'a Ka'a So we'll come back over here, we going up through this gate.

CSH: Okay.

SH: We not going to be hiking up the mountain, we just come up here and go just go through the walk up the road. Much easier. Just take our time coming back this way. Over here's the park. So hopefully someone will be leaving. They all trying to do pit stop, there's a bathroom over here. One eating. . .

CSH: Or not.

SH: So, we'll pull in here and hope someone comes out. Did you need to go? And then da kine.

CSH: I'm going to go.

[End of Recording]

[Transcription File 19]

SH: This is a lot easier.

CSH: Oh, okay.

SH: The big one, water would flow down here. [Inaudible]

[Long Pause, Walking to entry point]

[New Conversation]

SH: [inaudible] [laughing]

CSH: Yeah.

SH: So, they get 'ōpae, and then so what – the first import they got were, is what happen is then the guys go come in and they go feel inside the moss and inside where get dead 'ōpae. So, the guys came in with electric shockers, they put the net down and then electric shocker. Shrimp fall and come and get caught in the net. So that's how they were caught, said, 'oh someone was coming to electric shock over here.'

CSH: Is that normal?

SH: No, no, no that was long time ago. But that was – at that same time was about 'Īao. Somebody had electric shocker they threw them in the rubbish though.

CSH: Oh.

SH: [inaudible] They're like, 'oh I seen Hāna now I got to get back to my hotel.' So, they going to drive like the residents coming out, you know what I'm saying.

CSH: Yeah, yeah. Now that they know the road.

SH: Been there done that. The waters down already from yesterday. Yeah this is the waterfall, top of one. So, this one is the one they discuss about Nahiku and about how they wanted to guarantee a certain amount of flow for the folks in lower Nahiku.

CSH: Mm-hmm.

SH: Yeah. Ok?

CSH: Ok.

SH: So, we going to head back out then I going stop on the side and can take a look at the ditch coming up.

CSH: Alright.

SH: [Inaudible] [Laughing]

[Walking back to car]

SH: So Makapipi is here and then from. . .

CSH: So, we saw all of this right?

SH: Yeah and then Maliko. What – so that's all the streams that we passed over.

CSH: Cool!

SH: [laughing] And now the rain came! So just drive slow. I'm so glad, because before it used to have all the cuts you had to go through. Now you got the bridge so you can go all the way out to the point. Then I heard the bridge broken so they don't let people drive out there.

CSH: Oh, well that's good.

SH: Okay. So nice yeah get the 'ōpae and stuff, yeah.

CSH: Uh-huh.

SH: Yeah. So, but only the guys who get 'ōpae so they would be used to the more rugged – like how you have Big Island. Everybody no get 'ōpae yeah? They probably go for the prawns.

CSH: Yeah, yeah.

SH: Was there anything you needed to go – wanted to take a look in?

CSH: No, if you want to stop anywhere else. . .

SH: Ok.

CSH: I feel like it's just good to see the range of all the diversions 'cause I'm not even familiar with this at all.

SH: So that is 100 years, yeah. So, they did a job. It's awesome engineering but when you think about it you're like, 'oh wow all this water been diverted for all these'. . . but it's interesting how the government is still trying to accommodate a plantation even through no more plantations, yeah. The politics still there.

CSH: Yeah, yeah.

SH: So, you see like that, yeah. that's to Hāna. Here's a guy charging.

CSH: From Makapipi how long more till we would reach like Hāna? Like that. . .

SH: Oh, well right there.

CSH: It was that road going down?

SH: We're just above, yeah. Going down yeah, when you get into the flats. Then you going to be going into, um, oh, it would be da, da kine, there would be the cave, and the airport, and then Hāna.

CSH: Mm-hmm.

SH: Right after that. Yeah, you gotta keep going in. So, start way up with the elevation and then you start to lose elevation. . .

CSH: And that road is more windy than this?

SH: No, no this is the windy part. Yeah up here. This is Hāna. We should park the other side [inaudible].

CSH: Oh, more people stay now.

SH: Yeah.

CSH: Oh, and they charge 'um in the mud with the rental cars.

SH: That don't belong to them anyway.

CSH: Yeah.

SH: I think there's space. I'll just pull on the side, yeah. I'm going to go back, oh another one. See that and the rain too don't help.

[New Conversation]

[Walking over to bridge]

SH: They might slip and fall on the rocks. Remember I told you how they dam?



CSH: Yeah.

SH: So, there's a dam over here that has an intake pipe over there. What they do is they redirected the water over here and then they use this as an input. So, this is taking in water. And then over here there's supposed to be a well but I have no idea what... Maui Land and Pine is no longer yeah, but I have a feeling they still have the well. But I don't know who [inaudible]. Maybe Maui Land Company. I don't even think you can look that up nowadays.

CSH: Yeah, yeah.

SH: But they built these stairs over here, the guy probably cleans the intake for the water.

CSH: And, where's the pipe though?

SH: So that's where the natural waters supposed to be... It's underneath.

CSH: Oh.

SH: Yeah, so they went underneath. So, like over here that how you get – probably have to go clean out some of it then the sediment go down [inaudible].

[Inaudible, very loud background noise from waterfall and passing traffic]

SH: You see this one, get 'ōpae and da kine, 'alamo'o.

CSH: 'Ōpae and 'alamo'o.

SH: So, you know what, we go on the bridge to go that side.

CSH: Ok.

SH: Whenever the cars slows down. But I think this is a natural one but they redirected it this side, so it goes into the pool and then they dammed it. But it's already been dammed so they're not gonna bring back the natural flow, yeah.

CSH: Yeah.

SH: In here get 'ōpae. On this side you can...remember I told you about the watercress, it used to grow wild on that side but nobody taking care of it anymore. I used to be able to pick one bag before I go home [laughing]. See all around here 'ōpae. So, I don't know the status of the water and how much water or who the water goes to, but I'm pretty sure that Maui Land and Pine would not give it up.

CSH: Right.

SH: So, either maybe Maui Land Company or something would probably... that would be interesting to find out, [inaudible] but nobody asked so. But its separate from the EMI but this is Maui Land Company. They're one of the big companies here with the pineapple. Over there is a 'ōpae. But this at the down side there's a place they call Big Spring. And then Big Spring flows off to the ocean. [Inaudible] But I have a feeling when they were drilling for wells they wanted to tap into Big Spring and then tap that big water. That would, you know, it's like endless water.

CSH: Yeah.

SH: So, the amount of water that's just flowing out to the ocean there.

CSH: Are we going to stop anywhere?

[End of Recording]

[Transcription File 20]

SH: But that's why we're seeing – why I put in about the tourism. Because we need to consider it, so like with all these people drowning and stuff and they need keep hearing the same old spiel. I mean you increase the numbers that means you're going to get more drownings and then – but with that much people you gotta at least start improving, you don't want people dying all the time from drownings. But a lot of it is dumb mistakes.

CSH: Yeah, but then again, the sign is right there and it says keep out.

SH: That and then guys are snorkeling by themselves. You got all these 50, 60, 70-year-old's that get heart attack or something happens. They're swimming by themselves, your alone, you know. That's why they try and make this big deal about the full-face mask with the snorkel included.

CSH: Yeah but then I heard people die from that too cause. . .

SH: No, no, no but it's something else but it's complicated. But I say even I who used to with snorkeling and stuff, say how you going to take off the mask? You know, you're so used to you know just be able to just pop off the snorkel and stuff and breathe you know. This one you cannot breathe you just have a whole mask that filled with water and then you going to freak out, right?

CSH: Yeah.

SH: So I say no, these guys couldn't be able to and we talking about people who are used to the water. I say no they don't have enough data and information on how you da kine, how you clear, how you da kine. They think it's easy you just breathe through the face mask but then they saying that carbon monoxide build up. I say could be but I'm not really clear. They gotta – they should have monitored that in the lab and stuff. They can't do that, but do that before they. . .

CSH: That seems like a super basic issue.

SH: Yeah, before they sell it to the consumers. But they not going to, they want to make plenty money. Like Takata airbags [laughing]. I thought my vehicle was, da kine, I ran the number again on top and then mine got picked up so they did this lawsuit or something. So asked if I could send in my da kine, my registration and stuff and then they go. . . I'm listed on...so for the Takata airbags settlement. Give you plenty space.

CSH: Mm-hmm.

SH: You not as big as da kine, the gasolines, da kine. I give the guy credit, I mean just going in even around full gasoline, you empty out the gasoline and you still gotta drive 'um out.

CSH: Yeah.

SH: Oh, you got a full rig now with gasoline and stuff. Just imagine, most of these guys only one time they're driving into Hāna and one time they going to be driving out [laughing]. They ain't got no [inaudible], every day they got to drive in and drive out. Oh man.

CSH: That is kind of crazy to me.

SH: Yeah you talk like two hours driving and stuff.

CSH: Yeah.

SH: They go home, go sleep and then time to go work the next day and drive back out again. I know Bob Carol he's a councilman, he does that commute.

CSH: He lives in Hāna?

SH: He lives in Hāna. But he's the representative, yeah, councilman.

CSH: Oh wow.

SH: For East Maui. [Long pause] See over here the Hāna folks refer to over here as Three Tridges [laughing].

CSH: Yeah.

SH: They're little bridges, but yeah. . . But they know where Three Bridges is. Over here they refer to it Three Bridges. [Long pause] Oh, so how much comments did you guys get? A lot?

CSH: So far for EMI, for this project?

SH: Yeah.

CSH: Umm not a lot, actually.

SH: Oh really?

CSH: Yeah.

SH: I just felt it was important, so that's why I did.

CSH: Oh, I'm sure. I'm sure.

SH: I remember working all these years and I say wow, there's data out there but is it being used, I don't think so.

CSH: I mean I feel like we're pretty persistent too. We don't just try once, you know, and if they don't respond then we're not like 'oh well, we tried.' We definitely try to do it a couple times and if no one responds then we start just cold calling people to get their mana'o.

SH: Right, no that's good. Yeah sometimes it's like pulling teeth.

CSH: Yeah.

SH: Other guys like waste time [laughing]. But better get the comments in then complaining later on.

CSH: That's what is kind of hard to explain too, you know. Because some people they know and understand the CIA process but a lot of their feedback is 'why should we tell you?' Nothing is going to be done anyway there still going to do what they want to do. But it's like the point is adding your comments and. . .

SH: Put the truth in.

CSH: Yeah, you know if they do still build it then they can look back and be like well no one said anything about it. Like no one said. . .

SH: Well it's like the Kū'e Petition, you know. At least people you know on record, even they go back and look at them a little later you know look at all these thousands of people sign one petition [laughing].

CSH: Yeah.

SH: I see this guy, I'll let you go brah. Go ahead, yeah.

CSH: Resident [laughing].

SH: When you truck bigger than mine you take the lead [laughing]. Yeah, I going to pull on this side. This the ditch that came in. They used to have a sign over here, the East Maui Irrigation Ditch.

CSH: They had a sign?

SH: Yeah, they used to have a sign. It was on that pole before but then all the trees all fell over and stuff. So, this is nothing like it used to be. So, when the water used to be up, all this used to be clean. They, you know the maintenance and stuff used to be a lot better. But yeah, they don't need the water to add. They leave everything alone than cleaning even the vegetation and stuff. It's more efficient if you clean the water right you know. So that would also be some of the comments for maintenance, to go clean the debris.

CSH: Mm- hmm.

SH: The falling, the leaves, and the debris that all accumulate inside the ditches. I don't – you know it's up them but it's you know what I mean.

CSH: Mm-hmm.

SH: So instead of having to – when they decide they want to clean then they going to clean after they get permit. But in the meantime, they aren't doing any kind of maintenance.

CSH: Right.

SH: Yeah. So yeah, the irrigation ditch. Full on, max.

CSH: Like just below those rocks kind?

SH: Yeah. I'm pretty sure the water was probably up like three quarters and then the thing dropped down.

CSH: That's crazy.

SH: Yeah. But interesting upcountry, upside the upper ditches I would look inside then I would get like all o'opu nakea, prawns, 'ōpae, I could see them inside so. . . [long pause, heading back to car]

SH: That's why it's a big difference now when I see, it's like they don't care, they're just leaving everything. Everything is falling, the trees and leaves.

CSH: Not up keeping or anything.

SH: Yeah. So, like I said this is the one about the mixing in the water and stuff they have that ditch running right across the stream.

CSH: Mm-hmm [long pause]

SH: I'm glad the rain was light so it went away, cleared up.

CSH: Yeah. Choke hō'i'o or pohole. Oh, that van.

SH: [Laughing] Get on your side, yeah he no stay on his side maybe big boulder came. That's when they drive like the residents [laughing]. Take the whole road. See how much people.

CSH: Oh, still plenty.

SH: Yeah, yeah, yeah they still coming.

CSH: These people are crazy when they're walking out like in their bikini thinking it's some like. . .

SH: That's probably how it's being sold, go swim by the waterfall and stuff.

CSH: Yeah.

SH: But look how many cars, no signs now [laughing]. That's what I'm saying about guys just making that assumption that its public.

CSH: Yeah.

SH: But you know, some of the places are not public. See they get the Jeep and they drive half way over.

CSH: Yeah [laughing].

SH: It's not like they have a big SUV or they got a Cadillac, or something you know. Small car but you know how drive or what [laughing]. I hope you're not getting too hungry, we going to stop at Ke'anae.

CSH: I mean I only got a manapua. I didn't really eat too much cause I know I get carsick [laughing].

SH: I think we probably going get stuck behind cars going back.

CSH: I am loving all this koa. That was a nice tree back there.

SH: I'm glad you recognize the koa. I usually see them and say 'ah neat.' Cause when I grow up Kāne'ohe and stuff no more koa. Then I go over here and whoa. That's so funny cause when you go up Haleakalā and stuff and then you see all the young koa cause and I say 'oh wow, look like haole koa!' [laughing]. Oh yeah look like but then everything change, oh wow that's neat. Over here and stuff too.

CSH: Yeah, 'ōhi'a, all this koa.

SH: So that and then the African tulip.

CSH: Yeah [laughing].



SH: See this is all the da kine the wedelia. Yeah all on the side and everything, the uluhe. I know you know, but you see all the strawberry guava.

CSH: Yeah, choke waiawi.

SH: When I used to do stream stuff then on the way out I go pick the guava. Pick the guava and make guava jelly.

CSH: Really? Oh, look all the 'ie'ie on that tree. That's crazy. Even over here, oh my god.

SH: Somebody intentionally planted that heliconia. You see how that thing growing out?

CSH: Yeah.

SH: Yeah. You see how patchy on the uluhe?

CSH: Yeah.

SH: So I don't know what's – that's why I was wondering if we were going into drought. [Pause]

CSH: This is Ke'anae?

SH: Actually, yeah we coming toward Wailua first then Ke'anae. This is crazy, people never used to park off here. But now a days. . .

CSH: What are they parking to see?

SH: They go walk down to the waterfall.

CSH: Oh. That's a walk alright.

SH: Yeah. But also supposed to be no parking and guys park. They trying to prevent people from parking there and they still park. That's why they did all this, 'cause guys would still park. You wouldn't believe.

CSH: That's not even half-way off the road. They're just like parking right in the street.

SH: Like a parking lot. And then just block the traffic coming out of Hāna. What a nightmare, and then on top of that you got all the residents fuming and stuff 'cause you know, bad enough, they have to put up with the tourists [laughing].

CSH: Yeah.

SH: So, this is the Wailua lookout. I going to take you to da kine now, Waialohe lookout above Ke'anae and stuff over there. [inaudible] So, this is the main one to get water, yeah, to the Wailua fields, the taro fields and stuff. So, Waiokamilo, look they get this one over here. This is all ancient taro patches and stuff. So I think they were getting problems with pigs and that's why they put up the fences. They never used to have before. Yeah, I think. . . We also get one problem with deer too yeah.

CSH: Really?

SH: The deer population increasing upcountry. That's why they were trying to get this ag inspection so that they can start harvesting some of the venison and stuff for sale and stuff. They wanted to make jerky and all this stuff. So, this is Wailua and this is Waiokamilo Stream. That's Uncle Harrys. Uncle Harry Mitchell. Are you into lā'au lapa'au, lapa'au?

CSH: Uh, yeah. I mean I feel like just from dancing hula we have to know a lot about plants and stuff. So, I'm just kind of getting into plants and what not.

SH: So, Uncle Harry, way back when he had cancer and stuff he was I guess he got caught inside the reserve. And he had a citation and stuff so I have this letter and we were talking about the stuff he was gathering and using – medicinal. It's an in-house letter and stuff but I have them, it's old but I was thinking oh for da kine, maybe get information in the future.

CSH: Yeah.

SH: Yeah, 'cause they threw out the case and stuff. But yeah. So over here they wanted the State to certify the water and then what they wanted to do was, they wanted to come in here for the water bottling plant. To sell water.

CSH: What? A water bottling plant?

SH: A water bottling plant. They were going to sell water, like Fiji water. Yeah, they wanted to do that. The State wouldn't certify it. That's why it's kind of interesting you know, like certain things – whatever the State does they don't ever make money for anything [laughing]. They always seem to lose money, instead of doing it for the right reasons they always do it for the wrong. Or they reacting after something else go wrong. We going to pull up over here. So, this is Waialohe and I look over here because of Waialohe Pond and stuff. Remember I told you about the Palauhulu and Pi'i Na'au Stream.

CSH: Mm-hmm.

SH: It flows down here and then goes into a pond over there. It's called Waialohe Pond. We can go eat over here. Over here and then you look over – like I said this is the peninsula and then they carried the dirt and then put it on here for the taro and stuff.

CSH: Yeah.

SH: Yeah, some of the taro patches are from way back.

[End of Recording]

[Transcription File 21]

CSH: Um, you've participated in CIA's before?

SH: Mm...

CSH: Like with Cultural Surveys or...?

SH: Um.. some.

CSH: Ok.

SH: Mm-hmm.

CSH: Just if you're not familiar with it, we'll normally start off the first paragraph explaining who you are and your affiliation to the project or your connection to this area. But we kinda went

over that when we were driving down...that you were born in or born and raised in Kāneʻohe and then you moved here.

SH: I moved here in '85 so now I've been working here 33 years this month as an Aquatic Biologist. So I work for the State, yeah.

CSH: But this...today you're not representing this, you're just speaking on what you know of...

SH: Oh as an Aquatic Biologist, yeah.

CSH: Yeah, yeah.

SH: What I've learned while working here...

CSH: And now you said you live in Wailuku?

SH: I live...my house...my residence is in Wailuku.

CSH: And your connection to this area is through your work as an Aquatic Biologist.

SH: Work, as an Aquatic Biologist.

CSH: Yeah.

SH: So I've worked with all the animals. Started with 'ōpae and then the different 'o'opu and then now I'm working on...my current research is on hīhīwai. So I'm trying to put together a manuscript and then from that manuscript then I think it's time for me to retire.

CSH: Once that's done?

SH: Yeah. I finished my field work so I'm trying to get papers out.

CSH: Mm-hmm.

SH: Yeah.

CSH: Just you personally, do you have anyone that you would wanna...that you think we should talk to about this? About this project?

SH: Hmm, what did you want to know cause um, I got other people who live here so like, um, Mrs. Awapuhi Carmichael.

CSH: Well they may or may not be on our contact list already...

SH: But yeah, so she would be one because it was actually her mom remember I told you about Aunty Sarah Ka'auamo?

CSH: The house that was...

SH: Yeah, by the two streams...

CSH: Uh-huh.

SH: ...that joined behind her house. That's her mom.

CSH: Oh!

SH: So that's the daughter So she started doing the 'ōpae. So she's teaching her grandkids, gathering and 'ōpae and hīhīwai.

CSH: And you guys always meet up or..?

SH: So I talk with them and then I stop by and stuff. In fact, this year I didn't. In fact I should stop by and maybe drop off some tide calendars to her.

CSH: Oh! That's nice!

SH: [Inaudible] Oh maybe we can stop by and then I can introduce you to her if she's home. If not, then it might be Vegas. [Laughing] But they would be good people to talk to. They're the ones who'd be doing the gathering and things but she used to work with the um, ho'olaule'a and they used to get, basically, scholarships for the kids who live here.

CSH: Oh that's good.

SH: So after they graduate high school then you give them a scholarship to go to college and then at least start them in college...

CSH: Yeah, give them a chance yeah.

SH: Yeah.

CSH: Ok... I feel like some of these questions are kinda hard because we covered such a big area...

SH: What are you asking?

CSH: Um, are there any cultural, archaeological, historical, or burial sites like...within this whole area.

SH: Mmm, it's funny because I also work with Historic Preservation...

CSH: Oh yeah?!

SH: And I'm gonna have to meet with them and they're gonna return human bones and stuff that they found there but cause by coincidence I would work in the streams and had this policeman and then so I went to go look so he was showing me somebody found bones. They weren't sure if was human and so they recovered the bone and took it to Historic Preservation and now their guys are telling me, oh! So you were the one that ended up with the bone and I go, oh I know where because a policeman went show me where. So if they wanna return the bone, I know where the location and they can go back and bury um in the same place that I saw where they buried it. Yeah, yeah so I'm aware of some of those places like that and then we've had um burial sites exposed like when eroding by the rain...

CSH: Right, mm-hmm.

SH: ...before Ho'okipa there was a big tree and then basically bones were washing up on the beach and stuff...

CSH: Oh

SH: So yeah, stuff like that, yeah. So but that would be, um, oh, um, oh boy, that would be by Kū'au...Kū'au Ho'okipa. Yeah. In that area. Would be graves and stuff and then the archaeologists explained to me because I guess they were talking about how they buried and then they pointed in the direction to 'Īao Valley.

CSH: Oh wow! That's interesting!

SH: Yeah, yeah, so they were explaining to me... I didn't even know there was a direction [laughs] I thought they just buried um!

CSH: Yeah, yeah.

SH: So yeah I learned a lot from them and then da kine when they do excavation sites and stuff a lot of it, I also worked with them in Waihe'e...

CSH: Mm-hmm

SH: Because a lot of it they pick up, da kine, marine shells...

CSH: Really?!

SH: Marine shells would be inside the, yeah. So when they go down in the layers..

CSH: Yeah!

SH: They keep picking out shells and stuff.

CSH: Oh! That's interesting!

SH: Yeah, yeah. So, so some of that I've been involved with, yeah.

CSH: Um, I know we've talked a lot the whole way down but is there anything more that you wanna share about the general history of this area?

SH: Hmm, history in terms of...

CS: Like, past or present land use?

SH: Umm, well more, I guess, there's a push to try to raise taro...

CSH: Right.

SH: ...but I also feel this conflict with water commission and water decisions that really haven't [inaudible] I mean if you look at their actual return of water or their in-stream flow then I disagree with it because I said I'm kind of waiting for this official decision, um, but each time they choose a lower amount. Remember like I told you about the 65 percent?

CSH: Yeah, yeah.

SH: I can show you how the Aquatic Resources got to the 64% median flow which would return, actually, 90% of the stream habitat for the animals and yet they've always stayed away from that. So when they return the water for like the Nā Wai 'Ehā...

CSH: Mm-hmm

SH: So the 10 million gallons is one-third, so it's no where near 64 percent.

CSH: Right.

SH: Yeah, so that's why I told you I wrote a letter...

CSH: 30 million...



SH: And I asked, I asked for 30 million gallons a day and I said but I also wanted to make that clear because I wanted to get all that flow data that USGS had collected and then base it upon that and the 64% percent would be 30 million gallons.

CSH: So regardless of the, the facts that you bring up they just throw out the..

SH: No, no, they, they really aren't planning to... I think once they make a decision then I think it's set in stone to the next generation because no one is gonna rock the boat so they kinda, oh well, we came up with a decision. So although it's supposed to be interim in-stream flow, I don't have, I don't see them pushing to get a permanent as well as they're not asking all these questions, then what about gathering rights, what about for endangered species habitat and all these other things. Guys aren't asking those questions they're just coming up with this number and saying, well we're agreeing and we're returning some of the water into the stream. Yeah and I don't see them down the road gonna be changing their mind. They're coming up with an amount and then they're gonna...so I said that's for the future to decide but it's not based on any data. We kinda tried to do all this research, tried to give information so that they could give an intelligent compromise and yet I see politics.

CSH: Yeah.

SH: But yeah, I'm not gonna rock the boat or anything. That's also why I guess, a better understanding. I guess when you get older it's tough and you think, ah, too young. I'm gonna die before... [laughing] ...and nothing is gonna change. I just feel for the old folks because all the folks that passed away all that time they really, we want water for taro, we want water for taro(They were fighting for it yeah?), we want water for taro but they passed away and they still no more water for the taro and they're still controlling the water even though there's no plantation using the water... they're still diverting the water. Nobody is returning the water to the streams. Yeah.

CSH: Um, let's see...do you have any memories of what existed here like, cultural events, I know you said with getting just gathering...

SH: Gathering. Gathering and then dependency on fishing and fisheries but I also because I'm also interested in the fishing history in Hawai'i. Part of my problem is also, when guys see throw net, they claim it's traditional. That was introduced by the Japanese. But it's interesting how that they now, it's not Polynesian. It's coming from the Japanese side and influenced from Hawai'i. Yeah.

CSH: I see.

SH: So that is kinda interesting because you see a lot of, you get the throw net on top the covers and everything and then you think that they would know better but no. They're using mono-filament throw net.

CSH: Mm-hmm.

SH: You know, it was introduced.

CSH: Yeah.

SH: They're using modern gear but that's why when you're looking at...for them to claim traditional, you're talking modern traditional. We're not going back to the old traditional.

CSH: You're not using those things to...

SH: Yeah, cause it's similar to like when I was asking Kaho'olawe to review their fisheries management plan and I asked them, would you guys consider putting in traditional fishing use? But I said, if you're going traditional, no wet suits. No fins. No masks. Tell them go spear. You gotta go make your own gear and stuff like that. [stutter] But what I wanted was a discussion because it's like now...because what you're getting is this, um, modern interpretation but then now we're using gear, we're using boats, we're using gasoline engines, we're using...and then how do we give the bottom fishermen traditional when the guys are using depth recorders, GPS...

CSH: Yeah, yeah.

SH: And then claiming, oh, this is my traditional right! Then they're not fishing by hand so when I used to interview like Bill Shinsado at Kewalo Basin. He told me he used to go get one Sampan, used to go out to the Northwestern Hawaiian Islands, they'd go down with 17 hooks, by hand and pick um up by hand. No more power reels, no more hydraulic gurdies or anything to, you know, we're talking SamPan. We're talking old style.

CSH: Yeah.

SH: But these guys when they feel the line, they tell me they can tell what kind fish went bite on the line.

CSH: Really?

SH: Because, you know, that's how intricate...but you go try ask the kids now they all get electric reels and then they're not... it's not all by hand. They used to do um by hand but they used to put down as many as 17 hooks to go catch bottom fish. Yeah.

CSH: Wow.

SH: But it's interesting too because they also used to take turtles. They flip the turtles and then they take the turtles up live and then when they wanna eat meat then they kill the turtle and then they eat turtle meat on the boat.

CSH: Wow!

SH: Yeah [laughing] that's why it's interesting to see and then those are the guys that passed away but that was there at their time at, you know, to see what they considered traditional and what they had to do

SH: So, so I learned a lot from the kupuna.

CSH: Do you have any personal ties to this area?

SH: Nope. I grew up on O'ahu so mostly to Kāne'ohe Bay...

CSH: But you know a lot of kupuna here...

SH: That's what, that's what got me interested into fishing and then, um, so that, like I said, originally when I first came here I had to get first aid certification. That's how I first met Auntie

Sarah. She had to get first aid certification so we took first aid class together and then so after I talked with her, oh yeah, I like study 'o'opu and stuff like that. She tell, come my house and, da kine, so actually when I started doing the research because she knew I was interested in 'o'opu and stuff but I think it's also with her blessing because it because it's like her, leave alone this ka'a, he's coming in to do stream research and stuff like that.

CSH: Right, right, right.

SH: Nobody mess around with my car and stuff but basically I kinda have a feeling that I get this protection from her saying that, oh yeah, he going come and do research on top the 'o'opu and stuff...

CSH: Mm-hmm.

SH: ...and the hīhīwai.

CSH: Yeah.

SH: Yeah so that's why when I come out with papers I share with them and then...

CSH: Oh that's cool. Do they have any feedback for you?

SH: Oh, no, no. Like I said even like with all this stuff with the fish and stuff I say, you know, when you think about it... it's not us rediscovering because we see that and then the kupuna know.

CSH: Mm-hmm.

SH: So when the thing running, they the ones going be catching um and then they the ones going dry um, they the ones going be eating um that way and stuff.

CSH: Yeah.

SH: So way back so when the 20's and 30's that's when they used to go catch. I don't know if you know the 'ōhua? The 'ōhua is the manini. Before they make the stripes, so they're kinda like clear...

CSH: Mm-hmm.

SH: So just before they get stripes what they have, what they, technically I think what they're supposed to do, they said they go out and gather them inside the near shore but when they gather um, they go before sunrise. I guess they think that when the sunrise, then the stripes going come out already.

CSH: Mmm.

SH: So they're trying to get um before the ting pick up the stripes and stuff but they go catch the 'ōhua. So 'ōhua is the manini before the ting...

CSH: ...get the stripes.

SH: ...get the stripes. But that's what they wanted. They catch um, but they used to put um out, put um in the dry box and they dry um.

CSH: Ahhh.

SH: And they eat um like candy.

CSH: Like candy?

SH: Like dried fish.

CSH: Nice.

SH: Yeah but all the baby fish, so like the hinana. Hinana too they dry um up. You know how, da kine, go eat aku?

CSH: Yeah.

SH: Yeah, same thing, dry um and then just eat.

CSH: Nice.

SH: But that was their candy and stuff...but they're talking by the thousands. So, but, this is, they told me they used to do that in the 20's and 30's so up until then they were still doing this post-larvae recruitment...all this fish is coming upstream. But they were catching um in baskets and stuff. Yeah.

CSH: And how drastically did the numbers drop?

SH: Oh, no. They don't see that anymore.

CSH: At all?

SH: The big recruitment and stuff like that was when they were kids and they saw that and the now that they're adults they don't see that anymore. Yeah.

CSH: Oh.

SH: But it tells you how much more water that was just flowing in the stream...or when they tell me they go and catch 'ōpae, when they catch 'ōpae that means the water in the stream when the taro patches were cold enough to have 'ōpae. They never did go up the mountain, they catch um down low. So that means the water was coming down cool. So you can tell now, so like when I go Ke'anae would be by the intake...

CSH: Mm-hmm, where you went in, yeah?

SH: I wonder if you can see...so right on the corner over there, before then the thing redistribute the water. There's a flume that goes across...

CSH: Ok..

SH: But there's a intake. At the intake then the water gets distributed right in the corner by the taro patch.

CSH: Mm-hmm.

SH: You see the green taro patch?

CSH: Yeah.

SH: But then there's like concrete and then the thing split up the water. Right over there get 'ōpae and stuff inside. Yeah. Get 'ōpae, get prawns over there.

CSH: Oh!

SH: Yeah I've gone to go look and then I...so, when I was studying in here I would go, I looked at these clams. They call um fingernail clams. They're inside with the taro. So I was sampling, so I have a paper on fingernail clams. I didn't even know about um, I was working with, uh, a researcher from Dayton University and then, so I sent to him, he would measure um, and then they wrote up a paper and I was co-author with them on that.

CSH: Oh cool!

SH: These taro patch clams...the...

CSH: Fingernail clams?

SH: Fingernail clams, yeah. They call um musculium and pisidium clams, yeah.

CSH: Never heard of that.

SH: And then so that and then the, possible the fishes and maybe the birds probably ate the clams.

CSH: Oh.

SH: But they probably came in and it got distributed by when people, you know like when they...taro, when you replant the taro. It probably would be in there and so the clams would probably get redistributed that way too.

CSH: Oh yeah that makes sense.

SH: It's fresher...freshwater clams.

CSH: Oh.

[Pause]

CS: As far as agricultural, this is pretty much a lo'i place on this side...

SH: Well these are historical. So in here too..

CSH: In Ke'anae here?

SH: In Ke'anae. So over here too what it is is, what they have, or what the taro patch growers... you have what they call hui land. Ok, I don't know if you've heard of that before.

CSH: No...

SH: So in the hui land what it is, is...it's owned by a group of people...

CSH: Ok...

SH: So, say I wanna go to taro patches so they take charge of two taro patches and they grow taro at two taro patches...

CSH: Mm-hmm.



SH: They pay taxes for those two taro patches and stuff...but it's still considered hui land. Which is probably unique. I don't know if Big Island get um like that but that's what I get from over here.

CSH: So they still get to plant kalo and whatever...

SH: You plant...but you plant according to how much you...so they take on that as well as responsibility to pay taxes for the property tax and stuff for the hui land. Yeah. So it's tied in with the family, not everybody going plant taro.

CSH: Right.

SH: But somebody may be gung-ho or if they're younger or something may get more taro patch than other people.

CSH: Mm-hmm.

SH: But they would do that but they would be required to take care not only that but supposedly the water supply and go clean the ditch and clean the...right? It would be shared responsibility but that's what's so interesting because you got all these guys but they want somebody else go clean. They want the water at the end but they not helping the guy up here go clean.

CSH: Mm-hmm.

SH: Yeah, the Kanoa's the one, a lot of times doing the cleaning.

CSH: Interesting!

SH: Yeah, so that's what I get. Yeah. Over here is like Hatfields and McCoy's too.

CSH: Really?

SH: Yup! So...

CSH: Families scrapping out...

SH: No, no...but I heard and I'm like, oh...okay. [Laughing] And they're married to each other now...

CSH: Oh yeah?!

SH: Yeah, married and they got war and everything. Oh boy [laughing] So... interesting, yeah because I got to learn that too...so like I said but that's why I said I make sure I get the good kupuna da kine, protected by the kupuna and nobody mess around... [laughing] Only one time...they go flatten my tire.

CSH: Really?!

SH: They put stone inside and then all four tires were flat. Yeah.

CSH: Wow!

SH: So the other guy, good thing da kine taro farmer had his compressor on top his trailer...to come down and fill my tire up. Was Friday...and then, aw man, I don't wanna get new and then, oh wait, wait. Then he came with his da kine and go fill me up so I could get out. If not, I gotta stay overnight and da kine [stutter] And only one time they did that so I went go and park inside

so I get somebody never like that so they flatten all my tires so after that I park um outside, I no park inside. Yeah. But I say, nobody else is doing research.

CSH: Yeah.

SH: So after all these years, yeah, nobody.

CSH: Mm-hmm...but out on the road it seems like a lot of people recognize you...at least out here.

SH: Oh, I don't know. [laughing]

CSH: Um, do you know any legends maybe about this...or old mo'olelo?

SH: Oh, like I told you about that, um, people have asked me if I've seen mo'o...um, but I swim over here and da kine, I...one of the things I guess I've been brought up with is that, I have no problems. Like when I work with the bones and stuff and then actually what was interesting when I did the Kū'au one, I went help Historic Preservation go recover bones, the last thing I found was this human skull was inside the sand...and I looked like, oh, get one skull. So was one full skull. You know what I mean... [laughing]

CSH: Oh yeah!

SH: Yeah, because they ask me if I'm bothered and I said, no, not really because I said even my dad was saying, make sure you're not conniving. You're going there to help clean up and da kine, you know. But I said, you don't...you get conniving [inaudible] and stuff...

CSH: Yeah.

SH: ...the thing going come back and haunt you kind of deal. So other than that, I'm not bothered by that... I don't have that, you know, oh ghost going come after me or something like that...

CSH: Mm-hmm, you don't ever feel that way?

SH: No. I think, yeah, must have been the way my dad, da kine, what he said, you know how get the conniving, you try to do something that's not kosher or da kine, you know. So he said dat going come back and haunt you. So but I've never had any problems even if I pick up bones or...yeah.

CSH: Mm-hmm...umm, hmm...

SH: So that one was a mo'o, um, what else? So actually I, there is a cave on the side and everything and I looked and everything but I said no, um. People have told me, even like the mo'o by da kine, Lahaina, yeah. Um, the Moku 'Ula and things like that, so I've heard of that one and I also heard Waihe'e, also of the mo'o over there. But no... I haven't had any strange feelings or [inaudible] like that, no.

CSH: Um, what about any ancient trails in this area?

SH: Mmm, not so much here. I guess the only one was, um, so that's why when I was allowed to go here I followed, basically, the trail that the fishermen used and I come in along the side and then I jump in along the water and then I swim to the waterfall. But what it is is, I'm also looking at safety and the reason I decided to study that waterfall was that it's safer here. I don't have the wave or the ocean behind me.

CSH: Yeah.

SH: So where I gotta watch big waves or something going come and hit me from behind.

CSH: Mm-hmm.

SH: So inside the pool I can always go back away from the water and then I'm safe in the pool but whereas if I'm in the ocean then I may get ocean swells. You know like how I told you about the 'opihi pickers and stuff like that?

CSH: Yeah, yeah.

SH: Dat kine you gotta watch the swells. So yeah, that's the only, um, terminal falls that I worked on. Yeah. It's just more for safety but that's how all these different things. I got to watch the fish climb out and get 'ōpae, and get hīhīwai...

CSH: Yeah.

SH: [Inaudible]

CSH: That's cool... um, do you have any knowledge of any observed cultural protocols here? Like...maybe from back in the day or even now that is still being practiced?

SH: Um, not too much. No, not even the oli and the chants, no. Yeah.

CSH: Um, what about any mauka/makai relationships like with 'ohana who live mauka and makai and how they interact.

SH: You know what I've noticed and then it's not just my family and everything it's just everybody gotten older and stuff and I guess now being older and stuff then we don't have the kids and stuff like before. All my cousin's kids and everybody all graduated college and everything so it's not like when small and you get the kids...you know, take them to the beach, take them go swimming, like that...

CSH: Yeah...

SH: ...so my mom would always have the kids go swimming lessons and stuff so like my mom would babysit and stuff.

CSH: Mm-hmm.

SH: So that's why would be interesting cause I said when we got older then it's the kids that my mom took care of, you know life, eh, come, go in the car we go, you know, [inaudible] go get ice cream or da kine, dat kine stuff...and then my brother used to take the kids go, go get the newspaper but then right next is the fire station...

CSH: Mm-hmm.

SH: So the kids all know the fire...firemen and all the guys who worked at the fire station so when the fire engine going out then the kids all waving and the guys all waving to the kids, right, because they know the kids because they come pick up paper with my brother. So the kids would do that but my brother would also train them so what it would be is like, so like, they see the helicopter, they see the helicopter really small. From the time they were small they were always

trained so, oh, can see the helicopter. You no hear the helicopter but they already see um, but they used to looking and then later on then the helicopter come over and then but the kids pay attention to stuff like that. But you bring um up, but the kids would know if you ask them to look and then later on they pick that up on their own.

CSH: That's cool.

SH: So yeah, that kine stuff yeah my brother kinda followed up with my mom for take care the kids and stuff, that kine stuff. But always the kids...make the kids considerate.

CSH: Yeah.

SH: Yeah. That's why we always joke cause my mom passed already but it'sso funny. She could just tell them, my mom going give you this eye. She give you da eye, she no need say nothing. [laughing] Then the kids would sit by the bank and sit down.

CSH: And be quiet.

SH: Yeah, yeah. Dat kine stuff. But I said I guess you gotta be brought up that way...because I say we no need say nothing, yeah you see her eye and then okay, you get the evil eye. [laughing]

CS: Yeah.

SH: We know what my mom is thinking. She no need say nothing. [laughing]

CSH: Umm...

[Pause]

CSH: It's a kinda broad question but...um, like what do you think would be some concerns with the community that is related to any cultural practices in this area that the project might interfere with?

SH: Hmm, what do you mean? In terms of the project, we're talking about return the water?

CSH: Yeah.

SH: Umm, well I guess that's also why I asked for the clarifications.

CSH: Yeah, yeah.

SH: How much water being diverted that those kinds of things because the guys who are on the water commission aren't asking those questions or asking specifics. How much water? When they going release the water? What the water going be used for?

CSH: Yeah.

SH: Even though we just keep getting the, oh yeah, they going do diversified ag then in the newspaper they read, oh they may do cattle ranching...

CSH: Yeah, yeah.

SH: Then oh, how many cattle and where are you gonna put the ranch?

CSH: Right, no specifics.

SH: There really is no specifics other than, oh well we're going into diversified ag as a blanket and then no information at all.

CSH: Mm-hmm.

SH: Specifically to really addr...how much water are you gonna need? How many head cattle you gonna raise? Where are you gonna raise um and where is your livestock? Where you going slaughter? Where you going feed?

CSH: Right.

SH: And are you gonna, is it all gonna be, you know, what kind of feed are you gonna raise um on, like hay? That's why it's different cause like on the mainland you get like all the hay farms and stuff right, so they stock up on the hay and then other time then they get feed lots and stuff and then but there's nothing. Nothing is said, what kind of feed, what are you gonna raise, what kind of cattle and stuff? So...when they're raising the cattle are they gonna ship um to Japan? You know what I mean?

CSH: Oh yeah, what's gonna happen?

SH: So are they just raising um, so like with some of the ranches, they're just shipping off the cattle to get slaughtered on the mainland and stuff.

CSH: Yeah.

SH: Yeah, so I don't know all that...that kind of stuff. But that is just more from what we've heard like with the ranching here cause when they were getting all drought conditions...like right now, no problem. A lot of rain but when everything start drying up and everything then they're worried so they're talking about shipping cattle out just to get um fed, they don't want, you know, the cattle dying here cause not enough feed because the biggest cost could be feeding um.

CSH: Right. And even with the lo'i too?

SH: Umm, lo'i, I think it would pertain to certain families. At least it's still in the family so they wanna continue it but I guess, well most of what we hear is with more water then they should be able to raise more taro. But right now when they're not getting more water...sufficient water to expand production or anything...buggah just barely hanging on and stuff.

CSH: Mm-hmm.

SH: Yeah.

CSH: Do you personally have any recommendations, um, regarding, I guess, the preservation of this area?

SH: Umm, I know things are gonna change but um I guess having seen, I know that they do wanna make sure that, uh, kalo growing is part of, I guess their lifestyle...but it would be helpful if they would get more water and stuff, um, but it's not all EMI. So like even over here, the flume...

CSH: Yeah.



SH: It also involves the State and so the State also gotta....that as well as taking care of the watershed not wait until say the tree falls over and then disaster then no water and then they have to wait and then they kinda ask County or the State to help clean up for them.

CSH: Yeah.

SH: Yeah, um, it's kinda interesting cause you know, historically, so from CCC time, um, civilian conservation corps, when they planted all the, cause at the time they thought all the 'ōhi'a were dying...

CSH: Right, what did you say, the eucalyptus?

SH: So they planted the eucalyptus. Do we have any plans on what to do with the eucalyptus? Cause even like Olinda now, they're talking about trying to take down some of the trees and stuff because they're overgrown but then they, uh, they were originally planted for harvesting. But the guys were so opposed for them to harvest anything then they let the eucalyptus just grow dense. So now basically it's a fire waiting to just burn everything up. So you got all this dead under story and stuff and when it burns, it's not gonna be just the eucalyptus, it's gonna be all these peoples homes and stuff.

CSH: Yeah.

SH: Because they were the ones that said, no, we don't want you guys to cut the eucalyptus but the eucalyptus at the time was proposed for this eucalyptus harvesting...

CSH: Mm-hmm

SH: And it never happened.

CSH: Yeah.

SH: So it, you know, I guess trying to deal with the public after you already done that so when I look at that I say but is there a eucalyptus plan or even in the future and stuff? Um, and if they don't do anything then again we get this big burn up Olinda so with that you're gonna lose homes and things and then what's gonna happen after all these places get burned? Just like on the mainland...

CSH: Right, right.

SH: I'm asking that now because when you get the big burns and you can't evacuate these people and everything gets burnt up then I don't think anybody is preparing, what are you gonna do...but I have a feeling that's what's gonna happen. They're not gonna do anything until something burns and then they're gonna start from scratch in asking what do we need to do. So one of the things would have to be cleaning up. So now they're trying to clean up the ones by the highway and by the road cause what happens is, when they fall on the road then basically then traffic is screwed.

CSH: Mm-hmm.

SH: So but basically that's all they're doing. They're trying to address the, you know, what can government do so they're trying to clear the, the ones actually going fall on the highway but you still got all that other burn stuff. When that goes, I don't think people have even thought about it.

CSH: Yeah.

SH: Yeah, but that's in the background. That's one of the things that's gonna need, be needed, to be addressed.

CSH: Mm-hmm.

SH: So, I'm telling you first... [laughing]

CSH: And I am making notes... [laughing]

SH: So when you see that, yeah [laughing] [inaudible] Just stuck um with the foresters and everything cause they used to have the 'alalā because the facility used to be up in Olinda and stuff before so now the other guys are doing it so now they got all this bird people and if they knew then oh, we can release 'alalā.

CSH: Mm-hmm

SH: And then the 'io come and knock um off.

CSH: Yeah!

SH: So but I look at that and say no, it's typical, but I say but no forget you're making numbers. We just, ok, we raised six and then what? We going release six? And then now you lose, say four? What have you done? Are you making a difference or are you just, you're spending millions of dollars now...

CSH: Yeah.

SH: ...to try and bring um and then now they supposedly they took um back in from the wild and then they going re-train um and then they going put um out and then they're supposed to be smarter and not get hit by the 'io. Who's smarter? I think the 'io going knock um out.

CSH: Mm-hmm.

SH: Eventually.

CSH: Yeah.

SH: Just my...[laughing] Sorry I not the wildlife biologist [laughing] They're just preparing the 'alalā to be, da kine, dinner, you know.

CSH: [Laughing]

SH: So I don't know what you can do [laughing] I'm a DLNR employee so I don't know...we would think about stuff like that [laughing] [inaudible] So yeah, I'm sorry I never get a chance but if we had gone to, da kine, if we hiked up by Waikamoi would get the, da kine, abandoned like, one um, like a drilling rig that's off to the side inside the bushes in the bamboo and stuff but the thing is overgrown and all rusty and then...I don't know, whenever, I have no idea and I don't think they would ever...

CSH: Move it?

SH: ...go back to go clean all that stuff up. It's all abandoned equipment. They got places they built, da kine, they get roofs so that, I guess, they could do work up there but I don't know if they

would even reveal that they have um up there but these places that they, for construction and everything might keep you out of the rain and stuff but those kinds of places and stuff nobody is addressing any of that but they use that to prepare a rig or even pouring concrete and stuff like that.

CSH: Umm, I see you have your book here...

SH: Oh you want me... ok I can go over some of the stuffs.

CSH: Yeah... just anything you wanna share or things that I maybe didn't ask you or we didn't cover....

SH: No, no, there's only a few stuff but um...

CSH: I'm very interested to see what that is...

SH: I don't know how much, how in depth you guys are gonna go look up for information. So I'll give you...this is USGS, um, and I'm really not gonna use it already cause East Maui already been decided so what it is is, it looks at the natural flow conditions in the streams.

CSH: Uh-huh.

SH: This is done for, this is a USGS report, k.

CSH: Ok.

SH: So you can look at that and then get one map too. So what they were doing was, they did this study on, I'll give you this and the other one, but it's a USGS report. It's just information.

CSH: Ok.

SH: Yeah. So they're talking about median and low flow characteristics.

CSH: Oh, no, yeah. This is...great.

SH: Ok, so the other one that I have is this. So what they did was they went back and then they had some areas in five other streams in East Maui. They went back and they did long term study at the habitat and things and then so this is another one so this one I think was um, by Steve Gingrich and, ok, and Ruben Wolf.

CSH: Ok. Do you want this stuff back?

SH: No, you can have um. This is USGS reports but you can have um and then so this other one I just wanted to show, cause what it is, I had David Higa, he retired already but, um, he was with the water resources folks so then so he sent me this. This is for the Honomanu water license so in this they talk about the ditch and this is their application so at the time, so this is Garrett Hew, okay, so what happens is that this is how much...no data reported. Yeah. So this is way back, so this is '89 and stuff but, um, so this is Spreckles, so just to show you.

CSH: There's nothing.

SH: They submitted but they got the license anyway. So, but that's the way the system is. So they submitted no license and then they may have submitted so many million gallons of water taken, um, so like here, um, "1879 constructed concrete" So you can go look through it.

CSH: Yeah, so interesting.

SH: So this...also about what they're gonna use the irrigation for then that's why you see sugar and pineapple, ok. Then so it's just information.

CSH: Ok.

SH: Um, yeah, this is old already but but kinda...

CSH: Yeah, but interesting to go through for sure.

SH: But kinda gave me an explanation because I said, they don't have to submit anything and yet they going get the license anyway.

CSH: Yeah, a blank form...basically.

SH: Yeah so but that's what's in the files and then so it's not my decision but it's up to water resources to decide so it's not us but we, like I said, we recommend 64% median flow, um, and I have some reports and stuff that we had come up with for East Maui, um, and if you want um, just email me and I'll sent it to you.

CSH: Yeah, I don't think I have your email though.

SH: When you're ready, skippy.hau@hawaii.gov.

CSH: Ok.

SH: So I don't have a middle initial and I don't have a long last name so that's my email so...

CSH: Simple enough.

SH: At hawaii.gov.

CSH: Hawaii.gov, okay.

SH: So that was it.

CSH: Ok.

SH: So you can email me and then just email me when you're ready and I'll send you a whole ton of stuff and I'm not sure if you wanna get into ecosystem stuff... if you wanna get into insects, if you wanna get into...all other stuff. I'll send you other stuff too that I got from other people, other researchers...

CSH: Yeah.

SH: ...cause I guess at the time when we were doing research, other people did stuff on insects, other people did stuff, so we had, so we did our da kine, so when we compared, um, this would be, our research for um, we looked at, um, Waikolu Stream on Molokai and Makamaka'ole Stream on Maui and then we looked at, um, 'o'opu alamo'o populations so we also went in and we collected fish and we looked at the fish then they looked at the females, they also looked at if they were carrying eggs and also measured the eggs and everything. It was a very comprehensive

report we did and then basically what they were saying was that because of the diverted flow in Waikolu, the fishes weren't healthy. They weren't ready to reproduce whereas Makamaka'ole had much healthier population with natural flow. Yeah, but that was never used by water commission. So it was interesting because everything was all in the abstract and everything just said we're looking at impacts of diverted water and then they didn't use it. Yeah. So they're not the only ones so like I said, I have the other papers as well as even about water use, Hawaiian water use, so like I said, I don't know...Emma Nakuina, then Metcalf, and then, uh, I have the Justice Perry, because she comes out, he comes out afterwards and then basically just like changes the definition so his definition is, oh, water is for agriculture.

CSH: Right.

SH: But then agriculture now includes pineapple and sugar. Yeah, pineapple and sugar is now included. So, but here, we're talking this is all the late 1800's so that changes and so that's why when I talk with the kids or when I do presentations, I talk with the kids and also explain that on their agricultural zoning, agricultural zoning also includes golf courses.

CSH: Oh.

SH: The land use, never had golfing back then but now it does include and the politicians never address golfing under land use for agriculture. So that's one of the issues that should be addressed but they intentionally left it alone so that's gonna come back probably to haunt you know for land use and when hotels wanna go build they're gonna say they wanna do a golf course and they going divert the water for golf courses because we're using the water for ag. [laughing]

CSH: Ok. But so basically the next part of the process is that I'm gonna play back all the stuff that I recorded today and all the stuff you give me and basically like do a write up of today and then I'll email it back to you... maybe I'll just email you first so you can email me other material.

SH: Ok, ok.

CSH: And then I'll email you back the summary just so you can look through if I missed anything, if I'm not getting the message out properly then you can edit and send it back.

SH: Umm, maybe the only other thing I would probably include would be the fishing side. So cause that's something I grew up with and that was fishing.

CSH: Mm-hmm.

SH: And then but what's interesting is that now I've seen how things have changed, not just for fisheries but for limu, for crabbing, for all these things that we used to do when I was a kid. I've seen that change even here, we've seen ogo disappear from Kīhei and stuff and that's from over harvesting. Our regulations really didn't work and, uh, I can say that now but doesn't help when people are buying ogo at \$10 a pound under the table and then, yeah, I mean so they just kept wiping out and then there's no limu and then why are people now asking, oh why no more limu in Kīhei? And all these people were over-harvesting limu. They'd wait for graduation time and then everybody would just go and take.

CSH: Oh yeah!



SH: Yeah and that's everywhere. SO now the ogo grounds are just like being treated like fishing grounds. Nobody says where they fish. Nobody says where they pick limu. They go pick limu and just give you limu and no say nothing about where they got um form. It... I could see that coming but I didn't realize it would be so dramatic cause even the environmentally about four years ago the ogo blooms just disappeared so now it doesn't have the limu that used to wash up on the beaches and everything it just disappeared. In all this place no more waiwai iole, no more, um, lipoa, and in all this places that used to be able to be able to go gather...

CSH: No more?

SH: Um, get a little now but just disappeared. I don't know what was the reason, I don't know if it was acidity or...could be warming temperature and stuff too but could be a compliment of other factors and why we don't have...but that's why it's hard because even for the fishing because you always have the fishermen, 'oh don't blame us' and then when you look, you gotta go blame everybody. It's the guy who left the ogo, it's the guy who never pick the 'opihi, and then the next guy come in and then he does pick the 'opihi and stuff so it's more of a aggregate affect rather than just individuals because the individuals wanna claim, 'oh but I left some' but they realize that somebody else came up behind them and then just harvested everything else they had and then no limu, no ogo, no more crab, no more 'opihi.

CSH: That's sad.

SH: [laughing] And then the 'opihi not going come back, the 'opihi gotta wait for the 'opihi grow and we not going wait for the Northwestern Hawaiian Islands. The thing gotta be all localized...same with the fishing, gotta be localized. They gotta take care their own fishery and let the fish grow. Yeah. So, yeah, that and then seeing the pipes and stuff, the only other thing would also be, um, you know what going happen, cesspools are gonna be a big problem. Because alot of the folks don'thave, um, they don'thave sewers.

CSH: Down in...?

SH: No, all these... would be cesspools. We're talking isolated homes and stuff on this side. They don't have sewer systems and stuff and then they're making a big deal about it in Honolulu, yeah? Because they're talking about, oh they wanna have the guys convert off of cesspools.

CSH: Yeah.

SH: But I said no but all these individual homes, māla, yeah, they don'thave sewer. There's no sewer system. So they're using leaching fields and now they're saying that the thing is now going into the ocean...impacts are gonna occur but you're getting more people...demand for more houses...and then, um, I don'tknow how they're gonna get affordable housing because now you gotta tell them you want the housing to be, uh, environmentally...oh! whale, right over there...just on the surface [laughing].

CSH: Oh wow. Is this normally the time?

SH: Oh, yeah yeah, yeah. They going stay till next month and then after February then they go back but they're all over the place. If you go in the water then you listen and you can hear the whales.

CSH: What do you mean?

SH: Yeah, right there, spouting at the surface. Just a small one, yeah.

CSH: Oh yeah!

SH: [Laughing] That's why I tell the kids, when you guys go in the water you listen and you can hear the whales underwater. When we were doing surveys you can hear um. In the background you can kinda hear the whales. [inaudible] They just broke the surface but no more wind too so when get the white caps try look. [laughing] Right there, you see?

CSH: Everytime I look away!

SH: You see the little white? Yeah, yeah. But that's why, fishing eye...you gotta watch [laughing]. Sorry, yeah I know I'm going off [laughing] Oh, um, any other questions you wanna go...maybe I can introduce you to Awapuhi Carmichael. If she's home.

CSH: Yeah, no...

SH: I figured we can go drop off tide calendar. It's now 2:40.

CSH: Ok.

SH: Yeah, we go look. Maybe she's home then I go, I guess I'll drop off couple tide calendars.

CSH: Alrighty.

SH: I know I'm giving you plenty homework.

CSH: Yeah, I like it!

SH: So actually I was reading a book, reading a Dick Van Dyke, but I just finished this book on, uh, Father Damien and I found out that his older brother was actually the priest that was supposed to come out to Hawai'i.

CSH: Oh yeah?

SH: And then he took his place and then Father Damien was here and it talked about how Father Damien was more radical but I said you put him out there and then he's with all the guys with the leprosy patients and then he got leprosy and stuff but I said that it was interesting because we went there just this year. So I got, last year we got to go see, in September.

CSH: Oh cool!

[Inaudible]

[End of Recording]

[Transcription File 22]

[Leaving Ke'anae, heading back to Pā'ia]

CSH: What were your parents' names?

SH: Um, my mom was Rose and then she was Wong. She also had a Chinese middle name, so she was [inaudible] Wong and then my dad was a [inaudible] Hau and then when they went to school then they get their English name. So then he became Arthur. So Arthur is his given English name and he went to school up until eighth grade...but he went to, where we was, uh,

Ben Parker. At the time, eighth grade was the highest in terms of the grade school. Then later on Castle High School opened up. So even my Aunt, she was able to go to McKinley. So she graduated from McKinley. Kinda funny because you know, I didn't know until late, she went to McKinley but I didn't realize that my Aunt used to go Vegas and I was thinking, 'oh really?!' [laughing] [inaudible] So when she was younger I guess she used to go Vegas I guess before she was married and stuff. So we think back, oh, would've been nice if maybe my uncle or my dad ever got a chance to go travel.

CSH: Mm-hmm.

SH: Yeah, my dad was in the army. In the Pacific I think he went to Solomon Islands or something.

CSH: Oh!

SH: Yeah.

CSH: Yeah, my parents go to Vegas pretty often.

SH: Oh really?

CSH: I mean, well they go at least twice a year.

SH: No, but see, guys always wonder why all the Hawai'i guys go Vegas. I said, you know, the other thing is that, when you go Vegas you see all these people from Hawai'i! [laughing]

CSH: Yeah!

SH: And then in Hawai'i, you don't see them cause they're too busy working [laughing]. At least when we go up there you can at least relax a little bit, you know.

CSH: Yeah.

SH: And then I know it's high cost of living but that's why we get play money, go out, go shopping...don't have to worry about like when you're home, same 'ole hassles, same 'ole stuff here. You see, like I told you. Been there, done that. They're just trying to get out of here as fast as they can. [Pause] Well I'm glad she remembered Darryl. Darryl Kuamo'o, we used to work in the streams. He does that stuff on the Big Island so when we used to do the studies or the photographs or, yeah. He used to come here and help me do, da kine, survey over here. We did the two-year study. We fly in by helicopter. Did you wanna see the hīhīwai?

CSH: Yeah.

SH: If you no mind, I going stop on the side...

CSH: Ok.

SH: ...to go walk in next to the stream then I can show you where get hīhīwai. [Pause] You see how the hala droop?

CSH: Yeah.

SH: [Inaudible] I saw that all the way back to Hāna. So ever since I used to collect in Wai'anapanapa, I stopped collecting. Oh, did you need to use the bathroom?

CSH: Um, I'm good.

SH: Ok.

SH: [Inaudible]

CSH: Yeah, it's scary.

SH: [laughing] At your own risk... [inaudible] So have you been in the streams to go collect hīhīwai or anything?

CSH: No, I have not, no.

SH: So good thing you got your boots because we'll go through a muddy part and right next is the stream. Do you eat fern shoots?

CSH: Like this? Like the hō'i'o?

SH: Yeah.

CSH: Yeah.

SH: This is normally where people gather so they stop.

CSH: Same place as the hīhīwai?

SH: [inaudible] Guys pick fern, they pick bamboo. That's why, like I said, that's also why Honomanu was my number one recommendation for East Maui to restore the stream [inaudible] When they restore the water, the fisheries, then the public would be able to see that and all these other places what they do is, they have their locks on top. You know when you go to the gates?

CSH: Yeah.

SH: And then the public wouldn't have access to those areas. EMI cuts um off so they can't go up to the gates [inaudible] this is the only one that's open. So Awapuhi said she was, what? 81? Did you hear? She said she just had her birthday.

CSH: Yeah, yeah. She said the last time she went to the river was when she was 79...?

SH: So I'm not going down to the beach, I going park on the side and we'll go in from there.

[End of Recording]

## Appendix C Garret Hew Transcription

---

**Cultural Impact Assessment, East Maui Irrigation Water Lease renewal Project, Cultural Surveys Hawai'i (CSH) interview with Garret Hew (KN), at his home in Kula, Maui, on 26 June 2018**

**CSH: CSH Researcher**

**GH: Garret Hew**

GH: Yeah, so...when they asked me, "Eh, would you be interested in taking this survey?" I said, "Eh, you know, I'm retired now..."

CSH: Yeah.

GH: And I said, "You know, I worked for the company and I still have bonds....I don't have bonds to the company...."

CSH: Uh hmm.

GH: "...but my heart is still there."

CSH: Yup.

GH: So, I don't know if they're looking for things like that but...

CSH: Uh hmm.

GH: ...I work with a lot of people out there and got to know a lot of people. Tell me stories.

CSH: Yeah, yeah, yeah.

GH: You know about East Maui area that maybe somebody don't know, yeah?

CSH: Right, right, right.

GH: But you know, I retired in—last year---2017. August. So not quite one year.

CSH: Ah. Ok.

GH: Yeah.

CSH: Nice.

GH: Your recorder on now?

CSH: Yup! Recorder is on!

GH: Ok.

CSH: Ok. So let's start with your full name.

GH: Ok. Garret Hew. G-a-r-r-e-t H-e-w.

CSH: Ok. Um, where were you born?

GH: I was born in....Pu'unene, Maui.



CSH: And you were raised....here? In Kula?

GH: Raised in Kula, yes.

CSH: Umm. Did you ask you when you were born? [Laughing]

GH: Sure! 8-3-1955. I'm an old man already.

CSH: [Laughing]

GH: I can collect Social Security [laughing]

CSH: Ohhhh! [Laughing] Um, who are your parents?

GH: My parents are um, Harry. Harry Hew.

CSH: Ok.

GH: And my mother is Nellie. Her maiden name was Shim. She was from the Big Island, Kōhala. Hawī area. And my dad grew up here in Maui. And uh, he actually only had a, you know, 8th grade education and had to go out and work, so he worked for the plantation.

CSH: Uh hm.

GH: And you know—very, very cheap pay. So he had an opportunity to go to the mainland for schooling. So he went to California to get um—machinist schooling. So he went there, came back, and went to work at Pearl Harbor Navy Yard as a machinist.

CSH: Oh. Ok.

GH: Yeah. And then he married my mom. I guess my mom's folks from Kōhala moved to Oahu when my grandfather passed away.

CSH: Uh hm.

GH: And then um, he worked there quite a long time for Pearl Harbor. And then he started farming again in Lualualei.

CSH: Ok.

GH: On O'ahu. And then eventually moved back to Maui in the early 50s. So in the early 50s. Yeah.

CSH: Ok. So when...how did mom and dad meet? Or when did they meet?

GH: [Loud sigh, thinking] Hmmm. God, I don't know how they met but they met on O'ahu.

CSH: Oh, ok. They met on O'ahu.

GH: Yeah.

CSH: And you have siblings, yeah you said?

GH: Yes! I have three sisters. And one brother. My brother is now deceased but my three sisters are still here.

CSH: Ok.

GH: And like I said, this was our family house—nine of us.

CSH: Uh hm.

GH: And I was in charge of making hot water every night. So we had a hot water heater....

CSH: Uh huh.

GH:...and I was in charge of cutting wood, hauling wood, and splitting wood and making the fire for nine people every night.

CSH: Wow!

GH: Yeah.

CSH: Not a *furo*, like actual bath then?

GH: Actually my father made coils with steel pipes so I would make the fire under the coils. The water would heat up and go into the hot water heater. And then re-piped it into the house.

CSH: Oh ok, ok.

GH: Yeah.

CSH: Gotcha.

GH: So we had a brand new electric hot water heater here in the house that sat for like, 40 years that we never did use.

CSH: Wow.

GH: I was the hot water heater [laughing].

CSH: [Laughing] Ok. Um. So...let's see. What was it like growing up here in Kula?

GH: Kula?

CSH: Yeah.

GH: Very, very...rural. We're farmers. My dad was a truck farmer up here. He grew mostly Maui onions, Kula onions. And tomatoes and a whole lot of variety of um...crops. And then my grandmother or my Popo, which is my dad's mother.

CSH: Uh hm.

GH: Was also farming with my grandfather. My grandfather was a rancher. My grandmother used to farm over here in Kula. Her mother, which is my great-grandmother. She was born in Hawai'i so they lived up in this Kula area. So I guess I'm 4th generation.

CSH: Uh hm.

GH: Great-grandmother, grandmother, father, me.

CSH: Yeah.

GH: So I'm fourth. So she was here and then they went...she went back to China little while for something. But then there was the Japan-China War so then she came back to Maui. And eventually settled on O'ahu for long time.

CSH: Ok.

GH: But she lived to 100 and something. So she passed away in 19...I wanna say about 80. Or something like that. Very nice lady. Yeah.

CSH: So you all had farm chores then? You and your siblings?

GH: We all had farm chores.

CSH: Yeah.

GH: You know, the motto here was... "If you wanna eat, you better work."

CSH: Ahhhhhh [laughing] so everybody gotta work!

GH: [Laughing] Yeah! Everybody work. It was a hard life but it was a good life. You know, growing up outside with vegetables, fruits, and cattle and everything else.

CSH: Uh hmm.

GH: What's funny is that my grandfather only did cattle. And my father only did farming.

CSH: Uh hmm.

GH: But when my grandfather passed away my dad tried to do cattle, that didn't work out so we leased the land.

CSH: [Laughing]

GH: And now I do cattle and farming.

CSH: Oh wow! Ok.

GH: Yeah.

CSH: Your cattle is....

GH: I have one head down here....

CSH: Ok.

GH: ....and I have half a dozen up by Polipoli Road, by my house.

CSH: Ok. Ok. And you slaughter them all too or....?

GH: I...I usually raise them. I have a cow/calf operation. I have a bull with cows and what I do is when the calves are about 8 months, 9 months old—I sell em. Usually they ship out to the mainland for fattening in feedlots.

CSH: Uh hmm.

GH: And then they slaughter them there and ship the meat back here.

CSH: Nice.

GH: Yeah. It's....

CSH: Wow.

GH: Yeah, I do that or sometimes I sell one or two here or there. Yeah, yeah, yeah.

CSH: Cool.

GH: It's a good lifestyle.

CSH: Yeah! That's what I'm striving for in life!

GH: [Laughing] It's hard work but, you know—it's open and my grandkids, you know, they love to come with me and go taro patch and go run in the dirt. Feed the cows everything. My cows are all tame. You know, I pick ti leaves and. They come running...

CSH: Yeah, they love that!

GH: Yeah, they love that yeah. It's like candy!

CSH: Yeah and albizzia, I learned.

GH: They love albizzia? No kidding?

CSH: Yes! Yeah, that's what I heard too.

GH: Wow! Albizzia is plenty on the Big Island. Eh?

CSH: Yes, yes. It's bad.

GH: It's a nuisance tree to me.

CSH: Even on O'ahu now.

GH: Yeah.

CSH: Yeah, it is a nuisance tree. It sucks up all the water.

GH: So, you know, my growing up days was all farming and ranching and chores.

CSH: Mmhmm.

GH: And that's about it. And then you know when... we went to this old school over here. Ke'oke'a School and then Ke'oke'a School they shut it down in 1964, when they built Kula Elementary School. You passed that when you came up the road.

CSH: Yes.

GH: And Kula Elementary basically took kids from Ke'oke'a School and took kids from Kealahou School which was on the Waiakoa side.

CSH: Ok.

GH: So they merged and then we went there. And eventually I went to Maui High School at H-Poko and then half way through my junior year, they moved us to Kahului, to the new school—in Kahului. That was a real shock, because all this time we were in the country and H-Poko or Hamakuapoko is out in the boonies. And then we got to move to the city.

CSH: Oh, yeah, ok. I see.

GH: So then we got to move to the city – no grass, no trees, hot. Everyday you gotta wipe your desk because it's all sandy, all dust.

CSH: Mmm.

GH: So the last year and a half, it wasn't that pleasant, but, you know, I finished it up.

CSH: So when did you start working for EMI? Was it ... right after high school?

GH: No, after high school I went to college on the mainland. I went to this small university-- Pacific University in Forest Grove, Oregon. Took up some business and then it wasn't for me, so I worked a little bit, I went part time to Portland Community College. And then eventually, I went down to Corvallis, Oregon. Oregon State University. So, I graduated in 1978 with a Bachelor's Degree in Horticulture...and a little bit business. So, I came home. Shortly, thereafter my dad retired, so I took over the family farm. Raised onions and tomatoes and other vegetables.

CSH: Mmhmm.

GH: So that lasted for about five years. So, I mean, there are so many elements you cannot control about farming--

CSH: Mmhmm.

GH: So, you either gotta go really big and then try make it, or you're not going to make it, eh?

CSH: Yeah.

GH: Or you try to grow something special. Weather issues, bug issues. So, finally I said ok. I'm gonna get a job. So I started at HC&S in December of 1983 and I started in the irrigation department. I was a ditch supervisor, regulating water. That's when it all started. And then shortly thereafter, in 1985, they transferred me over to EMI. Yeah. I was in charge of the administrative functions of EMI.

CSH: Ok.

GH: Throughout all those years. However, there was a gentleman, Steven Cabral, that was our field superintendent. He was the old school type and he took me every place and everywhere that you could ever imagine. So, the first week I worked EMI, he said, "Ok, we're going out in the woods, you know, on Thursday, or whatever." Ok. "So bring your shorts, change of clothes. Whatever." Ok. We walked the tunnel. So we go inspect the tunnel. We go and jump in and going through this tunnel.

CSH: Yeah.

GH: And I think, "Ok." So, EMI has 50 miles of tunnels, 25 miles of open ditch where you can, you know, actually see the ditch, yeah?

CSH: Mmmhmm.

GH: So, the tunnels are all underground. So, we started in one section, and we kept on walking and walking and walking. So, after four or five hours, I said, "Steven, how much longer?" "Ah, a couple more hours." So, that was the training that I grew up with. Because, that's how the old guys they train you. If you cannot hack the first couple of days, you can't work for the company.

CSH: Yeah.

GH: Down the road. So, no problem walking in the tunnel. They look at me, yeah, eh, college guy, he work in the office. But they kinda had an idea that I worked on the farm and stuff.

CSH: Right, right.



GH: So then ok, another time, they tested me again, oh, we gonna try see if you can hike up the hill and read the rain gauge up there with somebody. So they get their best, you know, runner. Ok, we go. So, we go up and hike the mountain...

CSH: Yeah.

GH: The guys says, "What? Can make um?" "Yeah, yeah, yeah." "Keep on going." "Like rest, no?" "No, keep on going." Come back. "Wow, fast eh?" "Yeah." And that guy says, "That guy can go still yet."

CSH: Yeah [laughing].

GH: "Yeah, whatever you guys want to do I can do, no problem." No sweat on me.

CSH: Yeah.

GH: And the supervisors, one was Robert Pu'u. He was our Ke'anae supervisor.

CSH: Mmmmm.

GH: He was Chinese-Hawaiian. And you know, he kinda look at me, "Hey boy, you work on the farm?" I go, "Yeah!" "Mmmm. I can kinda tell."

CSH: [Laughing]

GH: "Oh, you no scared anything, ah?" "No, no, no, I do anything you like. You just tell me what you want to do." So, I remember one time when we were doing a tunnel inspection with Robert and Steven Cabral, and we had to go from, I think it was Ke'anae, Pi'inau and we came out to Kolea Powerhouse. I think that's—you know---a couple, three, four miles tunnel.

CSH: Yeah.

GH: Found some rocks on the floor. So, what we do is we bring inner tubes, tire tubes.

CSH: Yeah.

GH: We blow air into the tube and strap a piece of plywood on top. So what you do is, you jump on the plyboard and float down, and when you see rocks on the tunnel floor you stop and put it on the plyboard. And if you have plenty rocks, you turn the tire upside down where the plywood is under water...

CSH: Yeah.

GH: And you throw rocks in it and then you float them down.

CSH: Yeah, yeah. Ohhhh.

GH: So, at one place, plenty rocks. So we pick them all up. Ok. So three of us, I think we had three tubes...and the thing kinda weighted down, yeah?

CSH: Mmmhmm

GH: More weight you got, the more the inner tube go in the water, yeah?

CSH: Right.

GH: So more weight the faster the tube goes in the water.

CSH: Yeah.

GH: So then Robert says, "Eh, we got to get out at Kolea." Ok. So, we're going, going, going. He says, "Oh, there's one ledge over here so we got to keep to the left of the tunnel wall. Yeah, ok, because there's a little channel there that can take debris out of the tunnel. But we only walk in the tunnel whenever there's 40 million gallons or water or less, because anything more than that it's hard to stand up.

CSH: Yeah. Ok. Ok.

GH: So, you have to go at a certain level to have any control.

CSH: Yeah.

GH: So we come to Kolea where there is an opening in the tunnel— these guys holding onto the tubes loaded with rocks with the ropes. "Eh! Eh! Kolea, Kolea." Aw Man, I don't want to let the tubes with all of the rocks go floating past this point so I jump in front, and I'm hold the tubes which is under water and keep on holding 'em, Robert saw me holding the tubes from floating any further downstream he got out of the tunnel and pull one tube at a time out. I keep on holding the tubes until they were all out of the tunnel. Robert said "Come out. Oh boy, lucky thing you hold onto those tubes. If you hadn't held that, we gone, we gone."

CSH: [Laugh]

GH: I never like go pick up more rocks downstream or something.

CSH: Yeah. Wow.

GH: So we got them all out. Everything good. That's how I got to get their respect. You know, work with them. And. So they taught me a whole lot. They taught me everything about the ditch system.

CSH: Mmmhmm.

GH: Robert taught me how to blast rocks. I got an explosives license.

CSH: Wow.

GH: Because we had to clear roads and stuff like that before. So, small kind. If the rock too big, you blast 'em. Now, we have machines. We can do other kind of things, yeah?

CSH: You transitioned from admin to being like in the field?

GH: Not really.

CSH: Not really.

GH: I was admin all the way. My boss at that time, who was the Assistant Vice President at HC&S in charge of ag operations said, "Eh, whenever you can, the more you can learn, you go out in the field with these guys." So that's what I did. I did administrative work, but I went out in the field. But, I was in charge of administration and Steven was in charge of the field.

CSH: Ok.

GH: So, we did that for years and years. And then finally, Steven Cabral retired at...he worked there...let's see, 52 years. So, 70 years old he retired.

CSH: Uh hmm.

GH: So when he retired, they promoted me as the manager of EMI. So, I was responsible for the entire company.

CSH: Mmhmm. Yeah.

GH: I oversaw the company.

CSH: Ok. So, let's see from 1985 to 2017 wow, that was a long time...[inaudible]

GH: August 31, 2017 was my last day. I also wore two hats when I went back to HC&S in 2003 as the Paia Farm Manager responsible for growing about 9,000 acres of sugar cane and then in 2008 I was put in charge of all of the water resources at HC&S which included all of the irrigation facilities, deep well pumps and hydroelectric power plants. And I was also responsible for EMI at the same time. The Paia Farm operations was transferred to someone else when I took over all of the water resources.

CSH: Ok. [Laughs] Oh wow, you went down to the day!

[Both laugh]

GH: Yeah, so, I retired. You know, I help out the company as they have been good to me and also my former co-workers are also my good friends. I'm not a paid consultant.

CSH: Yeah, yeah.

GH: They call me, I help them out. I've done a couple of other things, but I'm going out that out already. I like to help out, but I don't like to be with the politicians or going to meetings, so.

CSH: Yeah, you're retired!

GH: Yeah, I know. But I have a life. But you know, my grandkids come first. The kalo and the cows.

CSH: Yeah. Nice.

GH: Volunteer work and stuff. So, it's all good.

CSH: That's good. Um...so, when you lived here, but obviously you've spent a lot of time on the east end.

GH: Yeah.

CSH: Have you come to any stories or traditions of that area?

GH: You know working with the people out there, you know, they taught me a lot, like Robert Pu'u, our Ke'anae Supervisor, he lived in Ke'anae,

CSH: Mmmhmm

GH: And ah...he worked there 30, 40 years too, yeah?

CSH: Mmmhmm.

GH: Um, and he said, all of Ke'anae/Wailua at one point, had rice growing. I said, "How come rice?" He said because there was an influx of Chinese in the late 1800s that intermarried with the local Hawaiians over there.

CSH: Yeah, yeah.

GH: And they settled down and then had kids and they started growing rice, because that's their staple, instead of taro.

CSH: Mmhmm.

GH: So he said, "Lot of rice patches, Plenty of guys growing rice." I said, "I thought it was always taro?" "No, had rice." Then he told me that Maggie Alu had a *poi* shop up Kūpau Valley. How they used to make *poi* and everything else. He said "You know, after a while, you know, people couldn't make it growing taro, so they got jobs in the County, outside here, outside there, and stuff like that." So, we, as the company, used to hire a lot of those people in Ke'anae, Wailua, Kailua to come work for us, you know, because they're born and raised there. So, like Robert, was born and raised there and also Jimmy Hueu, Steven Cabral was born in Nāhiku so we tried to keep up the tradition and give them opportunities. So, that went on for a while. Usually, you worked for EMI, you work until you retire, yeah?

CSH: Yeah.

GH: But then, times change. Lot of hotels were built and construction jobs paid well. Lot of different kind of opportunities. People don't want that kind of job. They go to college, which is good, and they find other kind of work, yeah?

CSH: Mmmhmm.

GH: The first part of my career it was pretty easy to find people who wanted to work for EMI, of course, mostly labor positions. You would have to enjoy that kind of conditions - when its wet, raining, to work for the company

CSH: Outdoors!

GH: Yeah.

CSH: Yeah.

GH: So, when we hired somebody we tell them, "You gotta remember two things, every day you come to work, bring your raincoat, rubber boots, and bring your lunch.

CSH: Yeah.

GH: Cause if you don't you going be miserable.

[Both Laugh]

CSH: Yeah.

GH: Yeah.

CSH: Yeah.

GH: So after, a while, you know none of those people was available and you know, we had more rules and regulations with pre-employment screening and all that. It's more difficult to find workers at EMI.

CSH: Oh.

GH: Because we had, when I started we had 23 people, when I retired, we had 17 approved positions, but probably only a dozen workers physically,

CSH: Mmmhmm.

GH: You know, closure of plantations. Somebody younger says, "No, I going to find another job." So, you know, you're in your 20s and you get a job with the County, better benefits, ok whatever, or with the State whatever," so they went.

CSH: Mmmhmm.

GH: To be comparable or more than comparable so that we can keep good people you need to compensate them. Yeah?

CSH: Yeah. Retention.

GH: Yeah, retention.

CSH: So, I mean, I met Kai, so that's the kind of stuff that you guys are looking for at EMI?

GH: Yeah.

CSH: Folks to just maintain regularly?

GH: Yeah. At EMI we had [clears throat] we have our maintenance worker. We have mechanic welders...

CSH: uh huh.

GH: We have supervisors, truck drivers, equipment operators. But no matter what your title, you better be able to do all that.

CSH: You're a laborer. Period.

GH: Yeah. I am the manager, I labor too. When I go out in the field, I gotta work. I work. Everybody does that. No matter what. You out there and one tree comes down, you can't go call somebody, go cut the tree for me, No. Everybody got one chainsaw in their truck.

CSH: Oh yeah.

GH: Everybody get one winch, everybody got a cane knife. Unless, you're really stuck, then you call. If not, cut yourself out.

CSH: Yeah, I learned that real quick.

GH: You went with Kai? Yeah.

CSH: Oh yeah, at one point there were four...

GH: ...Trees.



CSH: ...or five downed trees. He just brings out...

GH: ...The chainsaw?

CSH: Oh, what kind of chainsaw is that? I got to get one like that! Small, but powerful that one.

GH: The company buys Stihl chainsaws as they are the best.

CSH: Yeah and then you gotta haul it out.

GH: Yeah.

CSH: Yeah. And then if you want to get past, you got to.

GH: That's the way it goes.

CSH: That's hard work.

GH: So, you gotta be prepared.

CSH: Yeah.

GH: But yeah and you know, luckily I had opportunity to work with older guys that worked for the company for a long time and figured all of the tricks to the trade.

CSH: Mmmhmm

GH: You know, Robert was a real good resource, cause he grew taro in Ke'anae.

CSH: Mmmhmm

GH: And you know, we were going for our water license back in the 80s, 90s and trying to figure that all out. So he taught me a lot about the taro system in Wailua and Ke'anae.

CSH: Mmmhmm

GH: And I learned how to measure water from my predecessor and with USGS people.

CSH: Oh, ok.

GH: So, we became friends and he made sure I knew how to measure and you know, did it the proper way and everything else. So, we measured water and we did studies and things like that. But, maybe one thing that a lot of people don't realize, Nicole, is that Ke'anae and Wailua are the prominent taro growing areas on Maui, besides, Waihe'e and you know, some other places like that.

CSH: Mmmhmm. Yeah.

GH: And they continue to grow taro to make a living and to feed their family, but then, our ditch in that area was built in the 1900s.

CSH: Mmmhmm

GH: So I know we taking water from the stream, that usually goes down to the taro patch. So then I asked Robert, "Robert, if we divert water from the stream into our ditch, how come you still get water down there?" So, he says, "Oh Boy, come over here, I show you." So below our diversions, within the stream, there are springs that come up.

CSH: Ohh!

GH: So the springs rise below of our ditch system and feeds into the streams and feeds the taro patches.

CSH: Nice.

GH: So, in Wailua, there are springs below the Ko'olau ditch, and East and West Wailuanui Stream and then Waiakamilo Stream, which is the main one that feeds Wailua. They had a big spring over there called Akeke Spring, we used to call that Banana Spring, but it's actually Akeke Spring they call it. It brings a lot of water in and everything else. Robert used to tell me, he says, "You know, if you want the water, you know, you gotta go get it." So, I said, "What you mean?" So he says, "Well, like our ditch, if you don't clean it and maintain it, the water is not going to flow." So I said, "Same like taro patch, water only goes where you take care of it." So I said, "So how you take care of all that?" "Every Saturday, depending on how many taro patches you get, you send one person if you get 5 patches, you get 10, you send two. And they all go clean, religiously."

CSH: Ok.

GH: And they used to do that all the time.

CSH: So it's just a matter maybe taking out rocks and cleaning...

GH: Cutting brush, keeping the thing open, shoveling the debris out of the 'auwais. Repairing the walls, the main 'auwais and all that.

CSH: Ok.

GH: So, they did that and it worked out fine. But then [clears throat] as the older people retired or gave up taro or passed away, you know, that tradition wasn't kept up, maybe not to the fullest.

CSH: Mmmhmm

GH: Things got into disarray and at one time we even offered to assist them with the cleaning of some of the 'auwais and stuff like that. But, you know, they weren't receptive to our offer. So, it's fine It's fine.

CSH: Mmhmm.

GH: But we did do some work on their water system. We rebuilt a dam that diverted water around a losing section of the stream and diverted that water back into the stream. So that was the main thing. But, I think the main thing is that if you got a problem, you gotta address it, take care of it. Same like your house. You got a leaky pipe, you gotta fix it. If your water tank leak, you no fix it, you no more water.

CSH: Yeah.

GH: But, you know, I can see where, maybe, some people were angry, I guess, at the company, because of the fact that we, you know, had diverted for so long and everything else.

CSH: Yeah.

GH: And you know, I can see that. You know...we tell them, I tell them, "Eh, I work for the company, I didn't build the ditch and as far as I know the company pays me so I got to do this. I have no more animosity with you, or anyone else."

CSH: Yeah.

GH: "But if you feel differently, I'm sorry."

CSH: Yeah. Yeah.

GH: So, I think a lot of it was, you know, because of this water issue. And lawyers involved and everything, got *pilikia*.

CSH: Yeah.

GH: But I tell our guys when I was working, "Hey, you just have to let it go in one ear and other the other. We just do our thing. If anyone like make humbug with you, just walk away."

CSH: Yeah.

GH: "No make humbug. Just walk." "Ok, boss." They talking stink, never mind. Just in one ear and out the next. Just do your thing, do our thing. You know, we get jobs, so everything is okay. You guys have family, you guys got to take care so, just – it's just the way it goes, yeah?

CSH: Yeah.

GH: Sometimes family fight family too, yeah? Which is hard.

CSH: It is, it is.

GH: But Robert showed me in all the places where the springs came out, where there were problems with leaky sections, and how it was resolved, and everything else. I go out there today and I still see that nothing was done.

CSH: Yeah. Yeah, yeah, yeah.

GH: It's not our *kuleana*, it's the people who need the water who should take care of their system.

CSH: Yeah. What about any traditional or historic trails up there?

GH: Ah, that's a good question. Let's see, before the Hana Highway was built...

CSH: Ok.

GH: ...they used to use the EMI ditch trail to access going to Hāna. So, you either catch the boat from Kahului, go all the way to Hāna, which is real rough ride. Or you go horse and mule and you catch our ditch trail at Pāpa'a'ea and go up the road, come all the way across, and either come down Pi'ina'au Road or over across to Kopiliua stream. So, from what I recall, Jimmy Hueu who was our former overseer in Ke'anae. He told me that the Hāna Highway was built in sections, so the Hāna Highway from Pāpa'a'ea to Pi'ina'au was built in 1923 to 1925.

CSH: Wow!

GH: And from Pāpa'a'ea on they used our trail, to go towards Nāhiku side, Hana.

CSH: Ok.

GH: So they built the other section of the road from Pi'ina'au to Kopiliula from 1925 to 1927. And there's this Chinese guy, he was an engineer for the State. His name was Paul Lo.

CSH: Ok.

GH: Yeah, he was the guy who did all this. But basically, the trails up there are ditch access roads and were used by people wanting to go to Nāhiku or Hana or whatever.

CSH: Is that the one that hugs the...I feel that I was really high up in the Ko'olaus, and its got this full-on just drop down. That's the trail that they used?

GH: Yeah. Well, actually, Pāpa'a'ea is in Kailua and you would have to go all the way up and come across. But you went up, I think Wahinepe'e Road and you went all the way up. And then you have to cross a bridge, there's a waterfall come down, right?

CSH: Yup.

GH: And you kept on going in.

CSH: Yup.

GH: Locked gates. And then you guys went to Honomanū, which there's a real narrow road, had waterfalls.

CSH: Yup.

GH: Yeah. Dead end then come back, right?

CSH: I didn't get to the dead end. Yeah...

GH: Oh, did you guys walk or drive?

CSH: We drove part of it and I remember it splits. And then we walked on the upper part and so we walked on the upper part...then we went past one waterfall, which had like a plank too.

GH: Yup. The waterfall was real high, yeah?

CSH: Yeah.

GH: We call it "High Falls Honomanū."

CSH: Ok.

GH: And it has a plank you could go.

CSH: I said, "No, I'm not going on that." [Laughs]

GH: You want to hear a story about that?

CSH: Yeah. Sure.

GH: That plank there, washed away, so – we had a storm coming, a hurricane. So Saturday, Steven Cabral and I, we had to go out – "Eh, this storm coming, we gotta sluice the ditch." In other words, lift up this gate so the water would go down the stream. So no water goes in the ditch, to avoid lots of rocks and debris and damage, ah?

CSH: Yeah, yeah, yeah.

GH: So we go out. Ok, we go Honomanū, these other guys were here, we had the crew going there, Saturday. So we walk past high falls, instead of going on the plank, but no plank.

CSH: Yeah.

GH: So we're walking through, sluice everything, and come back out. By the time we come back out...there's too much water, cannot cross. So I look at Steven, "So what?" Ahhh, I don't know. He ran back found one pipe. He put the pipe over this – by the plank. And he walked on the pipe. So I'm watching him. If he ever fall – I don't know what I gonna tell your wife.

CSH: That's one far drop.

GH: Long.

CSH: Yeah!

GH: So he's on the other side – so he's waiting for me. "After you." "Ok, if he made it, I gonna try. I just walk gently on the pipe over the little rails - and go," and off we went. That's the kind of stuff, I was thinking "Ok God, if it's my time, it's my time."

CSH: That's how I felt when we were crossing some of those bridges where it's just that teeny tiny little roadway, I mean, Kai get em. He knows this...

GH: Oh yeah.

CSH: You know? But we're all in the back, squeezing and really...

GH: In the pickup truck?

CSH: Yeah, in the Tacoma. I'm like "Tell my kids that I love them."

GH: How many people was with you guys?

CSH: There were three in the back and then, yeah, there were like five of us.

GH: Oh!

CSH: And then Kai was six. Oh man! But I was like, "Kai got this!"

GH: That's what we do when younger guys we hire come. Put 'em with an old timer. They drive the road with the old timer.

CSH: Yeah.

GH: And when they feel confident...

CSH: Yeah.

GH: Then we let them drive, if not, you don't drive. You walk.

CSH: Yeah, yeah, yeah. Wooooo!

GH: That's one thing, you have to learn to drive the road.

CSH: Did you guys ever, you know when you were talking about how the water is just gushing, did you guys ever have to camp out over night? Where it got that bad?



GH: No.

CSH: No?

GH: Um, I got caught in my career on several occasions.

CSH: Mmmhmm.

GH: So where the river crosses the road...

CSH: Yeah.

GH: When you go – you turn around. You check it out. Cannot go, yeah? So you wait.

CSH: Ok.

GH: Cause streams in East Maui are very flashy.

CSH: Oh!

GH: So rain, stop, rain, stop. So what I do is...one time I took these people out- so we crossed this stream, 'O'opuola and drove towards Ka'aiea. Ka'aiea cannot cross. Big water. Ok, turn around, go back to 'O'opuola. Cannot cross 'O'opuola stream because of high water.

CSH: Yeah.

GH: "Oh no! What do we do?" I said, No worry. So we sit down here. So I get one rock and put it right where the water is. Ok, "Eh Sally, what have you got to eat?" "Oh, I made chocolate chip cookies," "Ok, go eat." These are some people, I forget who, but anyway, I took them out on a tour. Then the husband says, "Oh, what kind car is this?" "Oh, one Ford Explorer." "You know, my Nissan would make it right through this water." The wife said, "Shut up, Garrett know what he's doing. So shut up."

CSH & GH: [Both laughs]

GH: So, I wait. Look at the rock. The water go down. Ok, we can make it. So we go.

CSH: Awesome.

GH: So you just gotta know. You cannot rush 'em. Cause, if you do and your car die, you die.

CSH: Yeah.

GH: Forget it.

CSH: So there wasn't any trails that went, like from mauka to makai? It was mostly just...

GH: There were trails from our EMI system, where you went to.

CSH: Yeah.

GH: There were a couple of trails, but mostly hunting trails.

CSH: Ok.

GH: Going up mauka.

CSH: Ok.

GH: We made one trail, no, let's see, not made it, but yeah---we cut the trail from Honomanū going up to the lower pipe line. That's where we maintain the County system. The problem is to go walk up hill takes 2 ½ hours in thick mud.

CSH: Ohhhh!

GH: So, you either do that or you drive from Kailua when you're assigned, drive all the way through Makawao, go all the way to the top, come all the way down, and you hike along the pipeline for 2 ½ hours. So it takes you five hours to go in and come out - if you're in good shape.

CSH: Yeah. Wow!.

GH: But most of the guys that we send, is, you know, the younger guys, eh? You know like me, I get enough years and I'm *makule*. I check and clean the first two diversions which is the shortest walk.

CSH: Yeah, yeah. [Both laugh]

GH: I da boss.

CSH: Yeah.

GH: But, I take you the first time. Yeah, I take you.

CSH: Oh.

GH: Now you know. That's how we do it.

CSH: Yeah, yeah.

GH: But as far as trails going up, it was mostly pig-hunting trails.

CSH: Mmmhmm.

GH: Yup. Mostly pig-hunting trails. No established trails, going up or not.

CSH: Do you hunt?

GH: Yes, I do.

CSH: Did you hunt up there too?

GH: Um, little bit.

CSH: Yeah.

GH: But you know, I was in the Kaupō Gun Club, so I used to hunt this side of the island.

CSH: Yeah. Yeah. West side.

GH: On the east side all pig. So you need dogs.

CSH: Ok, ok, alright. But no more deer, axis deer you guys have?

GH: There's some axis deer. Um, not as prevalent as here, because I think it's wetter over there. Here it's a bit dryer.

CSH: Yeah.

GH: Yeah.

CSH: Ok. What did you do when you had your deer, pig? You like, make smoke meat? Or?

GH: Usually, I...the deer I take the meat and make teriyaki or whatever.

CSH: Ok.

GH: The pig, I give my friends, they make smoked sausage, ah?

CSH: Oh, ok.

GH: Because they need so much to get a batch going and get the machine going and make the sausage smoked. So it's just like now, that I retired that I grow stuff, I get these Chinese bananas, ah?

CSH: Oh, ok.

GH: As you come up on the right-hand side, so the bananas, I give to this lady. She makes pasteles out of that.

CSH: Oh ok, nice.

GH: So instead of her buying, I give her the bananas and she give me pasteles. Good trade, eh?

CSH: That's a good trade.

GH: And my friends, I give them. They go fishing, they give me fish, they give me 'opihis whatever. It's like I'm back in the bartering system, ah?

CSH: Yeah.

GH: So, I don't sell kalo. I don't sell anything. If I get extra, I give friends and if I have plenty extra, I donate to the Maui Food Bank cause I was on the Food Bank board for seven years and was the vice chair and chair during the last several years.

CSH: Yeah.

GH: But I still feel associated with them.

CSH: Nice. That's awesome.

GH: Yeah.

CSH: Do you recall seeing any, um, *heiau*, or archaeological sites, when you were up there? Pōhaku?

GH: You know, the only ones I can recall is in Honomanū, where you folks went.

CSH: Mmmhmm.

GH: And just when you reach Honomanū on the west side where you park, you know, maybe a couple of hundred yards up, I recall that there was a small grave up there. And then, I took the picture and I sent it to a friend who could read Chinese.

CSH: Oh. Ok. That's the one on the right-hand side?

GH: Yeah, yeah, yeah.

CSH: Yeah, I saw that one.

GH: This was right off the road?

CSH: Yeah.

GH: You talking about right off of Pi'ina'au road

CSH: Is that the one going up to the Power House?

GH: Ah, no. Which one you talking about?

CSH: There was... Let's see, it was after Ke'anae,

GH: Yeah...

CSH: And then you had to up, it seemed kind of flat. And then, it's on the right-hand side, there was like a Chinese or Japanese grave.

GH: Right on the side of the road. You could see it, ah?

CSH: There's a bottle?

GH: Yep, that's up Pi'ina'au Road. So, that one there, we translated that – it was a small child, she said. Then the one in Honomanū? I believe also a--small child.

CSH: Mmm, ok.

GH: So, I think, you know, that people lived up there, cause from what I'm told, way in the past, there was a ditchman, who lived up there, maintained the ditch, regulated the water. So, that person had a family up there.

CSH: Oh, ok.

GH: He would live up there with family and would maintain that section of the ditch. I think there were eight ditchman houses before. The ones I recall more, is the one up Pi'ina'au Road. If you look at the EMI map, there's a small piece of land up there...

CSH: I have some historic maps here. Hawai'i historic maps.

GH: Oh. You got a colored one with green and the..

CSH: I have this, with all the water diversions.

GH: No, if you got one map with ...

CSH: I have a small one.

GH: Oh, here we go, here we go. You see this right here? That's owned by EMI.

CSH: This one, this is owned by EMI?

GH: Yeah. And this is Pi'ina'au Road going up. So, the grave you saw was down here and up here was that lot that the ditchman used to live there and maintained that section over there.

CSH: Is that right next to where the...ummm...

GH: There were large pine trees over there and some tangerine trees.

CSH: I don't remember seeing those...

GH: You have to get off the road and go a little bit inside to see that.

CSH: I remember seeing, like what looked like lava tubes.

GH: Yeah, yeah. Have plenty.

CSH: And on the left-hand side was the ditch and then there was like a cluster of rocks there, that had some glass fragments.

GH: Ah, yeah, yeah, yeah.

CSH: But, I was wondering, did somebody live here? Because there was a teacup too that was cemented in.

GH: Yes. I guess...

CSH: Is that where they lived? Over there?

GH: No further up.

CSH: Oh, further up! So you go up on the right-hand side. Right?

GH: Yeah.

CSH: Ok, ok. Got you.

GH: Look at this, this is all red, this is all State-owned.

CSH: This is the project area.

GH: This here, I think is 34-acres, I forget, but anyway. That is owned by EMI, so is the ditchman's house right there.

CSH: Ok.

GH: And the other ditchman's house that I recall was by Waikamoi. West side of Waikamoi.

CSH: Where is Waikamoi?

GH: Waikamoi -- Ke'anae, Honomanu -- should be around here, Waikamoi. It should be, should be around here. I no more my glasses,

CSH: Ok.

GH: But Waikamoi, along the ditch road, there's this -- and it's hard to tell, but lots of bamboo -- Do you remember Representative Patsy Mink?

CSH: Yes.

GH: Her family lived up there. Her uncle, Takemoto, was a surveyor for EMI before.

CSH: Wow! Cool.

GH: Yeah. There's some stories about that and I can't remember what, but there was some *pilikia* with him and the boss or something like that. He worked for someone else, but their family was up there, taking care a section of ditch. Yeah. Cause Patsy Mink, her maiden name was Takemoto. Somehow her family was up there.



CSH: Hmmm.

GH: You can see some cement, some old kind of stuff.

CSH: Ok, is that the one where it forks?

GH: I don't think you went there.

CSH: Oh. There is another area where I saw some scattered rice bowls, it was by a mango tree.

GH: If you get the map with the green and the yellow – easier, I can show you where you went.

CSH: Green and yellow.

GH: Yeah.

CSH: I don't have that one.

GH: It's just like this but it shows State Land...

CSH: Ok.

GH: As yellow. And green then is EMI. And Orange is A&B.

CSH: Ok.

GH: And it has a ditch road. It just has the ditch system on it. It was a ditch map.

CSH: Ok. ok. I'll see if we have that at work. Ok, Cool.

GH: But you stopped at our base yard in Kailua, when you went with Kai?

CSH: Yes. We stopped at the base yard.

GH: Did you see that big map on the wall?

CSH: Oh, I didn't go inside the office though.

GH: Oh.

CSH: Yeah, yeah. I never went inside the office. Yeah.

GH: Did you stop at our Paia office?

CSH: I did, but we didn't go inside either.

GH: Oh.

CSH: We just met there outside and convoyed after.

GH: I see.

CSH: Ok. So did you guys, or do you know of people gathering from the mountains? Or did you guys gather anything from the mountains?

GH: Um...

CSH: Like fruits or veggies?

GH: Well, I know people gathered in the streams there. But, to my knowledge, everybody went to the ditch first. Because if it was low water, and they could go in and there was an influx of 'ōpae, yeah?

CSH: Oh.

GH: So, easy for catch, ah? And even for us, when my kids were growing up, I took them out there. Today, we go inside this tunnel. So we go.... bring the net. Catch enough, go home.

CSH: What would you guys do with it? Just fry them up?

GH: Yeah.

CSH: And how you eat them--with poi, kalo?

GH: Yeah.

CSH: Nice. What else do you get from the ditch? Are there any...

GH: The ditch had prawns, but Tahitian prawns.

CSH: The big ones.

GH: Yeah, they eat the 'ōpae. Yeah?

CSH: Yeah.

GH: The Tahitian prawns are mostly confined to the lower ditch. The Haiku ditch. But like 'ōpae and stuff like that, was mostly Ko'olau Ditch. But you can tell when someone had party or something because when you went over there and you go with your net and you no catch anything, you know that someone has just been there.

CSH: Yeah.

GH: But sometimes, the flow is high, say winter months...

CSH: Yeah.

GH: So, it's raining--December, January, February--three months straight rain. And then it starts tapering off. "Oh, let's go down, low flow." "Hey, can go catch 'ōpae. Cause now you can jump in the ditch, eh? Shucks, somebody went before me." Can tell someone went before me.

CSH: Yeah. Yeah.

GH: But when we go, I teach my kids and friends, we take what we need and that's it. We don't take everything.

CSH: Yeah.

GH: Cause bumbye no more, yeah?

CSH: Yeah.

GH: So we're always mindful of that. And they always remember that too. Yeah?

CSH: Yeah.

GH: But we still -- I still take the kids down to other places, and we used to go catch hīhīwai...

CSH: Ohhhh!

GH: Yeah. Fresh water.

CSH: How did you guys prepare that?

GH: That one there, you can boil 'um, and put garlic and salt on top.

CSH: Ok. Ok. Nice. Ok. Anything else in the streams? Ok.

GH: Hīhīwai, 'ōpae. I mean, I didn't see like 'o'opu and stuff. I would rather eat reef fish than 'o'opu.

CSH: Not your thing? What kind of reef fish?

GH: Anything. Anything. Reef fish. I like, my favorite is kūmū.

CSH: Well, that's a given, come on now! [laughs]

GH: Yeah. I like parrot fish, which is the kine - uhu.

CSH: Stuffed? With what? Lup cheong?

GH: Yup. Cut 'um open, put cabbage....

CSH: Oh!

GH: I mean won bok.

CSH: Ok!

GH: Lup cheong. And then you get garlic and some black bean sauce and then you steam that buggah.

CSH: Oh!

GH: 'Ono.

CSH: Ok. Nice. That's your favorite?

GH: Uhu is one of my favorites. Yeah.

CSH: Ok.

GH: My son-in-law is a diver, but now he get kids he no more dive.

CSH: [Laughing]

GH: But once, later on... he would dive, oh, plenty food yeah?

CSH: Yeah. Ok. What was the coolest thing that you've experienced? Up there in the ditches.

GH: Uhh. Just how it was built and how they could build it in that kind of environment. Yeah, I mean, I don't think you could ever replicate it today with all the environmental laws and everything else. Just for people that had limited training to go and even survey the right line, and grade. Because you figure, the Ko'olau Ditch starts at Makapipi, goes 20-something miles, ends up at Kamole Forebay. And it starts at 1,350 feet elevation and 20 something miles later it goes down to 1,150 feet, a 200 foot drop, in 20 something miles. Today, we get roads that people make, engineers, but no match yeah?

CSH: Yeah.Yeah, yeah, yeah. So which one is the one – I went to, it ends up in Nahiku, Which ditch is that?

GH: Ko'olau Ditch.

CSH: That's Ko'olau Ditch. Ok, ok. That one is how long?

GH: Ko'olau Ditch is actually from Makapipi to Alo.

CSH: Ok.

GH: And then from Alo to HC&S Maliko Gulch is the Wailoa Ditch. So, they built the Ko'olau Ditch first. And then they dropped it down to this new Hāmākua Ditch that took the water to HC&S. But then, later on, the new Hāmākua gave some trouble with siphons and stuff like that, they built this Wailoa Ditch in 1923. That was the last of the ditch construction.

CSH: Mmmhmm

GH: 1923.

CSH: Wow. Cool.

GH: But everything changes with the environment and things like that. I mean, like, there was this earthquake in 1938. Big earthquake. January. So, a lot of landslides. Hāna, they had some oil tanks that slid off and I don't know how much oil went into Hāna Bay. EMI had damage. I remember this guy telling me Mokulehua Stream, which is past the EMI system in Nāhiku, that ever since that earthquake, water would always go down the stream, but because of that earthquake, there were cracks in the stream so water would sink into the ground instead of flowing all the way down to the ocean unless, there would have to be a large flow of water to reach down to the ocean.

CSH: Yeah, yeah.

GH: So, there's things like that, that happen.

CSH: Yeah.

GH: Big floods I've seen that washed away some ponds. And now the water doesn't reach the ocean, like Makapipi. In spite of the ditch – used to take the kids down to Makapipi, go swim down there. Get some nice ponds. Every time, always nice water. And then back in the 90s or 90-something we had two days of rain, and I think we had like 30 inches of rain in two days. And then this pond, right below the Hāna Highway, the kids used to jump in the pond right from the bridge, that pond disappeared in a landslide. And now, the pond is 200 feet down below. So, you can see the water going into the pond, but it doesn't come out into the stream anymore. Everybody who lives down stream wonders why the stream doesn't flow anymore.

CSH: Yeah. What can you do? That's nature, right?

GH: That's nature.

CSH: Yeah. Wow.

GH: But it's funny, because you know, when you go in the tunnel and stuff like that, it's just like you're taking one geology class, because you can see all the different layers, the lava...

CSH: Yeah.

GH: You know, some places, I remember just one place, Pi'ina'au, walking through the tunnel - the tunnel is maybe seven feet high and six feet wide. You go with your flashlight, or your carbide lamp and you know, you're going through the water inspecting the tunnel for maintenance or repair issues. All of a sudden, a big cavern opens up inside this tunnel. So when they dug this ditch they hit one lava tube.

CSH: Ohhhh!

GH: Big cavern. Big, big cavern.

CSH: Cool.

GH: Yeah. So amazing.

CSH: So, when you go into the tunnels the ground is not flat then. It's not like paved.

GH: Yes, it is.

CSH: It is paved?

GH: Most of the Ko'olau Ditch is lined.

CSH: Ok.

GH: With cement.

CSH: Just on the bottom though.

GH: It's lined with cement on the bottom and the walls.

CSH: On the walls. Ok, ok.

GH: The top is just solid rocks.

CSH: Yeah.

GH: You know when they blasted. Yeah?

CSH: So your job was to pick up all the rocks on the bottom, right?

GH: Whatever was blocking, impeding the water we would remove.

CSH: Ok.

GH: That's what we would do.

CSH: Ok. Was there any vines coming down and stuff too?

GH: No, because usually these tunnels go through mountain ridges and it's too far down to have roots penetrate.

CSH: Yeah. Way far up, yeah?

GH: As you get closer to the opening or the exit, there may be some vines coming in. Certain tunnels...

CSH: You gotta clean all that too?



GH: Yeah.

CSH: Ok, ok.

GH: Yeah. Because as you exit, you know, the mountain goes down too. So then trees over there, roots come in and stuff.

CSH: What was the most interesting thing you found in the tunnel while cleaning? Was there, like animal debris that would come through or?

GH: No. Let's see. I've seen pigs in the tunnel.

CSH: Live?

GH: Dead. Because they....

CSH: They just wander, yeah?

GH: And they get hung up on a gate.

CSH: Oh, smelly! No?

GH: Yeah, yeah, yeah. What was real interesting, in a couple of places, like I said the floor was concrete lined and the wall is lined 4 feet up and at the top there is a small little ledge, like this.

CSH: Ok.

GH: And when you go through the tunnel, you got seeps of water coming in from the roof. Yeah? Some places more than others. That's why it's interesting when you go to EMI or anyplace. When you look at a stream, the stream - you got the water, but then some places you have losses the water goes in the ground. Sinks.

CSH: Ok.

GH: And then you walk some more, hey, the water comes back up.

CSH: Ok, ok.

GH: Some more water sinks.

CSH: Ok.

GH: So, you know there's losing stretches and gaining stretches, in streams that is very, very important.

CSH: Mmmhmm.

GH: And in the tunnel, its mostly gaining, water coming off the roof. However small but...what was interesting was this one place, I recall, had a steady drip on the cement. Drip, drip, drip.

CSH: [Laughs]

GH: So this ditch was built in 1923. The drip must have been going on for years and years, and decades. So there's a little impression in the cement.

CSH: Like the Chinese Water Torture?

GH: Yeah.

CSH: [Laughing]

GH: Just dripping.

CSH: Yeah, yeah, yeah.

GH: Just a little depression.

CSH: Cool.

GH: Yeah, that was pretty cool. And like I said, the lava tube that we went ... encountered, and stuff like that. That was really neat. But I recall going into tunnels when hurricanes were approaching...um, Hawaii, and to be safe we wanted to shut down operations, so that in case something happens, nothing overflows, nothing breaks. And I recall going into this tunnel with Steven Cabral, "Eh good time to inspect." "Yeah, we going to inspect." So we walk, walk, walk, keep on walking. I don't know, about halfway through, he goes, "I wonder if the hurricane when hit" "Oh my god, I think we're in the safest place because we're in a tunnel." Then he look at me, "I know what you're thinking." "What?" "We go out, everything decimated. And me and you the only people living on this earth."

CSH: [Laughs heartily]

GH: Terrible eh? [Laughs]

CSH: Yeah. Oh man. Ok.

GH: Off the record. If you need lua break, right through that door.

CSH: Ok, alright.

GH: Whatever.

CSH: Let's see. Ok. We kind of gone through a lot of stuff already.

GH: Yeah. You know the mountain has changed, Nicole. From the time I started to now. The vegetation and everything else. It's like you coming up here. It's changed. I go mountain today, change.

CSH: So what kind of vegetation did you see there before?

GH: More native plants. Not a lot of non-natives.

CSH: Yeah.

GH: You get hau growing all over...

CSH: Yeah.

GH: You got all kine.... like invasive weeds. Like ... miconia, the rose-apple dying.

CSH: Do you feel like there's a whole lot of tourists too who use the road as well and that kind of has affected...

GH: I don't think that. I don't think the tourists affect the growth that much - as man.

CSH: Yeah.

GH: Man do stupid things, eh? We have good intentions, like bringing the mongoose over here to control the rat.

CSH: Yeah.

GH: One in daytime, one at nighttime. No work.

CSH: Yeah.

GH: Now we got mongoose. Eat all our native birds. Ok. We go build Pukalani Bypass. Coming up to Pukalani. So, they need to go seed hydromulch both sides, after they grade the road, and all that. Eh? So they bring in the seed from, I don't know, New Zealand or whatever.

CSH: Yeah.

GH: Got fireweed in the seed. Now the pasture, all fireweed.

CSH: Oh no.

GH: Yeah.

CSH: Oh wow. I did not realize that.

GH: When we [clears throat] you ask the State Forestry Department, I work with them quite a bit, you go up Pi'ina'au Road, where you have the graveyard, where you have the grave.

CSH: Yeah.

GH: Notice all the big eucalyptus trees and all that kind?

CSH: Yeah.

GH: You know why they're there? Cause State thought, "Hey, all this rubbish – 'ōhi'a and koa, we'll get rid – go plant eucalyptus – that way we can go harvest the wood and make money." So they cleared the whole forest, all native species and plant non-native.

CSH: Oh, so, is this supposed to be a bio-controllish or just commodity?

GH: Commodity.

CSH: Yeah.

GH: And then, I don't know if you noticed when you went up Pi'ina'au road on the right-hand side. Had an old bulldozer, parked right there. All rotten.

CSH: I think so, yeah.

GH: This guy said he was the last guy operated, he said, yeah, they tell me go, I push down the koa, I push down the 'ōhi'a, stack them up, come behind, we plant all this...

CSH: Oh, yeah, I do remember that.

GH: That was in the forest.

CSH: Yeah. I remember seeing that. Oh, I was like, "I would love that at my house." [Laughs]

GH: No work. And still like, Nāhiku side, um, in the 30s, they had the civilian, the CCC, the Civilian Conservation Corps, no job, because depression, so, the President at that time, got the CCC started.

CSH: Yeah. That's right.

GH: Eh, you know what? Go plant paperbark, Nāhiku side because plenty bogs and runoff areas, they go plant yeah,

CSH: Yeah.

GH: All dry up the forest [laughs].

CSH: Oh gosh.

GH: [chuckles] Florida, they got 1 million acres of paperbark. And they wonder why their water table went down.

CSH: Yeah. Ok. Makes sense now.

GH: So, man is our worst enemy, yeah?

CSH: Yeah.

GH: You know, you think it's good. Have good intentions. But sometimes it's not going to work out.

CSH: Ok. Went through trails, talked a little bit about stories of that area. Legends, no?

GH: Legends, uhh! Jimmy Hueu in Kepa Maly's Native Tradition and Oral History in East Maui, he tells some good stories. Yeah.

CSH: Did you have anything—I don't know--supernatural or scary happen to you while you were out there? It's quiet out there. I got lost for a little bit and I was scared. Hey, either I'm not moving or I'm just going back to the truck.

GH: No. I really enjoyed my career at EMI. Me and the guys I worked with.

CSH: Mmmhmm.

GH: You know, from the very get go I knew what kind of guys these guys were. They never knew who the heck I was. But then, when I got to know them, and they got to know me, hey, it was like hey, alright man. One more hand.

CSH: Yeah.

GH: When I took over management, you know, I knew exactly what we needed out there to make things easier.

CSH: Mmmhmm.

GH: So I started buying equipment that could, you know, replace the kind of job that could be done with equipment, like

CSH: Mmmhmm.

GH: We used to go by hand – chain saw and cane knife, clear the road when the brush come over, eh. Hau, stuff like that.

CSH: Mmmhmm.

GH: So I buy this machine, an excavator, it has a rotary mower attachment that is able to cut brush and overhanging tree limbs adjacent to the road. You just need one person to operate the machine, rain or shine, just keep going. This frees up a 3 or 4 man crew to do other tasks and nobody gets hurt chopping brush with their cane knife.

CSH: Mmmhmm.

GH: You know, things like that, does a job faster and safer. We had [chuckle] You know what's a siphon, ah?

CSH: Mmmhmm.

GH: You know, water go in one end, come down, come back up the other end. One end is higher than the other. Ah?

CSH: Mmmhmm.

GH: So, the water keeps going. All of EMI's 12 steel siphons were concrete lined on the inside with a half inch thick layer of concrete in the late 1960s early 70s so that would extend the life of these siphons. The contractor who did the concrete lining guaranteed it to last 20 years. So after the warranty expired, we gotta inspect the siphons. So, out we go. We get this small little cart, about 3 or 4 feet long and about 18 inches wide, made out of a steel plate, with a hook on it to attach to a cable. The cart had small wheels attached to the bottom and a small foot rest welded on the opposite side of the hook. So, you stand on that cart, and the thing is hooked up to a cable winch on a truck.

CSH: Mmmm.

GH: The winch on the truck lowers the cart you are standing on to the bottom of the siphon. As you are lowered you can inspect the concrete lining for any cracks or damaged sections. The longest siphon is 983 feet in length and 72 inches (6 feet) in diameter.

CSH: Mmmhmm.

GH: It takes you ten minutes to go down this siphon. There is an elevation difference of about 160 feet from the top of the siphon to the bottom of the siphon.

CSH: Mmmhmm.

GH: So, since I'm the office guy and the boss, I go down first. Steven Cabral is out there. So, they start lowering me down the siphon while standing on the cart and about  $\frac{3}{4}$  of the way down [makes sound] the cart stopped. And then, you know, you're in a 72-inch pipe, you can hear everything, yeah?

CSH: Mmmhmm.

GH: Somebody, I hear says, "Hey, Steven, the winch - something wrong." "What wrong?" "I don't know. The key way look like coming out." Oh boy! The key way is something that locks the winch to the cable mechanism.



CSH: Oh no!

GH: ...so it doesn't free spin.

CSH: Yeah.

GH: So, here's this cable on the cart I'm on, and I'm on hanging on to this rope,

CSH: Yeah.

GH: No more safety line. Only one rope. So, I hear Steven go over there "Hey, Garrett, you can see the bottom?" "No!" "You can jump off and go to the bottom?" "No!"

CSH: [chuckle and then laughs]

GH: So, Cabral, Portuguese, they famous for hammer. I hear him hammering something. Bahm, bahm, bahm. I wait, I wait, I wait. Maybe 15 minutes, 20 minutes. "I think I can go." Ok, the thing goes down, I go all the way down, Stop. I inspect the bottom, take a couple pictures.

CSH: Yeah.

GH: "Ok, ready, go up." So they winch me up, winch me up. So when I get to the top, all these guys looking at me, "Brah – must have been terror, yeah?" I say "Hey you guys, thanks a lot for bringing me back up. Mahalo ah."

CSH: [Laughs]

GH: So everybody laugh. So I told the story to my boss and he told me, "Eh, you go find one winch that's OSHA approved."

CSH: Yeah.

GH: So I did, it was made in Germany.

CSH: Yeah.

GH: So, you know, it has all the safety features, and you know.

CSH: Yeah.

GH: But those days, we did what we needed to do, eh? Lucky, nobody get hurt.

CSH: Yeah. Totally different, today everybody has a hook on. Right? Tie on?

GH: Yeah, even EMI, you know, it's a big system, you're working in rain. It's wet, slippery, you got trees all over the place.

CSH: Yup.

GH: You gotta carry a chainsaw. You gotta know how to use a chainsaw. Yeah, it's a great experience to work for a company like that. I never knew about the water company until I went to HC&S.

CSH: Mmmhmm.

GH: Made a lot of good friends...

CSH: Mmmhmm.

GH: ...still today, it's good.

CSH: Yeah.

GH: But I'm glad I retired.

CSH: Yep. [Laughs]

GH: There's a lot more of this kind of stuff then.

CSH: Yeah. Did you have any... I guess that's kind of it. Did you have any concerns about the project or?

GH: You know, the only thing I can say is that the IIFS came out, the Interim In-Stream Flow Standards, whether the other side is happy, which they say they are in the paper. But whether our side is happy, with what we think we're going to get, remains to be seen.

CSH: Mmmhmm.

GH: So I just hope it doesn't go into litigation where one party or the other party says, I don't think it's fair and we file....

CSH: Yeah.

GH: And then we're back to square one. You don't have to finish this.

CSH: [Laughs]

GH: I just hope, you know, that whatever the hearing's officer had recommended is something both sides can live with.

CSH: Yeah.

GH: Let's move on. I mean, the lawyer's getting rich, everybody – you know, but the people not happy – businesses are uncertain how much water they will get. We cannot lease the land because we don't know how much water will be available after the IIFS is set.

CSH: Mmmhmm.

GH: You guys smart. We'll figure it out.

CSH: Yeah.

GH: How much we should get.

CSH: Yeah. Ok.

GH: If not, I go back to my files and try to figure it out.

CSH: Yeah. Yeah.

GH: For the average person, it's the best you can do, yeah?

CSH: Ok.

GH: But I think, you know, I think with A&B agreeing to really release all the water – in all those taro streams – East and West Wailuanui, Waiokamilo, Palauhulu, Pi'ina'au, Hanehoi,

Honopou, and Puoloa. I mean there's nobody else downstream that can complain, no more water, about taro.

CSH: Yeah.

GH: And then there's other streams that the hearing's office said so much water had to go down, you know, for flora and fauna, cultural resources, stuff like that. Fine, Good.

CSH: Mmmhmm.

GH: But, as long as we have the ability to take water whenever there's excess. So certainly, the taro streams, all that water goes down – if it reaches – you know, because sink holes and whatever, yeah. The rest, the scientists say, ok, you release this much, you achieve 90% habitat restoration, but, whether it's true or not, I'm not a scientist, but if it helps, then it's good.

CSH: Yeah.

GH: If it's not, then, you know, cause you hate to see people grumble about something that - to me is really easy to settle. Ah?

CSH: Yeah.

GH: I know people get hard feelings and this and that, but, you know, overthrow the Hawaiian Kingdom, took the water, da, da, da. But the King had signed the lease for us to take the water. So, at that time, in his mind, this was something good, because he collected revenue. And hopefully, helped the people out, whatever. But, that is water under the bridge. Yeah?

CSH: Yeah.

GH: I just hope that going forward, everybody can kind of be at peace.

CSH: Yeah.

GH: Yeah. That's what counts.

CSH: Do you have any recommendations? Or is there anything else that I missed and that you want to touch on? Or is that kind of...

GH: Um. This is only my opinion...

CSH: Yeah.

GH: My recollection of my years at EMI and HC&S are my personal thoughts whether if it's good or bad or whatever. It's my mana'o. It's what I think. It's what I believe should be fair. Some water should go down the streams. I think the company did right by agreeing to put water back in all those streams. Hopefully, the people are you know.

CSH: Happy.

GH: Yeah! And if they're not, then what you gonna do?

CSH: Yeah.

GH: You can only give so much. If you give them all... they're still not happy, then what?

CSH: [Laughs] I don't know.

GH: But there's a lot of different things that come into play, yeah?

CSH: Yeah.

GH: Politics and this and that.

CSH: Ok. Alright!

GH: I'm an on-the-ground kind guy.

CSH: Yeah.

GH: I had to be discreet in what I say when I worked for the company.

CSH: Right.

GH: The company pay for my children's education and everything else.

CSH: Yeah.

GH: So, I owe it to the company.

CSH: Yeah.

GH: Yeah. We try our best to work out things.

CSH: Right.

GH: Not to be adversarial. Right?

CSH: Right. Ok, I think that's it.

GH: Good.

CSH: Let me turn this off.

[End 1:15:42]

## Appendix D Response from OHA

PHONE (808) 594-1888

FAX (808) 594-1938



STATE OF HAWAII  
OFFICE OF HAWAIIAN AFFAIRS  
560 N. NIMITZ HWY., SUITE 200  
HONOLULU, HAWAII 96817

HRD18-8414

February 26, 2018

Hallett H. Hammatt, PhD, President  
Cultural Impact Studies Department  
Cultural Surveys Hawai'i  
1860 Main St.  
Wailuku, HI 96793

Re: Comments on Request for Information for a Cultural Impact Assessment for a Thirty-Year Water Lease proposed by Alexander and Baldwin, Inc. and East Maui Irrigation Makawao and Hāna Moku; Maui Mokupuni  
Tax Map Keys: (2) 1-2-004:005 and 007 (por.); 1-1-002:002; 1-1-001:044; 1-1-001:050, and 2-9-014:001, 005, 011, 012, and 017

Aloha e Dr. Hammatt:

The Office of Hawaiian Affairs (OHA) has received your letter requesting information in preparation of a cultural impact assessment (CIA) for a draft environmental impact statement for a proposed thirty-year water lease to Alexander & Baldwin, Inc. and East Maui Irrigation (EMI). The water lease will enable the lessee to continue to divert water from approximately 50,000 acres of land through approximately 388 intakes; twenty-four miles of ditches; fifty miles of tunnels; and numerous dams, intakes, pipes, and flumes. The water lease will also enable the lessee to continue to access State lands to maintain and repair existing access roads and trails used as a part of the EMI Aqueduct System.

The Office of Environmental Quality Control Environmental Council's Guidelines for Assessing Cultural Impacts (guidelines),<sup>1</sup> identifies matters that should be addressed in the CIA including, "a discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resource within the project area affected directly or indirectly by the proposed project" and "a discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs." The guidelines also encourage field visits by

<sup>1</sup> Guidelines for Assessing Cultural Impacts, Adopted by the Environmental Council 1997, Available at [http://oeqc2.doh.hawaii.gov/OEQC\\_Guidance/1997-Cultural-Impacts-Guidance.pdf](http://oeqc2.doh.hawaii.gov/OEQC_Guidance/1997-Cultural-Impacts-Guidance.pdf)



Dr. Hallatt H. Hammatt  
February 26, 2018  
Page 2

preparers accompanied by informants. OHA appreciates that aspects of your CIA study, as indicated in your letter, seeks to address the matters listed in the guidelines. OHA recommends that an archaeological inventory survey (AIS) be conducted of the lease area prior to conducting interviews so that the interviewees can adequately identify their concerns about cultural resources that may be affected by the issuance of the lease. If an AIS has been conducted of the lease area, OHA requests copies of the AIS reports.

As stated in your letter, the EMI Aqueduct System has been diverting water for more than a century to transport water to central Maui mainly for large-scale sugarcane cultivation. OHA recommends that the CIA address both current and historic impacts of the water diversion, including impacts to Native Hawaiians' abilities to traverse or utilize the license area to engage in traditional and customary practices.

OHA recommends consulting with the subsistence farmers, community members, individuals, organizations, and Department of Hawaiian Home Lands beneficiaries that live in or are connected to the ahupua'a and vicinity of the lease area.

Thank you for providing the opportunity to comment. We look forward to reviewing the draft CIA. Should you have any questions, please contact Teresa Kaneakua, OHA Lead Compliance Specialist, at (808) 594-0231 or [teresak@oha.org](mailto:teresak@oha.org).

'O wau iho nō me ka 'ōia 'i'o,



Kamana'opono M. Crabbe, Ph.D.  
Ka Pouhana, Chief Executive Officer

KC:tk



---

# **APPENDIX G:**

## Social Impact Assessment

Earthplan



---

**A&B Proposed water lease for  
the Nāhiku, Ke`anae, Huelo, and  
Honomanū License Area**

**Social Impact Assessment**

**Prepared for Wilson Okamoto Corporation  
By Earthplan  
June 20, 2019**



# Contents

|   |           |
|---|-----------|
| <b>1. Background and Introduction.....</b>  | <b>1</b>  |
| 1.1. Report Preparation and Description .....   | 1         |
| 1.2. The Proposed Action and Objectives .....   | 2         |
| 1.3. The Role and Purpose of Social Impact Assessments.....                               | 4         |
| <b>2. Profile of the Existing Community .....</b>   | <b>6</b>  |
| 2.1. Study Area Description .....   | 6         |
| 2.1.1 Maui Island .....   | 6         |
| 2.1.2 Study Area.....   | 8         |
| 2.2. Population Trends and Density.....   | 12        |
| 2.3. Selected Demographics.....   | 15        |
| 2.3.1 Race.....   | 15        |
| 2.3.2 Age .....   | 16        |
| <b>3. Major Forces for Change.....</b>  | <b>18</b> |
| 3.1. County of Maui 2030 General Plan: Countywide Policy Plan ...                         | 19        |
| 3.2. Maui Island Plan.....  | 22        |
| 3.3. Population Forecasts.....  | 24        |
| <b>4. Preliminary Community Issues.....</b>   | <b>27</b> |
| 4.1. November 2018 Focus Group Sessions.....  | 27        |
| 4.1.1 Approach and Session Process.....   | 27        |
| 4.1.2 Focus Group Sessions and Profiles .....   | 29        |
| 4.1.2.1 Overview .....  | 29        |
| 4.1.2.2 Profile of the November 2018 Focus Groups .                                       | 29        |
| 4.1.3 Focus Group Issues.....   | 39        |
| 4.1.3.1 Relationship to A&B, EMI, EMI Aqueduct<br>System, and Proposed water lease .....  | 39        |
| 4.1.3.2 How Changes May Affect Participants<br>Personally or Other People They Know ..... | 42        |
| 4.1.3.3 Balance in Water Resource Allocation .....  | 45        |

*Contents*

|           |   |           |
|-----------|---|-----------|
| 4.1.3.4   | “One Thing”.....  | 48        |
| 4.2.      | April 2019 Follow-Up Community Interviews.....                              | 57        |
| 4.2.1     | Purpose and Approach.....   | 57        |
| 4.2.2     | Profile of Those Interviewed .....  | 58        |
| 4.2.3     | Interview Process .....   | 61        |
| 4.2.4     | Interview Findings .....  | 63        |
| 4.2.4.1   | Involvement and Participation in East Maui<br>water lease Application ..... | 63        |
| 4.2.4.2   | Positive Aspect of Updates and Changes .....                                | 64        |
| 4.2.4.5   | Potential Problems and Challenges Related to<br>Project Updates .....       | 67        |
| 4.2.4.4   | Suggestions to Address Potential Problems and<br>Challenges .....           | 74        |
| 4.2.5     | Analysis of Follow-Up Interviews.....                                       | 75        |
| <b>5.</b> | <b>Potential Social Impacts.....</b>  | <b>77</b> |
| 5.1.      | Overview of Social Environment.....   | 78        |
| 5.1.1     | Maui Island .....   | 78        |
| 5.1.2     | Study Area Communities .....  | 81        |
| 5.1.2.1   | Upcountry .....   | 81        |
| 5.1.2.2   | East Maui.....  | 86        |
| 5.2.      | A&B Relationship in Social Context .....                                    | 89        |
| 5.2.1     | Historic Perspective.....   | 89        |
| 5.2.1.1   | The Sugar Industry .....  | 89        |
| 5.2.1.2   | Plantation Camps and Community Building... ..                               | 91        |
| 5.2.2     | Current State .....   | 93        |
| 5.2.2.1   | CWRM IIFS Decision .....  | 93        |
| 5.2.2.2   | Diversified Agriculture Replaces Sugar Mono<br>Crop .....                   | 97        |
| 5.2.2.3   | New Landowner .....   | 97        |
| 5.3.      | Potential Social Impacts .....  | 100       |
| 5.3.1     | Overall Community .....   | 100       |
| 5.3.1.1   | Potential to Realize Public Policies .....                                  | 100       |
| 5.3.1.2   | Sustainable and Local Agriculture.....                                      | 101       |

---

*Contents*

|  |            |
|--|------------|
| 5.3.2 Affected Groups.....                                   | 102        |
| 5.3.2.1 East Maui.....                                       | 102        |
| 5.3.2.2 Ha'ikū and Huelo Downstream Residents and<br>Farmers | 103        |
| 5.3.2.3 Local Farmers and Ranchers.....                      | 103        |
| 5.3.2.4 Upcountry Domestic Users .....                       | 104        |
| <br><b>6. Recommended Mitigation .....</b>                   | <b>105</b> |
| 6.1. Core Working Group .....                                | 105        |
| 6.2. Ke'anae-Wailuanui Reconciliation.....                   | 106        |
| <br><b>References .....</b>                                  | <b>107</b> |

## Tables and Figures

|   |    |
|---|----|
| Figure A: Maui Island Census Tracts .....   | 9  |
| Figure B: Maui Island Census-Designated Places (CDP) .....                                      | 11 |
| Figure C: Maui Island and Maui District Population, 1990 to 2010.....                           | 12 |
| Table 1: Maui Island and District Population Changes, 1990 to 2010.....                         | 13 |
| Table 2: 2010 Residential Density and Household Size for Study Area and Maui Island, 2010 ..... | 14 |
| Table 3: Race, Study Area and Total Maui Island, 2010.....                                      | 16 |
| Table 4: Age in Study Area CDPs, 2010.....  | 17 |
| Table 5: Population Forecasts for Maui County, 2030 .....                                       | 24 |
| Table 6: Population Forecasts for Maui Island Community Plan Areas, 2030                        | 25 |
| Table 7: Upcountry Community Associations Participants .....                                    | 30 |
| Table 8: Ranchers and Farmers.....  | 32 |
| Table 9: Mālamalama Maui .....  | 33 |
| Table 10: Huelo and Ha'ikū.....   | 34 |
| Table 11: Environment and Sustainability.....   | 36 |
| Table 12: Ke'anae / Wailuānui – Ko'olau Moku .....  | 37 |
| Table 13: List of People Interviewed and Their Affiliations .....                               | 58 |
| Figure D: Maui Island Moku .....  | 78 |

# **1. Background and Introduction**

In 2001, Alexander & Baldwin, in conjunction with its subsidiary East Maui Irrigation Company, Limited (hereafter collectively referred to as A&B) requested that the State offer a lease at public auction for the right, privilege and authority to enter and go upon State-owned lands for the purposes of developing, diverting, transporting and using government-owned waters. The requested lease term is for 30 years, and the lease area would allow the use of government-owned waters from the Nāhiku, Ke'anae, Huelo, and Honomanū License area (hereafter referred to as License Area). This report contains a Social Impact Assessment, or SIA, on the proposed action. It is summarized in and appended to the EIS.

## **1.1. Report Preparation and Description**

This Social Impact Assessment was prepared by Earthplan, whose owner Berna Cabacungan Senelly managed all aspects of the project and served as focus group facilitator, interviewer, researcher, analyst and writer.

This section describes the proposed action and the purpose and scope of SIAs. Section 2 provides a profile of the existing community in terms of a brief overview of Maui Island and the Study Area, population trends and selected demographic characteristics.

Section 3 discusses major forces for change, as provided for in Maui plans and policies that are particularly relevant to this SIA, as well as population forecasts.

Section 4 presents preliminary community issues raised in focus groups and interviews conducted for this study. Section 5 identifies potential social impacts in terms of an overview of the social environment, A&B's relationship in the social context, potential social impacts and recommended mitigation.



## 1.2. The Proposed Action and Objectives

A&B is seeking the issuance of long-term (30-year) water lease by the Hawai'i State Board of Land and Natural Resources (BLNR) that will enable the awarded lessee the "right, privilege, and authority to enter and go upon" the License Area for the "purpose of developing, diverting, transporting, and using government owned waters" through the EMI Aqueduct System. Pursuant to statute, all state water leases must go to public auction before the leases can be issued.

There are four objectives of the proposed action:

### 1. Preserve and maintain the EMI Aqueduct System

The EMI Aqueduct System comprises of approximately 388 separate intakes that control diversions through sluice and radial gates. The system consists of 24 miles of ditches and 50 miles of tunnels. This is a gravity flow system driven by higher elevation diversions in the wet, eastern part of Maui. The EMI Aqueduct System collects water from approximately 50,000 acres, of which 33,000 acres are owned by the State, and approximately 17,000 acres are privately owned, previously by EMI and A&B and now by Mahi Pono (herein collectively referred to as the "Collection Area"). The System is designed to be able to collect all of the streams' base flow, or water flowing in normal conditions. A stream's total flow includes base flow and additional water from rain and storms.

### 2. Continue to meet Upcountry Maui domestic and agriculture needs

The Upcountry Maui Water System serves the domestic needs of the following communities:

Kula  
Pukalani  
Makawao  
Ha'ikū  
Hāli'imaile  
Waiakoa  
Kēōkea

Waiohuli  
'Ulupalakua  
Kanaio  
Olinda  
Ōma'opio  
Kula Kai  
Pūlehu

---

*Background and Introduction*

Maui County Department of Water Supply, or MDWS, has taken water from the Wailoa Ditch based on a series of contracts with A&B. Only one MDWS water treatment facility, the Kamole-Weir Water Treatment Facility, relies on water directly from the EMI Aqueduct System. However, the same contract also allows the MDWS access to other surface water sources on lands previously owned by A&B, and now owned by Mahi Pono, that feed the MDWS' two other water treatment facilities in Upcountry Maui. The existing Kula Agricultural Park (KAP) and the future 262-acre expansion of the KAP rely on water directly from the EMI Aqueduct System as well.

- The Kamole-Weir Water Treatment Facility relies on water directly from the EMI Aqueduct System through the Wailoa Ditch, which diverts water from several streams. The average daily production at this facility is 3.6 Million Gallons Per Day (MGD), and has a maximum capacity of 6 MGD.
- The Pi'iholo Water Treatment Facility relies on water conveyed through the Lower Waikamoi (Kula) Flume, which diverts water from various streams on Mahi Pono's Ha'ikū Uka Watershed, which is then diverted into the Pi'iholo Reservoir. Its average daily production at this facility is 2.5 MGD; it has a maximum capacity of 5 MGD.
- The Olinda / Upper Kula Water Treatment Facility relies on water conveyed through the Upper Waikamoi (Kula) Flume, which diverts water from various streams on Mahi Pono's Ha'ikū Uka Watershed, which is then diverted to the Waikamoi Reservoir and the Kahakapao Reservoir. The average daily production is 1.6 MGD at this facility; it has a maximum capacity of 2 MGD.

At Kula Agricultural Park, water from the EMI Aqueduct System is provided as follows:

- The EMI Aqueduct System serves the 420 acres of the Kula Agricultural Park via Reservoir 40. The KAP comprises 31 farm lots, ranging from seven to 29 acres. The water is not treated and comes from the same diversions that serve the Kamole-Weir Water Treatment Facility. Current consumption is estimated at 548,191 gallons per day, or gpd. However, approximately 1.5 MGD must be provided to the KAP reservoir to produce the current amount of consumption.

- The EMI Aqueduct System will also serve the 1.0 MGD needs of the 262-acre expansion of the KAP, though efficiency improvements to the existing reservoir and water delivery system.

### **3. Continue to serve Nāhiku below Hāna Highway**

MDWS also provides 20,000 to 45,000 gpd to Nāhiku via a development tunnel directly from the EMI Aqueduct System. MDWS serves approximately 40 water meters located makai of Hāna Highway.

### **4. Continue to provide water for agricultural purposes in Central Maui.**

This includes approximately 30,000 acres of agricultural cultivation lands, of which the majority is currently fallow but is planned for new diversified agricultural operations to be undertaken by Mahi Pono LLC, that can be irrigated by waters conveyed by the EMI Aqueduct System.

## **1.3. The Role and Purpose of Social Impact Assessments**

A Social Impact Assessment is a study of how a proposed action or plan affects the human environment. While there are many facets to the human environment, the social context is basically framed by relationships. The social aspects of an area relate to people living and interacting with other people. Social impact analysis explores how changes in the physical environment of a community or neighborhood caused by a proposed land development may affect the neighborhood as a social environment.

Social Impact Assessment, hereafter referred to as SIA, became a recognized subfield of research and policy application, with the passage of the U.S. National Environmental Policy Act (NEPA) legislation in 1969. It is an interdisciplinary, inter-professional field of social science knowledge and application. SIAs draw sometimes from social science, but other times from organizational development, political analysis, or journalism. Its primary function has to do with the development and disclosure of social information relevant to informing the decision-making process and/or designing management actions to deal with problematic social outcomes of a proposed project.

---

*Background and Introduction*

The goal of SIAs is to predict the social effects of a policy, program or project while still in the planning stage, before those effects have occurred. The overall framework for SIAs is anticipatory research, which seeks to place the expectation and attainment of desired outcomes on a rational and reliable basis.

Commonly identified uses of SIAs include:

***Understanding the ability of a community or group to adapt to changing conditions*** - In identifying social consequences of a proposed action, cause-and-effect relationships are complex. Different people and different communities react differently to similar events. An important function of SIA is therefore to obtain and analyze the necessary information about community organization and likely responses to changing conditions. As such, the non-project social scenario is as important as the with-project scenario because it provides the analyst with a realistic social context for the proposed action.

***Defining the problems or clarifying the issues involved in a proposed change*** Frequently, opposition to or support for a proposed project can only be understood and addressed when the proponent is aware of cultural tendencies, underlying issues, vested interests, and misperceptions. The SIA is the basis for defining and clarifying project or program issues in a systematic approach within the EIS framework.

***Illuminating the meaning and importance of anticipated change*** - An important objective of SIAs is to determine what meaning a probable impact would have for a community and its residents. Whereas a certain impact may have relatively low social significance in some communities, it may be given more import or significance in other settings or communities.

***Identifying mitigation opportunities or requirements*** - Another function of SIAs is to explore how a proposed action can cause the least adverse and most beneficial impacts, and to identify responses from the community and affected persons. SIA information can be crucial in determining if and what mitigation is necessary, what mitigation alternatives exist, and which mitigation strategies are most likely to work.

## 2. Profile of the Existing Community

This section establishes the social context for this project. Section 2.1 provides an overview of the history of Maui Island that helped to shape the current social environment. Also included in Section 2.1 is an identification of the Study Area communities.

Section 2.2 presents population trends and residential density. Selected demographic information is presented in Section 2.3.

### 2.1. Study Area Description

#### 2.1.1 Maui Island

Early Hawaiians used a system of land distribution that did not include private ownership. A common land division within the Native Hawaiian land-use system was the ahupua'a, which were divisions typically running from the mountains towards the oceans, or mauka to makai. Each division was administered by an ali'i, or chief. In each ahupua'a, people were separated into distinct classes, from chief to laborer, and each class had clear responsibilities in maintaining the self-sufficiency of the ahupua'a.

Soon after the arrival of Captain Jean-Francois de Galaup, the first outsider to land in Maui in 1786,<sup>1</sup> Maui Island was transformed by missionaries, trade and goods from Westerners, and the whaling industry. The major population centers were the towns of Hāna, Makawao, Wailuku, and Lahaina. Diversified agriculture rapidly expanded during the 1840s and 1850s to support the transient and resident population.

Two significant changes came about with the arrival of Westerners. First, the host people had no resistance to Western diseases, and the island's population decreased dramatically. Between 1831 and 1878, the population reduced from 35,062 to 12,109, a 65 percent decrease, even with the in-migration of newcomers.

---

<sup>1</sup> County of Maui Department of Planning, **Maui Island Plan: Island of Maui, General Plan 2020**, p. I-6



*Profile of the Existing Community*

The second significant change was landownership. Kamehameha III instituted the Māhele, or land division, in 1848 after much pressure from Westerners frustrated with the ahupua'a system. A Land Commission reviewed land claims and decided ownership rights. As part of the Māhele, the Kuleana Act of 1850 allowed the Land Commission to award small parcels of land to commoners for subsistence.<sup>2</sup>

Hawaiian commoners were accustomed to a land tenure system of a self-sufficient ahupua'a and communal subsistence economy. The concept of land ownership was truly foreign to them, and this unfamiliarity, coupled with legal and logistical constraints, resulted in large amounts of land intended for Hawaiians under the ownership of foreign entities. Many Hawaiian families were often required to leave the lands they had cultivated for generations and had to move to towns.<sup>3</sup>

Sugarcane cultivation started between 1836 and 1861, but planters had a difficult time surviving until the 1850 Masters and Servants Act allowed plantation workers from foreign countries. Further, the 1876 Hawaiian Reciprocity Treaty permitted duty free admission of Hawaiian sugar in the United States. Sugar plantations thrived with these boosts in workers and change in trade practices.

The Hāmākua Irrigation Ditch delivered water from the East Maui's watersheds to the dry Central Maui plains; this ensured a reliable source of water. As the physical landscape changed, so did the social environment. The sugar industry brought in workers from Asia, Europe, South and Central America and the South Pacific Islands. The multiple and often ethnic-based plantation camps were communities unto themselves with housing, schools, stores, churches, recreational facilities, clinics and services such as police, fire and community centers.

In 1890, Dwight D. Baldwin established the Ha'ikū Fruit and Packing Company and thus the pineapple industry took hold. By 1930, more than 28 percent of the island's cultivated fields were in pineapple. Today, there is only limited pineapple cultivation remaining on Maui.

---

<sup>2</sup> *Ibid*, p. I-7

<sup>3</sup> *Ibid*, p. I-7

*Profile of the Existing Community*

By the end of World War II, mechanization was transforming sugar and pineapple industries. Labor unions played an increasingly major role in how plantations operated. Plus, job opportunities became more diversified, workers were buying their own homes, and plantation camps were coming to an end. The last sugar cane haul at the Pu'unēnē sugar mill operated by Hawaiian Commercial & Sugar Company occurred on December 12, 2016.

As the agricultural industry continued to evolve, Maui again experienced a population decline. From 1940 to 1960, 24 percent of Maui residents moved elsewhere. In the meantime, tourism emerged as the new economic force, and with it came resort destinations and new towns. The population rebounded, as fewer Maui residents moved away and in-migrants moved in to work or retire, thereby increasing the demand for housing. Between 1960 and 2010, Maui's population increased over 300 percent, from 35,717 to 144,444 persons.<sup>4</sup>

### 2.1.2 Study Area

From a social perspective, the implications of the continued diversion, and transporting of waters from one area to another extend well beyond irrigation flumes and drainage ditches. These actions are seen through the lens of community values and have to do with feelings about past actions, cultural and environmental values, expectations for the future of the water, reliance on an established potable water supply, livelihoods and businesses, and more.

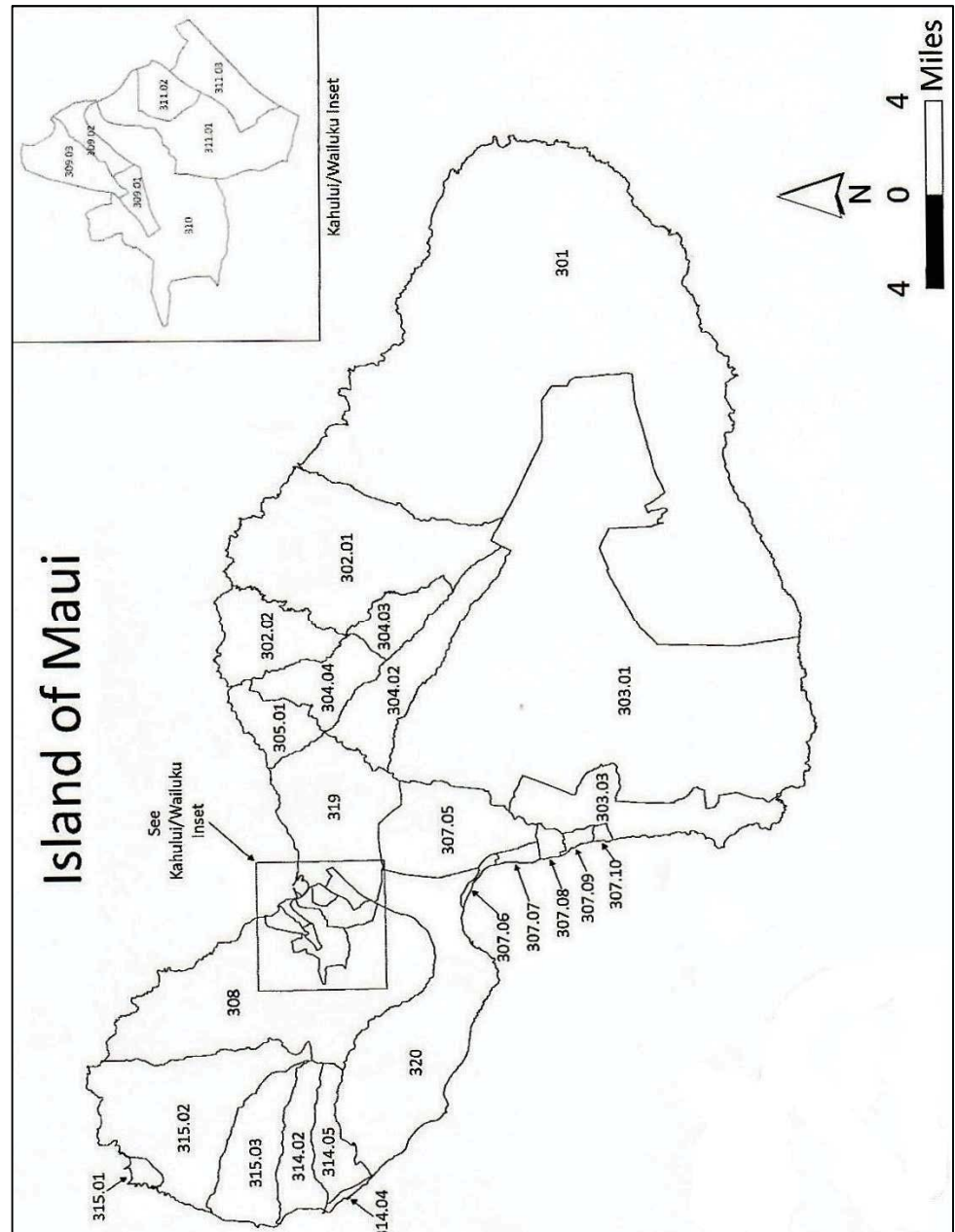
The Study Area for this project includes the geographic regions that are affected by the proposed action and comprises a portion of the Hāna District located in East Maui, and the Makawao District, which occupies the central portion of the island.

Statistical information includes Census Tract information collected by the U.S. Bureau of the Census. The U.S. Decennial Census occurs every 10 years, in years ending in zero, to count the population and housing units for the entire United States. Figure A depicts Maui Island's Census Tracts, or CTs.

---

<sup>4</sup> County of Maui Planning Department Long Range Division, **Maui Island Plan: Island of Maui, General Plan 2030**, pp 1-11 1-12 (County of Maui: 2012)

**Figure A: Maui Island Census Tracts**



*Profile of the Existing Community*

In addition to census data, this report includes information collected for census-designated places, or CDPs. A CDP is a concentration of population defined by the United States Census Bureau for statistical purposes only. CDPs have been used in each decennial census since 1980 as the counterparts of incorporated places, such as self-governing cities, towns, and villages, for the purposes of gathering and correlating statistical data.

The boundaries of a CDP have no legal status. Criteria established for the 2010 Census require that a CDP name "be one that is recognized and used in daily communication by the residents of the community," and recommend that a CDP's boundaries be mapped based on the geographic extent associated with inhabitants' regular use of the named place.

It is noted that CT and CDP information do not directly coincide because CDPs focus on a smaller, concentrated areas than a CT. Nevertheless, CDPs provide insight on characteristics of a contained community. Figure B depicts Maui Island CDPs.

In the **Hāna District**, Kea'nae, Wailuānui and Nāhiku are included in the Study Area. CT 301, which comprises the Hāna District, is larger than these communities and includes the Hāna CDP which is not part of the Study Area. Information presented for these communities was extracted as the net value between the Hāna CT 301 and the Hāna CDP.

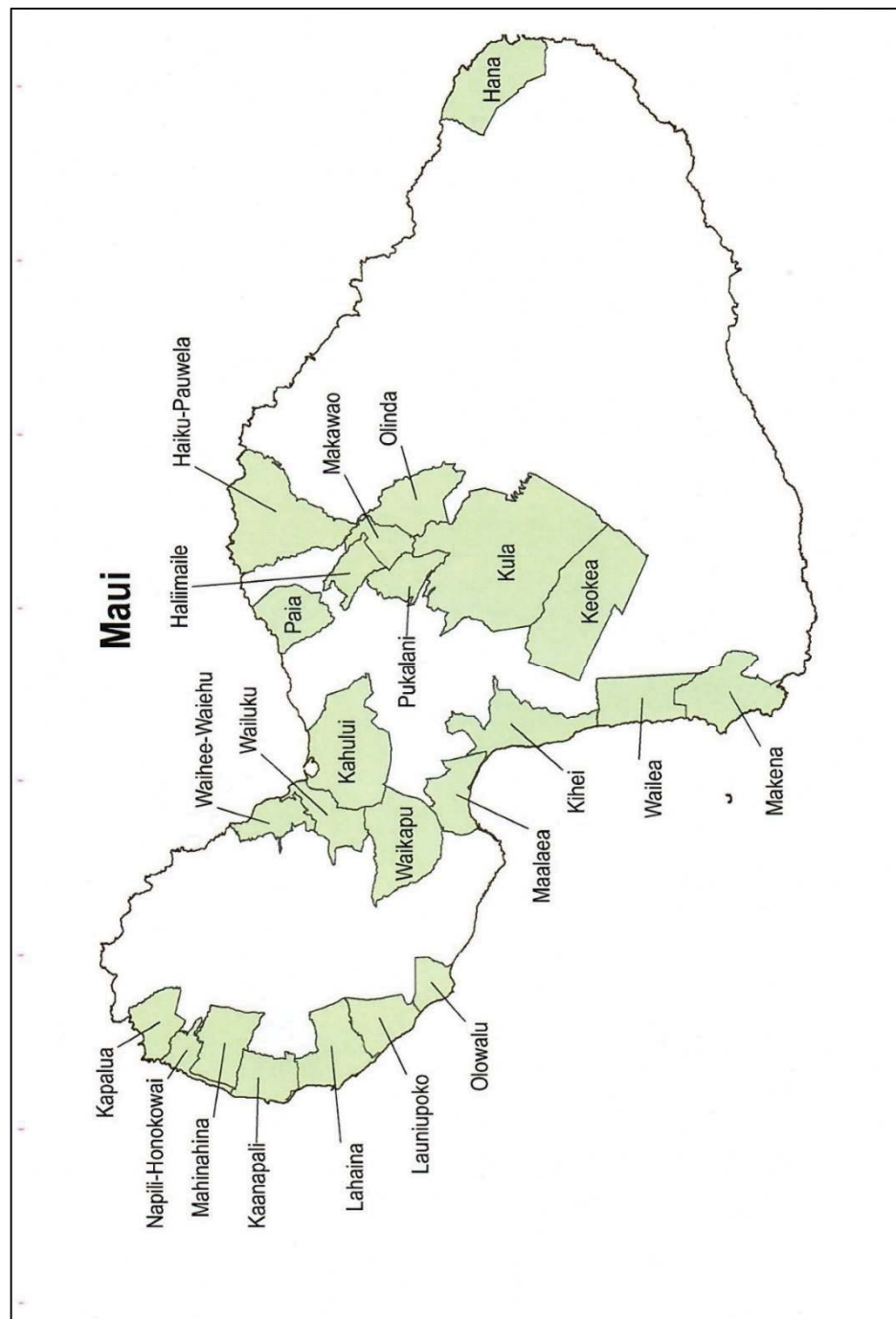
The **Makawao District** includes the following Study Area communities generally from north to south:

- Huelo, which is part of CT 302.01 and the Ha'ikū-Pa'uwela CDP
- Ha'ikū, which is part of CT 302.01 and CT 302.02, and the Ha'ikū Pa'uwela CDP
- Hāli'imaile, which is part of CT 304.04 and Hāli'imaile CDP
- Olinda, which is part of C 304.03 and Olinda CDP
- Kula, which is part of CT 303.01 and Kula CDP
- Pukalani, which is part of CT 304.02 and Pukalani CDP
- Makawao, which is part of CT 304.03 and Makawao CDP
- Kēōkea, which is part of CT303.01 and Kēōkea CDP

*Profile of the Existing Community*

It is noted that the Makawao District also includes makai communities that are not in this Study Area, including Pā'ia, Kihei and Makena, and information is clarified when appropriate.

**Figure B: Maui Island Census-Designated Places (CDP)**

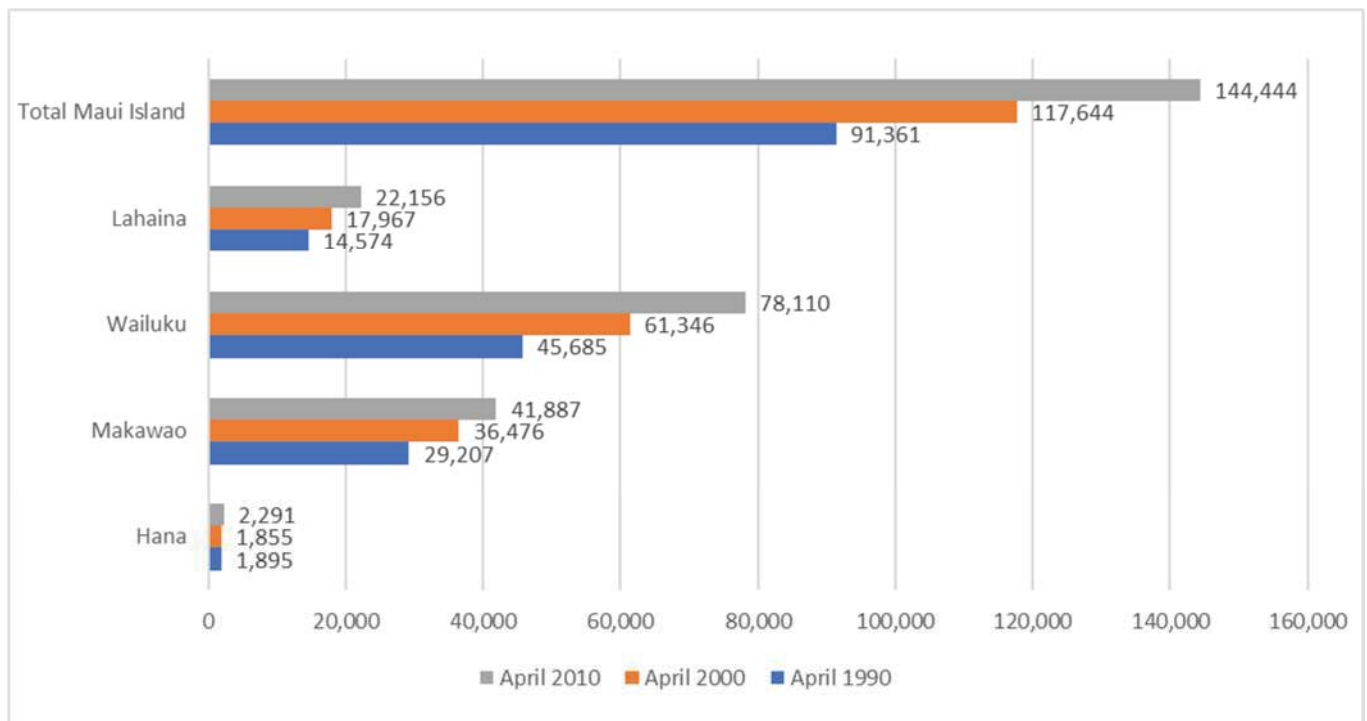




## 2.2. Population Trends and Density

Decennial Census information is used in this report to present accurate trends of how Maui Island has changed in a 30-year period, from 1990 and 2010, as illustrated in Figure C.

**Figure C: Maui Island and Maui District Population, 1990 to 2010**



*Note: The Makawao District includes the Study Area, as well as the makai Kihei region, which is not part of the Study Area. Only a portion of the Hāna District is included in the Study Area.*

*Source: **Maui County Data Book: 2015**, Table 1.3.3 Resident Population by County and District*

*Profile of the Existing Community*

Table 1 presents 1990 to 2010 population changes for Maui Island and its districts in terms of percentage.

**Table 1: Maui Island and District Population Changes, 1990 to 2010**

| Maui Island<br>Districts | Year          |                |                | Percent Change  |                 |                 |
|--------------------------|---------------|----------------|----------------|-----------------|-----------------|-----------------|
|                          | 1990          | 2000           | 2010           | 1990 to<br>2000 | 2000 to<br>2010 | 1990 to<br>2010 |
| <b>Hāna</b>              | <b>1,895</b>  | <b>1,855</b>   | <b>2,291</b>   | <b>-2%</b>      | <b>24%</b>      | <b>21%</b>      |
| <b>Makawao</b>           | <b>29,207</b> | <b>36,476</b>  | <b>41,887</b>  | <b>25%</b>      | <b>15%</b>      | <b>43%</b>      |
| Wailuku                  | 45,685        | 61,346         | 78,110         | 34%             | 27%             | 71%             |
| Lahaina                  | 14,574        | 17,967         | 22,156         | 23%             | 23%             | 52%             |
| <b>Total Maui Island</b> | <b>91,361</b> | <b>117,644</b> | <b>144,444</b> | <b>29%</b>      | <b>23%</b>      | <b>58%</b>      |

*Note: The Makawao District includes the Study Area, as well as the Pā'ia and Kihei region, which are not part of the Study Area. Only a portion of the Hāna District is included in the Study Area.*

*Source: **Maui County Data Book: 2015**, Table 1.3.3 Resident Population by County and District*

Unlike the rest of the island, the Hāna District experienced a population decrease, albeit slight, in the 1990s. Hāna's population rebounded in the 2000s by 24 percent, and there was a net increase of 21 percent from 1990 to 2010. This was the lowest level of increase over the two decades compared to other Maui Island Districts. While the Hāna District is larger than the East Maui portion of the Study Area, it is highly likely that Ke'anae, Wailuānui and Nāhiku experienced population changes consistent with district-wide trends.

The Makawao District experienced levels of growth lower than the Districts of Wailuku and Lahaina. Nevertheless, its population increased by over 40 percent between 1990 and 2010, and much of this growth can be attributed to increased urbanization in Upcountry Maui as well as continued urbanization of the Kihei region, which is not part of this Study Area.

## Profile of the Existing Community

Table 2 shows that the Hāna District is geographically the largest CT in the Study Area. The Hāna District covers 214 acres of Maui Island's 772 acres, or 28 percent. Hāna's 2010 population of 2,291 persons made up two percent of Maui Island's 144,444 residents. The combination of a large land region and low population translates into a significantly low residential density of 10.7 persons per square mile. While this CT is larger than the East Maui portion of the Study Area, it is highly likely that Ke'anae, Wailuānui and Nāhiku have comparable residential density and household sizes with the overall region.

**Table 2: 2010 Residential Density and Household Size for Study Area and Maui Island, 2010**

| Population Density and Households | Study Area    |                            |                  |                |                    |                   |                       |                                     | Study Area Total | Remaining Maui Island | Maui Island Total |
|-----------------------------------|---------------|----------------------------|------------------|----------------|--------------------|-------------------|-----------------------|-------------------------------------|------------------|-----------------------|-------------------|
|                                   | Hāna District | Makawao District (Partial) |                  |                |                    |                   |                       |                                     |                  |                       |                   |
|                                   | Hāna CT 301   | Huelo CT 302.10            | Ha'ikū CT 302.02 | Kula CT 303.01 | Pukalani CT 304.02 | Makawao CT 304.03 | Hāli'imaile CT 304.04 | Makawao District (Partial) Subtotal |                  |                       |                   |
| Resident population               | 2,291         | 2,453                      | 7,635            | 8,013          | 8,652              | 3,269             | 5,609                 | 35,631                              | 37,922           | 106,522               | 144,444           |
| Percent of Total Maui Island      | 2%            | 2%                         | 5%               | 6%             | 6%                 | 2%                | 4%                    | 25%                                 | 26%              | 74%                   | N/A               |
| Land area in square miles         | 214.03        | 45.60                      | 14.25            | 166.91         | 17.85              | 7.27              | 10.52                 | 262.40                              | 476.43           | 295.56                | 771.99            |
| Percent of Total Maui Island      | 28%           | 6%                         | 2%               | 22%            | 2%                 | 1%                | 1%                    | 34%                                 | 62%              | 38%                   | N/A               |
| Residents per square mile         | 10.70         | 53.80                      | 35.00            | 48.00          | 484.60             | 449.90            | 533.30                | 135.79                              | 79.60            | 360.41                | 187.11            |
| Households                        | 823           | 1,013                      | 2,908            | 3,189          | 3,064              | 1,225             | 1,918                 | 9,396                               | 10,219           | 39,996                | 50,215            |
| Persons per household             | 2.78          | 2.42                       | 2.63             | 2.51           | 2.82               | 2.67              | 2.92                  | 3.79                                | 3.71             | 2.66                  | 2.88              |

Sources: **Maui County Data Book: 2015** 1) Table 1.3.4 Population Density by Census Tract, Maui County; 2) Table 1.3.5 Resident Population and Households by Census Tract, Maui County.

Note that only a portion of the Hāna CT 301 is in the Study Area.

The Makawao District portion of the Study Area encompasses 270 acres, or 35 percent of the Island. The District's 38,312 persons accounted for 27 percent of Maui residents.

In terms of residential density, there were 141.86 residents per square mile in the Makawao District, which is lower than the island-wide residential density of 187.11 residents per square mile.

While the residential density in several Makawao Districts was higher than that of the overall Maui Island, Makawao's density was offset by the low resident-per-square mile counts in the Ha'ikū (35 persons) Kula (48 persons) and Huelo (53.8 persons) CTs. The highest residential density was in the Hāli'imaile CT, where there were 533.3 persons per square mile.

In 2010, in the Makawao District portion of the Study Area, the Pukalani CT had the largest residential population of 8,652 persons, followed by the Kula CT with 8,013 residents. The lowest population was in Huelo CT, with 2,453 residents.

## 2.3. Selected Demographics

### 2.3.1 Race

The Census Bureau defines race as a person's self-identification with one or more social groups. An individual can report as White, Black or African American, Asian, American Indian and Alaska Native, Native Hawaiian and Other Pacific Islander, or some other race. Census respondents may report multiple races.

Key highlights in how Ke'anae, Wailuānui and Nāhiku residents identified their race in the 2010 Census are hereby summarized and depicted in Table 3.

- The proportion of Native Hawaiians and Pacific Islanders, at 25.8 percent, is significantly high when compared to the Makawao District (8.3 percent) and Maui Island (9.5 percent).
- These communities also had the third highest proportion of White residents in the Study Area, at 42.8 percent.
- The "Two or More Races" category also ranked third among Study Area communities.
- The proportion of Asians, at 2.1 percent, is the lowest in the Study Area, and significantly low compared to Maui Island's 29.7 percent.

## Profile of the Existing Community

**Table 3: Race, Study Area and Total Maui Island, 2010**

| Race                                    | Kea'nae<br>Wailuānui<br>Nāhiku | Makawao District (Partial) CDPs |             |        |       |         |        |          |  | Total<br>Study<br>Area | Remaining<br>Maui Island | Total<br>Maui<br>Island |
|---|--------------------------------|---------------------------------|-------------|--------|-------|---------|--------|----------|--|------------------------|--------------------------|-------------------------|
|   |                                | Ha'ikū -<br>Pa'uwela            | Hāli'imaile | Kēōkea | Kula  | Makawao | Olinda | Pukalani | Makawao<br>District<br>(Partial)<br>CDPs |                        |                          |                         |
| Native Hawaiian and<br>Pacific Islander | <b>25.8%</b>                   | 7.1%                            | 11.8%       | 25.6%  | 4.2%  | 8.4%    | 3.2%   | 9.5%     | <b>8.3%</b>                              | <b>8.8%</b>            | 9.7%                     | <b>9.5%</b>             |
| Asian                                   | <b>2.1%</b>                    | 8.1%                            | 35.0%       | 8.7%   | 16.3% | 15.9%   | 7.6%   | 23.9%    | <b>15.8%</b>                             | <b>15.4%</b>           | 34.3%                    | <b>29.7%</b>            |
| White                                   | <b>42.8%</b>                   | 59.4%                           | 20.5%       | 29.0%  | 56.3% | 38.2%   | 71.1%  | 33.2%    | <b>45.9%</b>                             | <b>45.8%</b>           | 31.6%                    | <b>35.1%</b>            |
| Black or African<br>American            | <b>0.4%</b>                    | 0.3%                            | 0.1%        | 0.7%   | 0.5%  | 0.4%    | 0.2%   | 0.4%     | <b>0.4%</b>                              | <b>0.4%</b>            | 0.6%                     | <b>0.6%</b>             |
| American Indian and<br>Alaska Native    | <b>0.5%</b>                    | 0.5%                            | 0.1%        | 0.6%   | 0.4%  | 0.6%    | 1.3%   | 0.3%     | <b>0.5%</b>                              | <b>0.5%</b>            | 0.4%                     | <b>0.4%</b>             |
| Some Other Race                         | <b>1.1%</b>                    | 1.1%                            | 2.5%        | 0.7%   | 1.2%  | 1.0%    | 0.8%   | 1.8%     | <b>1.3%</b>                              | <b>1.3%</b>            | 2.4%                     | <b>2.1%</b>             |
| Two or More Races                       | <b>27.4%</b>                   | 23.4%                           | 30.0%       | 34.7%  | 21.2% | 35.5%   | 15.8%  | 30.9%    | <b>27.8%</b>                             | <b>27.8%</b>           | 20.9%                    | <b>22.6%</b>            |

Source for Makawao District: **Maui County Data Book: 2015**, Table 1.3.6  
Summary Characteristics of Persons by Race Census Designated Places, Maui  
County

For Ke'anae, Wailuānui and Nāhiku, information was extracted as the net value  
between the Hāna CT 301 and the Hāna CDP.

In the Makawao District, there are distinctions as well.

- There tended to be high proportions of Whites in this District. Notably, Olinda (71.1 percent), Ha'ikū Pa'uwela (59.4 percent), and Kula (56.3 percent) all have higher proportion of Whites compared to the 35.1 percent reported for the overall Maui Island. The Makawao District as a whole had 45.9 percent White, compared to 35.1 percent island-wide.
- When compared to Maui Island, the Makawao District had a lower proportion of Native Hawaiians and Pacific Islanders (8.3 versus 9.5 percent) and Asians (15.8 versus 29.7 percent).

### 2.3.2 Age

In the Study Area, the highest proportions of youngsters under 18 years of age were in Kēōkea at 26.2 percent, followed by Makawao, Pukalani and Hāli'imaile at 24 percent.



## Profile of the Existing Community

**Table 4: Age in Study Area CDPs, 2010**

| Age               | Kea'nae<br>Wailuānui<br>Nāhiku | Makawao District (Partial) CDPs |             |              |              |              |              |              |
|-------------------|--------------------------------|---------------------------------|-------------|--------------|--------------|--------------|--------------|--------------|
|                   |                                | Ha'ikū -<br>Pa'uwela            | Hāli'imaile | Kēōkea       | Kula         | Makawao      | Olinda       | Pukalani     |
| <b>Population</b> | <b>1,056</b>                   | <b>8,118</b>                    | <b>964</b>  | <b>1,612</b> | <b>6,452</b> | <b>7,184</b> | <b>1,084</b> | <b>7,574</b> |
| Under 18          | 21.0%                          | 23.0%                           | 24.0%       | 26.2%        | 20.0%        | 24.2%        | 18.7%        | 24.0%        |
| 18 to 24          | 5.6%                           | 7.0%                            | 7.6%        | 7.0%         | 5.2%         | 8.1%         | 5.2%         | 7.3%         |
| 25 to 44          | 22.2%                          | 28.3%                           | 28.4%       | 25.4%        | 20.7%        | 27.0%        | 26.3%        | 25.1%        |
| 45 to 64          | 39.1%                          | 32.7%                           | 26.7%       | 30.1%        | 39.1%        | 29.9%        | 36.3%        | 31.3%        |
| 65 and older      | 12.1%                          | 9.0%                            | 13.4%       | 11.3%        | 15.0%        | 10.8%        | 13.6%        | 12.4%        |
| <b>Median age</b> | <b>n/a</b>                     | <b>39.6</b>                     | <b>37.9</b> | <b>38.7</b>  | <b>47.7</b>  | <b>38.4</b>  | <b>44.9</b>  | <b>40.5</b>  |

Source for Makawao District: **Maui County Data Book: 2015**, Table 1.3.7

Population by Age Group and Gender Ratio Census Designated Places, Maui County

For Ke'anae, Wailuānui and Nāhiku, information was extracted as the net value between the Hāna CT 301 and the Hāna CDP.

The CDPs with the highest elderly group of 65 years and older are Kula (15.0 percent), Olinda (13.6 percent) and Hāli'imaile (13.4 percent).

Of note are the age groups that are typically in the work force. These age groups are the 25 to 44 and 45 to 64 age groups. The Olinda CDP had the highest proportion of workforce with a combined 63 percent, followed by the Ha'ikū-Pa'uwela CDP workforce at 61 percent, and Kula CDP at 60 percent.

In terms of median age, the Kula CDP had the highest median age at 47.7 years. The lowest median age was found in the Hāli'imaile CDP at 37.9 years.

### **3. Major Forces for Change**

This section identifies forces for social change in the Study Area that are independent of the proposed project. The purpose of this discussion is to extend the baseline information on the social environment by exploring the type of change directed by relevant public policies and plans. These policies and plans have been developed by the public sector with extensive community input and review. They provide good indications of community vision and expectations.

It is noted that the intent of discussing public policies and plans in this SIA is different than the EIS section on "Compatibility with Land Use Plans and Policies, Required Permits and Approvals." The framework of the EIS discussion is directed at to the proposed action, namely that the State offer a lease at public auction for the right, privilege and authority to enter and go upon State-owned lands for the purposes of developing, diverting, transporting and using government-owned waters.

From an SIA perspective, the implications of the continued diversion, and transporting of waters from one area to another extend well beyond public auctions, leases, irrigation flumes and drainage ditches. These actions are seen through the lens of community values and have to do with feelings about past actions, cultural and environmental values, expectations for the future of the water, reliance on an established potable water supply, livelihoods and businesses, and more. This SIA discussion on public policies and plans therefore extend beyond water lease - related policies and plans to reflect perspectives shared in focus group sessions and interviews conducted in the SIA process. Sections 3.1 and 3.2 discuss, respectively, the Maui County General Plan and Maui Island Plan. Section 3.3 presents population forecasts.

### **3.1. County of Maui 2030 General Plan: Countywide Policy Plan**

The Maui County Charter requires that its General Plan recognize and state the major problems and opportunities concerning the needs and development of the County and the social, economic and environmental effects of such development. The 1990 General Plan was approved by the County Council in 1991. Given the significant socio-economic, demographic, and physical changes in the last decade, Maui County prepared a comprehensive Policy Plan to 2030 that provides the basis for updating the Maui Island Plan and the nine Community Plans.

Adopted in March 2010, the County of Maui 2030 General Plan provides broad goals, objectives, policies, and implementing actions that portray the desired direction of the County's future. The Plan articulates a vision statement and core values for 2030, describes current conditions, identifies guiding principles and identifies goals, objectives, policies and implementing actions to realize the vision and based on the following core themes:

- A. Protect the Natural Environment
- B. Preserve Local Cultures and Traditions
- C. Improve Education
- D. Strengthen Social and Healthcare Services
- E. Expand Housing Opportunities for Residents
- F. Strengthen the Local Economy
- G. Improve Parks and Public Facilities
- H. Diversify Transportation Options
- I. Improve Physical Infrastructure
- J. Promote Sustainable Land Use and Growth Management
- K. Strive for Good Governance

One can say that all of these Plan policies are integral and pertain to the proposed water lease. This SIA focuses on those policies and objectives that are especially relevant to the social environment in terms of the proposed long-term (30-year) water lease, the related Commission on Water Resource Management's (CWRM) Interim Instream Flow Standard (IIFS) Decision and Order and community issues identified in Section 4. Policies and objectives within this specific context are as follows:

### **Goal A: Protect the Natural Environment**

Objective 1: Improve the opportunity to experience the natural beauty and native biodiversity of the islands for present and future generations

Policy c. Restore and protect forests, wetlands, watersheds and streams flows, and guard against wildfires, flooding and erosion.

Policy d. Protect baseline stream flows for perennial streams, and support policies that ensure adequate stream flow to support Native Hawaiian aquatic species, traditional kalo cultivation and self-sustaining ahupua'a.

Objective 2: Improve the quality of environmentally sensitive, locally valued natural resources and native ecology of each island.

Policy i. Restore watersheds and aquifer-recharge areas to healthy productive status, and increase public knowledge about the importance of watershed stewardship, water conservation, and groundwater protection.

Objective 3. Improve stewardship of the natural environment.

Policy b. Improve communication, coordination, and collaboration among government agencies, nonprofit organizations, communities, individuals, and land owners that work for the protection of the natural environment.

**Goal B. Preserve Local Cultures and Traditions**

Objective 1: Perpetuate the Hawaiian culture as a vital force in the lives of residents.

Policy a. Protect and preserve access to mountain, ocean, and island resources for traditional Hawaiian cultural purposes.

Policy c. Promote the use of ahupua'a and moku management practices.

Objective 1: Emphasize respect for our island lifestyle and our unique local cultures, family and natural environment.

Policy a. Acknowledge the Hawaiian culture as the host culture, and foster respect and humility among residents and visitors toward the Hawaiian people and their practice.

Policy d. Recognize the interconnectedness between the natural environment and the cultural heritage of the islands.

**Goal F. Strengthen the Local Economy**

Objective 2: Diversify and expand sustainable forms of agriculture and aquaculture.

Policy b. Prioritize the use of agricultural land to feed the local population, and promote the use of agricultural lands for sustainable and diversified agricultural activities.

Policy e. Support ordinances, programs, and policies that keep agricultural land and water affordable to farmers.

Policy j. Encourage healthy and organic farm practices that contribute to land health and regeneration.

Policy k. Support cooperative and other types of nontraditional and communal farming efforts.

**Goal I. Improve Physical Infrastructure**

Objective 1: Improve water systems to assure access to sustainable, clean, reliable, and affordable sources of water.

Policy c: Ensure a reliable and affordable supply of water for productive agricultural uses.

Policy e. Retain and expand public control and ownership of water resources and delivery systems.



Policy f. Improve the management of water systems so that surface water and groundwater resources are not degraded by overuse or pollution.

Policy g. Explore and promote alternative water-source development methods.

Policy h. Seek reliable long-term sources of water to serve developments that achieve consistency with the appropriate Community Plans.

## **3.2. Maui Island Plan**

The Maui Island Plan sets the direction for the future based on the vision, principles and objectives set forth in the General Plan. Its contents are specific to the island and are based on an extensive three-year dialogue with the community. The Maui Island Plan provides policy direction for the development of land, the extension and improvement of transportation services and infrastructure, the development of community facilities, the expansion of Maui's economic base, the provision of housing, and the protection of natural and cultural resources. The Maui Island Plan was adopted and took effect in December 2012.

Key highlights of the Maui Island Plan include

- A Directed Growth Management Plan that establishes future growth areas and enables predictable development
- Protection of Maui's small towns and rural character
- Protection of designated affordable housing
- Protection of watersheds and coastal resources
- Identification of transit corridors
- Economic diversification
- Integration of land use and infrastructure planning

As with the Maui County General Plan, goals, objectives and policies are synergistic. This study focuses on those topics that are specifically relevant to the social environment in terms of proposed long-term water lease, the CWRM IIFS Decision and Order and issues raised in study focus groups. These are as follows.

### **Watersheds, Streams and Wetlands**

One of the challenges cited in the plan and related opportunities, is diversion and damming. It was noted that these actions affect the overall watershed by compromising the vitality of its flora and fauna.

Objective 2.3.6 is to "Enhance the vitality and functioning of streams, while balancing the multiple needs of the community." Policies that are particularly relevant to this SIA include:

2.3.6.c Respect and participate in the resolution of native Hawaiian residual land and water rights issues (kuleana lands, ceded lands, and historic agricultural and gathering rights).

2.3.6.e Work with appropriate agencies and stakeholders to establish minimum stream flow levels, promote actions to support riparian habitat and the use of available lo'i, and maintain adequate flows for the production of healthy kalo crops.

### **Expand Diversified Agriculture Production**

When the Maui Island Plan was adopted, HC&S, a former A&B subsidiary, was still operating the sugar plantation in Central Maui. With the closure of the plantation, goals, objectives and policies related to diversified agriculture become even more relevant to the proposed action and this SIA.

The Maui Island Plan stated that, "For agriculture to flourish in Central Maui, reliable and affordable supplies of water will need to be made available to the region. Without an adequate supply of affordable water, farmers may be reluctant to invest capital in agricultural production."

While all of the diversified agriculture goals, objectives and policies are relevant to this SIA, those that were repeated themes in focus groups and interviews for this SIA are as follows:

Policy 4.3.1.a: Strive to substitute food/agricultural product imports with a reliable supply of locally-produced food and agricultural products.

Policy 4.3.1 c: Encourage growing a diverse variety of crops and livestock to ensure the stewardship of our land while safeguarding consumer safety.

Objective 4.3.2: Maintain or increase agriculture's share of the total island economy

Policy 4.3.2.c: Encourage the continued viability of sugar cane production, or other agricultural crops, in central Maui and all of Maui Island

### 3.3. Population Forecasts

The Maui County Planning Department developed a socio-economic forecast in preparation for the General Plan Update. The forecast serves as a planning tool to predict future growth scenarios, and is based on projections developed by the State Department of Business, Economic Development and Tourism.

The model in this forecast is not designed to predict short-term economic cycles. Rather, it provides estimates of long-term trends. Actual conditions will diverge on a short-term basis within the long-term time frame.

The baseline forecast incorporates historical information and forecasts growth in population and jobs. Table 5 contains population forecasts for 2030 for the county and its islands.

**Table 5: Population Forecasts for Maui County, 2030**

|             | Estimated<br>2005 | 2030<br>Forecast | Percent<br>change | Annual<br>average<br>growth rate |
|-------------|-------------------|------------------|-------------------|----------------------------------|
| Maui County | 140,050           | 189,298          | 35.2%             | 1.2%                             |
| Maui Island | 129,471           | 175,147          | 35.3%             | 1.2%                             |
| Molokai     | 7,127             | 8,036            | 12.8%             | 0.5%                             |
| Lanai       | 3,452             | 4,676            | 35.5%             | 1.2%                             |

Source: County of Maui, **County of Maui General Plan 2030**, Table 2: Resident and Visitor Population Estimates for 2005 and Forecasts for 2030, March 2010.

It is forecasted that the population of Maui County will increase approximately 35 percent between 2005 and 2030, with an average annual growth rate of 1.2 percent. This implies a decrease in the historical annual rate of growth of 2.5 percent between 1990 and 2000.

Within Maui Island, population growth in the different regions is forecasted to increase at different rates, as shown on Table 6.

**Table 6: Population Forecasts for Maui Island Community Plan Areas, 2030**

| Community Plan Area          | 2010           | 2030 Forecast  | Percent change | Annual average growth rate |
|------------------------------|----------------|----------------|----------------|----------------------------|
| West Maui                    | 22,156         | 36,058         | 62.7%          | 2.0%                       |
| Kīhei-Mākena                 | 27,244         | 46,896         | 72.1%          | 2.2%                       |
| Wailluku-Kahului             | 54,443         | 64,853         | 19.1%          | 0.7%                       |
| <b>Makawao-Pukalani-Kula</b> | <b>25,198</b>  | <b>29,635</b>  | <b>17.6%</b>   | <b>0.7%</b>                |
| <b>Pā'ia-Ha'ikū</b>          | <b>13,122</b>  | <b>14,040</b>  | <b>7.0%</b>    | <b>0.3%</b>                |
| <b>Hāna</b>                  | <b>2,291</b>   | <b>3,149</b>   | <b>37.5%</b>   | <b>1.3%</b>                |
| <b>Total Maui Island</b>     | <b>144,454</b> | <b>194,631</b> | <b>34.7%</b>   | <b>1.2%</b>                |

Source: County of Maui, **Maui Island Plan (December 2012)**, Table 1-2: Community Plan Area Population 2000-2030.

The Study Area includes communities in the three community plan areas and the following summarize population forecasts:

- *Makawao – Pukalani – Kula*:<sup>5</sup> This area is expected to grow by 17.6 percent between 2010 and 2030, which translates into 0.7 percent annually. This is a continuation of strong growth that occurred Upcountry in the 1990s, though not as rapid.
- *Pā'ia – Ha'ikū*: This area's population is projected to increase about seven percent, which would amount to 0.3 percent a year.

<sup>5</sup> The Makawao – Pukalani – Kula Community Plan Area is part of the Makawao District designated by the U.S. Census Bureau. The Makawao District includes several other communities, as discussed in Section 2.1.2.

---

*Major Forces for Change*

- *Hāna:* As shown in Table 1, the population in Hāna decreased slightly in the 1990s, and experienced a slight increase by 2010. Some growth is projected to occur between 2010 and 2030. Note that while the growth rates are higher than the other two community plan areas, the actual increase in numbers is less than 1,000 persons.



## **4. Preliminary Community Issues**

Impacts are changes that may occur as a result of the implementation of a proposed action, plan or policy. Issues are reactions and opinions. Issues can change over time, as people's priorities and values change.

Issues analysis helps decision-makers identify and analyze community concerns about a proposed action. It differs from statistical surveys, the latter of which is designed to focus on frequency of reactions. Polls are valuable because they tell us about the opinions of the majority or the minority. The survey instrument is not conducive to dialogue, however, and the personalized reasons for the opinions expressed are not evident, or need to be inferred from responses.

In contrast, the only time we refer to the quantity of opinion in issues analysis is where there is significant difference of number or a distinct trend.

This section describes and summarizes the November 2018 focus group session in Section 4.1, and the April 2019 interviews in Section 4.2.

### **4.1. November 2018 Focus Group Sessions**

#### **4.1.1 Approach and Session Process**

To encourage interaction and active discourse, a focus group structure was used to optimize input. Focus groups are essentially focused interviews with a group of people.

Focus group settings can enhance community dialogue about critical topics in several ways. Focus groups allow the facilitator to share common information with several people at a time. They also allow interaction between participants whereby they can share their own views, learn how others feel, and discuss reactions in a comfortable setting.

The focus group structure in this study was designed to encourage a comfortable setting in which the proposed long-term water lease was described to establish a common level of information. Each group was relatively homogenous in that group participants shared common backgrounds and/or common interests. Presentations and questions were common to all groups to allow for collective analysis.

Each session was facilitated by Berna Cabacungan Senelly of Earthplan. She opened each session with a description of the sequence of topics and activities, as follows:

- Self-introduction: Each person was invited to say where they live and why they were interested in participating.
- The facilitator provided a three-part overview that summarized the following:
  - The proposed action upon which the Environmental Impact Statement is based, including four objectives.
  - The EMI Aqueduct System, in terms of overall distance, collection infrastructure, Collection Area, and State License Area.
  - Key findings of the CWRM IIFS Decision and Order dated June 20, 2018.<sup>6</sup>
- Participants in each group were then asked four questions:
  - What is your **relationship** to anyone or anything related to Maui A&B, EMI, the EMI Aqueduct System, and any part related to the proposed long-term water lease?
  - How do you believe **changes** (namely proposed long-term water lease and CWRM IIFS Decision and Order) affect you personally, others in this focus group and people you know?
  - Do you think water resource allocation should be **balanced**? If so, how? If not, why?
  - What **one thing** do you personally want the reader of the social impact assessment to read?

---

<sup>6</sup> While the CWRM Decision and Order is not the subject of the EIS and this SIA, it is nevertheless relevant to social environment because of implications related to stream users and water quantity.

## **4.1.2 Focus Group Sessions and Profiles**

### **4.1.2.1 Overview**

Participants targeted for focus group participation were based on how the proposed long-term water lease might affect their interests, interest and participation in previous lease- and water-related events, such as the CWRM proceedings, media coverage and participation in the scoping meetings subsequent to the issuance of the EIS Preparation Notice.

To invite participants and organize the sessions, the facilitator contacted organizational and community leaders in these interest groups. To the extent possible, times and dates were set for the convenience of the groups. Except for one meeting, the initial contacts offered to invite participants in their network or provided contact information. Further, except for one meeting, the initial contacts arranged venues. The facilitator provided refreshments and paper and pens for notetaking.

During the sessions, participants were asked to hold questions and discussions until after the three-part presentation. They generally did this, although there were instances in which information was clarified and expanded. While participants sometimes strongly expressed their views with passion, the overall tone of the sessions was always respectful and supportive of each other.

Assistance in preparing for and conducting the focus groups was provided by Dawn Freels, an independent contractor and Pukalani resident.

### **4.1.2.2 Profile of the November 2018 Focus Groups**

Seven focus groups were conducted, as follows:

- Two focus groups with Upcountry Community Associations, including Kula, Pukalani and Makawao Community Associations
- Farmers and ranchers
- Mālamalama Maui (a two-year community project to use arts and culture)
- Huelo / Ha'ikū residents and farmers

*Preliminary Community Issues*

- Environment and sustainability
- Ke'anae and Wailuānui (Ko'olau Moku) residents, farmers and cultural practitioners

Collectively, 64 people signed in at the seven focus groups. The actual number of participants is higher because some who arrived after the session started did not sign in. Four people participated in two sessions to share their views from different perspectives.

While there were often common views and interests that spanned the focus groups, each group tended to have a “personality” of sorts. Participants had interests common to that group and expressed their views within that context.

This section identifies participants in each group and themes that tended to emerge within the group. It is intended to share general impressions of each group and does not elaborate on specific comments and issues. Discussions regarding collective opinions and issues are presented in Section 4.1.3.

### Upcountry Community Associations

The focus group with members of the Kula and Pukalani Community Association was convened on November 12, 2018 at 6:00 PM at the Kula Community Center. A separate session was held with the Makawao Community Association on November 13, 2018 at 5:00 PM at Makawao Elementary School. Participants are listed in Table 7.

**Table 7: Upcountry Community Associations Participants**

| <b>Name</b>                                     | <b>Affiliation</b>   |
|---|--|
| <b>Kula and Pukalani Community Associations</b> |  |
| Dawn Freels                                     | Pukalani Community Association   |
| Gina Flammer                                    | Kula Community Association   |
| Dick Mayer                                      | Vice President, Kula Community Association<br>Vice Chair of Maui Island Plan |
| Heather Mueller                                 | Kula Community Association   |
| Doug Sheehan                                    | Kula Community Association   |
| <b>Makawao Community Association</b>            |  |
| Jeremy Baldwin                                  | Makawao Community Association  |
| Duane Hamamura                                  | President, Makawao Community Association                                     |

A common theme with these residents was the continuation of reliable water service to Upcountry residents, businesses and farmers. There was general appreciation for water provided by the EMI Aqueduct System.

While participants understood their relationship with the EMI Aqueduct System, they believed that not all Upcountry communities are served equally by the system. They said that the EMI Aqueduct System supports the two water treatment plants for Kula, including Olinda / Upper Kula and Pīiholo Water Treatment Plants only in times of drought. They believe there needs to be clarification on the actual Upcountry dependence on the EMI Aqueduct System.

Another theme, expressed primarily in the Kula / Pukalani focus group, was that water is a public trust, and should not be controlled by a single private corporation. They suggested a restructuring of public utilities to include a water utility that would be administered similar to the current electricity in the public utility structure. Further, profit made from use of this public trust should be invested in public need. They strongly advocated for lease restrictions that would prohibit using water for private development projects.

It was also discussed that, with the conversion of A&B to a real estate investment trust, participants believed that water for agricultural uses is inconsistent with a company whose primary purpose is real estate.

It is noted that these Upcountry residents felt that East Maui agricultural and cultural practitioners should have the water they need for their activities. They understood the need for flowing cold water in kalo cultivation.

One person was very concerned about making any change to the system unless it was really needed. He said that the system has worked well for over 100 years, and that any change should be carefully studied to make sure that the modifications are necessary and make sense.



## Ranchers and Farmers

A focus group with farmers and ranchers was held on November 12, 3:30 PM at the Kula Community Center. Participants are listed on Table 8.

**Table 8: Ranchers and Farmers**

| <b>Name</b>         | <b>Affiliation</b>  |
|---------------------|---|
| Brendan Balthazar   | Diamond B Ranch   |
| John Dobovan        | Hawaii Farmer's Union United,<br>Haleakala Chapter<br>Founder of Kula Haven Farms (trout<br>and watercress)   |
| William G. Jacintho | President, Maui Cattlemen's<br>Association<br>Co-Owner, Beef and Blooms (Hawaii's<br>First Certified Organic Ranch)   |
| Annette Niles       | AKN Ranch   |
| Pam Shingaki        | Farm manager at Kula Agricultural<br>Park, Maui Agricultural Research<br>Center, University of Hawaii College of<br>Tropical Agriculture and Human<br>Resources |

This group stressed that water from the long-term water lease should be allocated to agriculture first, and that the priority should be for local farmers, ranchers and flower growers who are actively in production, as determined by tax status.

They tended to oppose mono crops that would not be produced by local farmers. They noted that coffee production for Starbucks was recently cited in the media as a possibility; this was not consistent with local farming. Also, it was noted that pongamia orchards, an alternative being considered by A&B, would bring invasive species to the area and is poisonous for cattle. They believed that A&B's recent conversion of sugar lands to ranch lands was an effort to lower taxes because of lower production value. They reported that these lands continue to have sugar cane and are not used for ranching.

They were supportive of East Maui kalo and agricultural efforts; this was consistent with support of local agriculture.

This group strongly advocated for quantification of water under the water lease. They felt that a long-term lease without indications of how the water would be specifically used would be irresponsible. They suspected that, while some of the water might be reserved for the 23,000 acres of Important Agricultural Lands, there may be less restrictions on water use of the remaining 10,000 acres of the 33,000 acres in Central Maui. They speculated that these lands could eventually be used for non-agricultural uses.

Participants wanted to see a cap on potable water for Upcountry needs, though they stressed that residents should get water they need. When that cap is reached, alternative sources such as wells should be used.

### **Mālamalama Maui**

A focus group with Mālamalama Maui was held on November 15, 1:00 PM at Sacred Gardens in Makawao. Participants are listed in Table 9.

**Table 9: Mālamalama Maui**

| <b>Name</b>      | <b>Affiliation</b>                  |
|------------------|-------------------------------------|
| Jeannine Bourque | Mālamalama Maui<br>The Seeking Root |
| Melinda Carroll  | Mālamalama Maui<br>When We Shine    |
| Loxley Clovis    |                                     |
| Daniel Collins   | Akaku Media                         |
| Rebecca Rhapsody | Mālamalama Maui                     |
| Lehua Simon      | Mālamalama Maui                     |

Mālamalama Maui is a two-year community project that uses arts and culture to help residents to “creatively make the place they live in.” This group collaborates and partners with community groups to engage their networks to use arts and culture in defining agriculture, with a focus on the Central Maui Valley lands that are proposed to receive water under the long-term water lease. The three types of partners that work with Mālamalama Maui include youth education, civic engagement and farmers.

*Preliminary Community Issues*

Central to participants' comments was a strong emphasis on collaboration and peacemaking. They seek to engage in meaningful partnerships with educators, environmentalists, farmers, and others who are interested in seeking mutually beneficial solutions. Participants reported that Mālamalama Maui recently helped to convene an interactive roundtable that included A&B, EMI, Maui Tomorrow, farmers and others interested in water issues. They felt that there was a lot of polarization at this meeting, and that there remains a lot more work to be done to have productive conversations.

Participants noted past corporate practices are no longer relevant in current times and as the community plans for the future. They felt that A&B, like other large agricultural companies, made their profits from colonialization and industrialization. However, resource stewardship of public resources is shifting. The community is increasingly adamant about being part of the decision-making process and "behind close door agreements" no longer work.

Hence, for participants, the decision on a long-term water lease is not just between the State and BLNR. They believe that the community needs to have a meaningful say in how much water is allocated, who uses the water, and how the water is used.

### Huelo and Ha'ikū

A focus group with residents and farmers from Huelo and Ha'ikū was convened on November 15, 2018, 6:00 PM at Hale Akua in Huelo. Table 10 lists participants.

**Table 10: Huelo and Ha'ikū**

| <b>Name</b>           | <b>Affiliation</b>                      |
|-----------------------|---|
| Bodhi Be              | Wailele Farms at Twin Falls             |
| Neola Caveny          |   |
| Diane Dahl            | Farm Owner                              |
| Lucienne deNaie       | President, Ha'ikū Community Association |
| Jen Yasho Friedlander |   |
| Robbie Friedlander    |   |
| Don Grantham          |   |
| Moke Kahiamoe         |   |
| Char O'Brian          | 'Aina First                             |
| Dana Ollech           | Honopou Road Association – Ohana        |
| Megan Loomis Powers   | Farmer                                  |
| Jill Richards         |   |
| Lynn Scott            |   |
| Ernest Shupp          | President, T.A.R.O.                     |
| Jette Slater          |   |
| Doug Stone            | Kailua HOA                              |

*Preliminary Community Issues*

| <b>Name</b> | <b>Affiliation</b>                 |
|-------------|------------------------------------|
| Ute Viole   | Waialele Farms, Inc. at Twin Falls |

Most of these participants live in the Huelo watershed area owned by the State of Hawai'i. They generally live downstream of the EMI Aqueduct System and many live and farm in areas adjacent to streams that were the subject to the CWRM's recent IIFS decision. .

As landowners and farmers downstream of the EMI Aqueduct System, two major concerns emerged among participants. First, many reported that that EMI Aqueduct System is not maintained in a manner that was safe for people in the area and located downstream. Focus group participants said that portions of the ditch area are so overgrown with vegetation that people visiting the area are injured if they stumble upon or fall into ditches and flumes that are not readily visible. Two bridges on State land often flood in this wet season, and people cannot drive to their residences until the water level subsides. It was felt that the bridges are unsafe because of lack of maintenance.

Also, people who visit popular areas in the State Forest Reserve, such as Twin Falls and area trails, are subject to overgrown landscaping and flash flood conditions. Participants noted that neither EMI nor the State has participated in maintenance of the EMI Aqueduct System and trails in this area, even though this area attracts residents and visitors alike.

Also, participants said that EMI personnel do not notify residents in the area when the gates open to allow downstream flow. The sudden onrush of stream water has endangered several people who happened to be in/near the stream at that time.

It was noted that, with the closing of the sugar plantation, the low level of maintenance has deteriorated even further given the reduction of EMI staffing to, reportedly, about eight people.

A second major concern with this group is fairness in how they, as a community, have been treated in two ways. First, they reported of the 25 streams in the petition before CWRM, only three streams in the Huelo watershed were considered kalo streams and designated for full flow.<sup>7</sup> While they agreed with such designation in other watersheds, they felt more streams in their area should have been considered.

<sup>7</sup> The purpose of this section is to summarize focus group participants' comments. The number of streams focus group participants cited was their impression and may not reflect the CWRM petition.

Another fairness related concern raised by the group is that residents and farmers in Huelo and Ha'ikū have very limited rights to watershed streams. Except for those whose properties have deeds allowing stream water access via pipes, most cannot access stream water. They cannot use the water for agriculture or domestic uses. Participants noted that they are off the electricity grid, and they are very interested in using stream flow for hydroelectricity. It was reported that there have been drought times in which residents had to truck in water even though they live next to streams. It was also said that those who were fortunate to have wells on their property share their water with neighbors during these times.

### Environment and Sustainability

A focus group comprising people interested in the environment and advocate sustainability principles was held on November 16, 2018 at 11:30 AM in the Maui Beach Hotel Molokai Room. Table 11 lists participants.

**Table 11: Environment and Sustainability**

| <b>Name</b>      | <b>Affiliation</b>   |
|------------------|--|
| Lucienne deNaie  | Member of Executive Committee, Sierra Club Maui Chapter  |
| William Jacintho | President of Maui Cattlemen's Association<br>Former teacher in Agriculture and Natural Resources at Maui Community College |
| Char O'Brian     | 'Aina First  |
| Rob Parsons      | Mayor's Office of Economic Development<br>County Liaison, East Maui Watershed Partnership                                  |
| Albert Perez     | Executive Director, Maui Tomorrow  |
| Rob Weltman      | President of Executive Committee, Sierra Club Maui Chapter   |

A theme of this group was process in various forms. Participants felt it was highly inappropriate for the applicant of a long-term 30-year water lease to prepare the EIS that discloses impacts. They believed that this precludes other lessees, and implies that the water lease will be issued. Participants believe that DLNR should prepare the EIS, and prospective lessees would then be asked to demonstrate how their applications are consistent with EIS findings and analysis.



*Preliminary Community Issues*

Another process-oriented theme was management. Participants stressed that it is highly irresponsible for the State to hand over long-term management of a public trust to a for-profit corporation.

Further, they believe that day-to-day management of the EMI Aqueduct System needs to be restructured. Currently, it is reported that the public has very limited access to the system as EMI maintains locked gates. System upkeep is unknown and they suspect much of the EMI Aqueduct System is in disrepair. Participants have asked for maps and the State has not responded. They believe that the State should have its own maintenance monitoring system, and allow responsible community members access for community-based monitoring. Such community access should also allow for cultural practice.

Another theme for this group was the type of agriculture that the water would support. They felt that a display produced by A&B that illustrated possible diversified agriculture was neither credible nor sincere. Participants noted that media coverage indicated that A&B has a potential agricultural partner. However, participants noted that there is no indication if this is real. Further, this group believes any agricultural activities supported by a State water lease should be local-based and not threaten the social environment with chemicals, downwind spraying and incompatible or potentially harmful crops, such as pongamia.

### **Ke'anae, Wailuānui – Ko'olau Moku**

A focus group was held with residents, farmers and cultural practitioners on November 16, 2018 5:00 PM at the Ke'anae School. Table 12 lists participants. Note that several people arrived after the session started and every effort was made to have them sign in; some may not have done so.

**Table 12: Ke'anae / Wailuānui – Ko'olau Moku**

| <b>Name</b>     | <b>Affiliation</b>             |
|-----------------|--------------------------------|
| Ume Binstock    | Ha'ikū                         |
| Loxley Clovis   |                                |
| Jesse Davenport |                                |
| Avi Elkayam     | Nā Moku 'Aupuni 'O Ko'olau Hui |
| Joe Gardner     | Nā Moku 'Aupuni 'O Ko'olau Hui |
| Hea             | Nā Moku 'Aupuni 'O Ko'olau Hui |
| Blasé Kaauamo   |                                |
| Josyah Kaina    | Hana                           |
| Kaleikauwaka    | Nā Moku 'Aupuni 'O Ko'olau Hui |
| Kane Kanakaole  |                                |

*Preliminary Community Issues*

| <b>Name</b>                           | <b>Affiliation</b>                               |
|---------------------------------------|--|
| Jerome Kekiwi, Jr.<br>Junior          | Nā Moku 'Aupuni 'O Ko'olau Hui                   |
| Isabella Keegan                       | Hana   |
| Michael Krupuick                      | Nā Moku 'Aupuni 'O Ko'olau Hui<br>Resident Owner |
| Katelynn Oliveira                     | Hana   |
| Rebecca Rhapsody<br>Khadya Striegel   |  |
| Kili`ohu Thomas                       | Kawaiianu o Hāloa                                |
| Kimberly Thomas<br>Jonathan Wakzakpol |  |
| Edward Wendt                          | Nā Moku 'Aupuni 'O Ko'olau Hui                   |
| Mahealani Wendt                       | Nā Moku 'Aupuni 'O Ko'olau Hui                   |

The prevalent theme in this focus group was the foundational impact of generational change and legacy. Participants shared an inherent personal angst that permeated ethnic identities and communal cultural practices.

This focus group repeatedly cited instances of multiple 'ohana (family) generations that had to deal with the transition from full stream flow to EMI stream diversions. Participants stressed that wai (water) is life, the starting point for Hawaiian culture in all forms, including food, soft fiber, medicine. The wai from streams contain food sources and fed kalo patches and agricultural activities. In the past, keiki (children) played in streams and intimately learned about nature and the ecosystem. Participants personally experienced these activities and it pained them that their ability to pass this legacy on to their children and grandchildren has been hindered by EMI stream diversions.

Kupuna participants noted that getting water back in the steams has been occurring over decades, starting with their own kupuna. Several people said, "We are weary of this fight." Further, this group was unique in having many young people; they acknowledged the sacrifices of their kupuna and are prepared to fight for their children, again stressing the multi-generational effect of water leases in East Maui.

Another perspective that was a common theme is the natural order of the environment. It was often noted that Hawaiian cultural practices are based on using the environment in its natural state. As one person said, "We are servants of nature." They described the ahupua'a land system and the 'auwai (ditch/canal) that fed their agricultural fields in a systematic way.

They stressed that the flow of streams into the ocean has also been an integral part of cultural resources. Stream fish, shrimp and mollusks need the interaction between streams and nearshore waters and this allows for healthy ecosystems and productive food gathering.

Without exception, participants in this focus group wanted to see streams restored and diversion structures entirely removed. While they felt that releasing the kalo streams as initially done by A&B in 2016 and as now required under the IIFS decision is a step in the right direction, they believed that continued stream diversions in this area need to end.

#### **4.1.3 Focus Group Issues**

This section summarizes topics raised by participants in response to the common four questions (see Section 4.1.2.2).

##### **4.1.3.1 Relationship to A&B, EMI, EMI Aqueduct System, and Proposed water lease**

Many participants, regardless of their focus group, lived in an Upcountry community. All acknowledged their dependence on domestic water that are part of the EMI Aqueduct System. They hoped that the EMI Aqueduct System would continue reliable service. They also believed that not all Upcountry communities are served equally by the EMI Aqueduct System. Some communities receive water from the EMI Aqueduct System only in times of drought. As several said, "It is the exception, not the rule." There was no mention that EMI is contracted to operate the two water treatment facilities not located in the State watershed areas.

They distinguished between EMI Aqueduct System as a water source, and MDWS as the operator of treatment and transmission activities. Participants were aware that there were almost 2,000 Upcountry properties that are still not metered. It was felt that the cost of connecting to the MDWS system was too expensive. In addition to the reported \$6,000 for a water meter, a property owner must pay for connection to the main line and other appurtenant requirements. Depending on distance and physical conditions, these costs are more like \$20,000, which is not affordable for many people.

Many participants knew EMI employees in the past. They noted that in the past, relationships between EMI and the community were much more amicable. Some employees used to release water to help downstream residents and farmers. They notified residents of gate openings in a timely manner. Two participants had unique relationships with A&B. One is President of the A&B Sugar Museum; the other, a descendent of one of the company's founders.

### **Community Interaction**

Often, when participants talked about A&B and its subsidiaries, they distinguished between the company in the past and what it has become today. This section summarizes instances that help to define their relationship with the company today.

**Interest in land leases:** Participants, particularly ranchers and farmers, expressed interest in leasing land from A&B. Frustration was shared about previous efforts of local farmers in negotiating leases with the company. Reportedly there has been a policy of a minimum of a thousand acres, which most local ranchers and farmers could not afford. One person described a situation in which he was willing to lease a large tract, then sublease affordable portions to other farmers; this was not permitted.

**Lack of community engagement:** It was noted that the community hears about A&B's activities mostly through the media or the "coconut wireless." Participants pointed out several news articles regarding possible land sales and agricultural partners published just prior to the focus group sessions.

Participants believe that A&B is not interested in an active relationship with the community. Their impression of the aforementioned round table (see Mālamalama Maui focus group) was that company representatives did not seem interested in people's suggestions and opinions.

Further, East Maui residents repeated several times that the company has not made contact or met with their communities for a couple of years, and have not been reaching out as it has in the past.

**Lack of community access and oversight:** Participants advocated for community access to the EMI Aqueduct System on State lands. They said that they have been asking the State for maps of the EMI Aqueduct System and that these requests have not been answered. They said that EMI maintains locked gates on State land, and this prohibits public access on public lands. Participants have been seeking access to 1) observe and monitor the EMI Aqueduct System handling of water, a public trust, and 2) engage in cultural practices. They were willing to limit access to responsible parties. Reportedly, such requests have not been permitted by the company.

Some believed that the portion of EMI Aqueduct System on State land is owned, at least in part, by the State. This means it is not private property and that community access to the EMI Aqueduct System should be allowed.

**Divisiveness:** Participants in each group supported local water users. East Maui supported Upcountry use of water and Upcountry likewise supported East Maui residents and their rights to stream water for cultural purposes. All groups supported local farmers and their right to water in the water lease. Participants wanted to see Central Maui be a place for a wide diversity of successful agricultural activities operated by Maui farmers.

Participants said that A&B is trying to create the impression that East Maui is trying to take away the water from others, including Upcountry residents. Participants reported that there has been a brochure circulated by labor unions that claimed that if East Maui gets their water, people will lose jobs and Upcountry's water supply will be threatened. East Maui participants related this divisiveness to corporate arrogance, willing to divide families for its own profit.

### Legal Proceedings

The relationship between many participants and A&B has been defined by contentious proceedings in the legal system. For many years, CWRM has received petitions on behalf of Native Hawaiians to restore certain East Maui streams. They have been joined by environmentalists. CWRM issued its IIFS Decision and Order in June of 2018.



Several focus group participants were engaged in the petition requesting IIFS, as the petitioner, the petitioner's representative and expert witness. Although some components have been resolved, participants involved in these proceedings continue to be wary of A&B's objectives and plans.

During the focus group sessions, Sierra Club members said that they are requesting a contested case hearing on A&B's request for time extensions on a revocable water use permit, a temporary permit in lieu of a long-term lease. BLNR subsequently rejected this request.<sup>8</sup>

#### **4.1.3.2 How Changes May Affect Participants Personally or Other People They Know**

##### **Need Credible Basis for 30-Year water lease Application**

Participants said that it is difficult to identify how specific changes will affect the community because they do not have information to gauge the extent of change a 30-year water lease to a single entity would bring. They questioned the basis for requesting a long-term water lease, especially considering that A&B appears to be out of the agriculture business when it became a Real Estate Investment Trust. It was stressed that more information is needed on how the water would be used for agriculture in Central Maui. Specific questions included:

- How much water is A&B currently actively using? For what purposes?
- How much water is A&B diverting but not using? In other words, how much diverted water is being wasted / dumped?
- How much water is being stored by A&B?
- How much water does A&B realistically need for Central Maui and specifically for what agricultural purposes?

---

<sup>8</sup> Perry, Brian. "BLNR denies contested case for A&B water leases." *The Maui News* December 8, 2018.

Participants also stressed that the amount of water from the EMI Aqueduct system serving Upcountry Maui, which was identified as 6 MGD, is a very small portion of the total water being diverted. They believe that Upcountry water needs should be put in perspective of the overall water quantity that would be made available with a 30-year water lease. Answering the aforementioned questions would provide the community a realistic sense of scale and need.

### **Suspicion that 30-Year Water Lease Will Eventually Support Urbanization**

Without answers to the above questions, participants suspected that eventually water from State lands will be used to urbanize at least a portion of A&B land holdings. They cited that only 23,000 acres of Maui A&B's 33,000 Central Maui acres are designated Important Agricultural Lands (IAL). While it may be difficult from a land use entitlement perspective to convert these lands for urban uses, conversion of the remaining 10,000 acres may be a more feasible opportunity. Participants strongly felt that the water lease agreement should spell out specific uses allowed and what happens if A&B vacillates from the agreement.

If unforeseen urbanization did occur, participants were very concerned that the area's infrastructure would be significantly impacted. They did not believe that such development would be curtailed by public agencies and public officials interested in increased tax revenues.

### **Long-Term Water Lease Will Continue Unresolved Issues**

East Maui participants noted that, while CWRM fully or partially restored certain streams, stream restoration is still unresolved. Many want to see more streams restored to their natural state and the removal of diversion structures was advocated for all fully restored streams.

Further, for Huelo and Ha'ikū participants, the recent CWRM IIFS Decision and Order just scratched the surface of stream management in their area. Maintenance and management of the EMI Aqueduct System continue to be major issues, as well as water and stream rights for those live and farm in the State watershed areas.

### **Change in Upcountry Water System**

Participants doubted that MDWS could adapt to changes if EMI were to curtail or discontinue providing water and services as is currently occurring. They said that MDWS is already experiencing difficulty in maintaining the Upcountry Water System now, and that any challenge would likely not be met.

Residents were concerned that if domestic water was limited in any way, then MDWS would need to pump water from wells. This would be more costly than receiving water from the EMI Aqueduct System and MDWS would likely pass this cost to the water users. Likewise, well development would also cost money and water users would end up paying through water fees.

### **Maintenance of the EMI Aqueduct System**

Regardless of changes in stream diversion and restoration, participants believed that the EMI Aqueduct System infrastructure is not being maintained or managed. There were stories of the need for better maintenance, including downstream scouring in flooding conditions, dry streams with only intermittent release from gates, and washed out bridges.

One recollection is of a site visit with County officials of the EMI Aqueduct System. The road was so overgrown that vehicle almost drove into the ditch. When one person exited the vehicle, he stepped into the ditch and water reached his knees.

Another instance of ineffective stream management is related to mosquitos, which became more prevalent during times when stream flow was low due to diversions. The population of mosquito fish, which ate the mosquitos, eventually decreased as the ponds dried up. Additionally, the population of toads, which also controlled mosquitos, decreased with EMI's increased spraying of Roundup, a chemical weed killer.

Participants reported that EMI staffing has decreased to eight people and they were not hopeful that maintenance and management would improve in the near future.

#### 4.1.3.3 Balance in Water Resource Allocation

##### Water is a Public Trust

Participants said that King Kalākaua agreed to have A&B construct the EMI Aqueduct System provided that the people are not harmed in any way. It was noted that A&B has been diverting streams for over a hundred years and participants did not believe that the company has lived up to its agreement of taking care of the people. The diversion of public water for private purposes has had significant impact on the Hawaiian community.

Participants in several focus groups stressed that water is a public trust, as provided for in Article XI of the Hawai'i State Constitution. For them, balance meant that the State needs to control water for the public good, and not relinquish such a large amount of water to a profit-driven corporation for three more decades.

Suggestions to create a true balance of water resource allocation included:

- DLNR should be preparing the EIS, since it is responsible for stewardship. The EIS would then be the benchmark for evaluating water lease applications. Allowing one prospective lessee to prepare the EIS was considered a travesty by some. It assumes that the applicant is the only lessee and precludes other options that might be more beneficial in the public interest.
- Establish a new publicly-owned water utility, similar to the electric utility. The water utility was envisioned as a non-profit entity that would be governed by an independent commission. The public utility would maintain the infrastructure for a public service, and work could be contracted out to qualified companies. EMI, for example, might be contracted to maintain the EMI Aqueduct System.
- Further balance in the utility scenario is to use proceeds from the water utility to meet public need, such as affordable housing and education. The determination of areas public need and funding recipients would be made by a consortium of public agencies, non-profit groups, and community leaders.

Regardless of how change occurs, participants strongly felt that there needs to be a paradigm shift on how water, as a public trust, is managed. As one person summarized, "It is poor public policy to have a public trust relying on a private corporation."

### **Support for Sustainable Local Agriculture**

Balance for many was creating an environment where local agriculture is fully supported. With the closing of the last sugar plantation, participants believed that there is an opportunity to fully diversify and support local farmers, ranchers and flower growers in Central Maui and Upcountry Maui. They described a “robust local agriculture” that would significantly reduce importing food. This balance included motivating prospective young farmers to invest time and energy in local food production.

Participants envisioned an agricultural environment that would improve the physical environment with practices that minimize chemicals and utilize responsible tilling practices that avoid air quality impacts and sedimentation. It was noted that sustainable agriculture helps to sequester carbon and control climate change.

Further, it was constantly reiterated that support for local farmers in Central Maui does not deter from support for East Maui farmers and cultural practitioners.

In this context of sustainable agriculture with local farmers, participants felt that the agricultural alternatives raised by A&B so far were inconsistent. They said mono crops produced by an outside corporation would continue the “industrialization of agriculture.”

### **Hawaiian System of Water Use in Agriculture is Balance**

Participants cited the Hawaiian system of ahupua'a watershed management as a sophisticated and successful balance of using natural resources in an efficient and reliable manner. The practice of allowing full mauka to makai stream flow provided for a healthy ecosystem, where it provided a reliable source of water that circulated through 'auwai (ditches) leading to lo'i (taro fields), orchards and other crop lands.

Using ahupua'a watershed management principles would require changes in how people think about and use water. Water conservation needs to be taken seriously on both a personal and community level. This implied that giving a private corporation access to large quantities of water every day, for yet unknown uses, over a 30-year period would be inconsistent with the basic principles of ahupua'a watershed management.



### **Need for More Farmers in East Maui**

Participants in several focus groups pointed out that, while East Maui participants now have full stream flow in several streams, there is another problem that was brought about by stream diversions in the past. As streams dried up, the availability of constant flows of cooling stream water decreased significantly. The reduced ability to grow kalo, feed families, sell produce and economically survive caused many families to make difficult decisions. Parents had to drive long distances every day for employment and families were broken up for long periods of time. Eventually, many families decided it was best to move to other areas, another island, or even leave Hawai'i. Some likened this significant effect as "cultural genocide."

This exodus, while painful from personal and community perspectives, also meant that there were less and less people who know how to grow kalo. Focus group participants reported that, in valleys that supported dozens of people, now support "a dozen, if you're lucky."

East Maui participants described current efforts to clear land and restore kalo fields, one at a time. It is often a communal endeavor, where people help each other out.

This is not enough, however. Participants said that a few people are returning, or considering returning, but it is a slow process.

A somewhat related aspect is the need for restoration and reparations. Participants advocated some form of reparation for East Maui residents and farmers who have negatively impacted by stream diversions for over a century.

### **Still Need Resolution for Downstream Users in Watershed Areas**

While participants living in Huelo and Ha'ikū supported stream restoration in Ke'anae, they stressed that there is still much to be done to balance conditions and public rights in the Huelo Watershed Area. As previously discussed, downstream users reported that the lack of ongoing EMI Aqueduct System maintenance continues to cause environmental degradation and public safety hazards.

They said that there is little, if any, communication between EMI and watershed residents and farmers, and there seems no possibility of near-term interaction. Huelo participants pointed out interaction, whenever that occurs, will need accurate information about system conditions and correct maps with accurate stream locations and identification. A participant cited a map of a portion of the Huelo watershed that depicted inaccurate stream locations and identification.

Also unresolved is fair and equitable access to streams and their resources. These participants expressed much frustration that, unless their property deeds specify stream access, they cannot use stream water in any way even in drought conditions. Further, visitors who hike trails and visit Twin Falls are exposed to unsafe conditions due to lack of adequate ditch management. They reported that efforts to work with the State and EMI on these issues have thus far been unsuccessful.

#### 4.1.3.4 “One Thing”

At the end of each focus group, participants were asked to share one thing that they personally wanted the reader of this SIA to read. The facilitator had announced at the beginning of each meeting that the meetings were being recorded. In this portion of the focus groups, she committed to replicate their comments as closely to verbatim as possible. This section lists “one thing” from each group.

##### **Upcountry Community Associations (Kula, Pukalani, Makawao)**

- From a historical perspective, the proof is in the pudding. EMI has been running this very efficiently for over a 100 years. We’re playing with something that we don’t know what the new outcome might be. Say another company takes over and they have no clue on what’s going on. We lose this valuable resource that’s been here for a long time. We’ve seen history and what they can do. Why would we want to change it? If it’s not working, not good, not efficient, I’m all for changing it. But I’m not for changing just for the sake of changing. If you take this water away from EMI, what will happen. I hate to see all this water go to the ocean. That’s going backwards. I agree with water for shrimp, for taro farmers. But I’d like to see some numbers. What are we talking about? The problem is we have no way to hold the water. If we had reservoirs, and this water came cranking out of the other side of the island every day, we wouldn’t have a problem with water at all. We just can’t store it. That’s what we need to look at. The County should

*Preliminary Community Issues*

buy cheap land from EMI and put in reservoirs. The whole system is already set up.

- Number one thing is we need a lot more information. We should look at other islands and see what they did with similar systems. Information about what a public utility would look like and how that process might happen. On maintenance, it's already changed – how could other entities would maintain the system is really important. Information about ways this public utility could be used by the public. Who owns the current infrastructure?
- I don't think a private company should own a public good. Thirty years is a long time. If A&B is a for profit company owned by shareholders, how can we give them the lease? What if they go belly up? It may not be in their best interest to own the EMI system. If they sell big chunks of land to other people, that's a huge unknown. Need to go through a public entity.
- Too many people don't trust A&B and EMI to do what they're going to do.
- A&B is no longer an agricultural company. It's a real estate trust. In fact, A&B is not allowed to operate EMI anymore. As an REIT, can only buy, sell, lease land. Cannot legally operate an agricultural operation. That's why they're going to other companies to lease their land and do agriculture. I don't trust a real estate company to look out for the best interest of Maui. Therefore, I'm very leery of giving lease to real estate company short term or long term. Nor do I even know if a real estate company can operate the irrigation system. They would have to hire or set up a new company that would lease from A&B. Real legal issues that need to be addressed in EIS to see if they're allowed to have the water lease. There are laws that govern what an REIT can do. Whole series of legal issues that need to be addressed. If they sell Maui lands, can they transfer water lease and rights? Most of these decisions are made in Honolulu. They think of us as a third world country.
- I would like to see fairness so people get the share they need. We need this water. I don't see opposition from my end as far as trying to get that water fairly.
- Historically, Central Maui was desert. Man transformed that. People are all over the map of what man's impact should be. You fly in and see green – that is two thumbs up. Too easy for me to respect that there are different opinions. Not everybody has embraced our history. We are diverse now. Activists often have disproportionate impact on land use and water. A&B has been tone deaf to us because all power on Oahu. For example, proposed development for Hāli'imaile was to connect Makawao to Pukalani.

That does not make sense. Hāli'imaile could be so much more in and of itself.

### **Farmers and Ranchers**

- The future of our food supply is in the hands of our farmers. I do not want to see Central plains become another Mililani which happened on Oahu. Complete disaster.
- Make sure the 33,000 acres stay in agriculture production. If you want water, stay in ag production. If you want for development, that's a different story.
- Would like to see A&B follow through with all of the commitments they made in public in keeping 33,000 acres in active ag. With that, the water is essential. Cannot do anything without that water. Whether livestock, row crops, flowers. They always say diversified ag. I object to another single crop like sugar, another coffee plantation. Want to see opportunities for local farmers.
- Find a reasonable balance in system. How much water is left in the streams to be used? DHHL has first pick. They have a percentage due them. Maybe 10 percent in Kēōkea area. What are their future needs? IAL is next priority. That should have committed water. HC&S / A&B has dibs on water. I don't know how that plays out. Really bothers me that Kula 1800 has a reserve. I don't know where that came from. That is 1,800 acres of private property originally owned by Maui Land and Pine. That is a lot (almost 25 %) of the 1.5 MGD. The next water available is MDWS. Finding the proper balance means 1) what is available to begin with, 2) what is committed, 3) what is left, 4) what are future plans as in Maui Island Plan
- Now all quasi. Everybody says we need the water for this; we need the water for that. So how much water do we really have once you take care of kalo and habitat? After that then. A&B has to figure out how much water is for the farmers.

### **Mālamalama Maui**

- Water is the most important matter in my life. Without water, there is no life. Looking closely at history, A&B's history, the legal standing of the water, and the current situation, reveals that continuing to allow A&B to divert the public's water out of dozens of watersheds will continue to have significant negative social and environmental impacts for the island of Maui.

*Preliminary Community Issues*

- Because of everything that was done, A&B wants to use water as detrimental to the people. For me, as a Hawaiian, I feel all my ancestors will come for this land. For 140 years, these other people were able to come and rape the land, the people and our culture. Our culture is the solution to the destruction that has occurred. Spiritually, sacredly, I know whoever wants to buy the land they have so much work if they do not do this the right way. Spirits, ancestors that come against them.
- I want to remind whoever is analyzing this should know that this island is a living being, without whose help and full thrive ability, cannot continue to sustain the life it has. As our population grows, this is an opportunity to change perspective of restoration. And about seeing these living systems that are dependent on our stewardship and how we manage ourselves.
- This is an opportunity for forward thinking. Let the past inform the future. The perspective and paradigm that man knows future – that time is ending quickly. Please choose methods that honor how nature does things. We can't think that we know best. We only have one chance. Once we f\*\*\* up we cannot turn back.
- My one thing is access. The sugar industry had access to large amount of water. It was gifted to them at the detriment of others. Access for people for traditional hunting trails, to waterfalls, to water supply, to beauty. We don't know the numbers and what will be grown there. The know quantities, e.g. what kalo needs, should be determined so we know what we have access to.
- What keeps coming to mind is this imbalanced idea that we can put a price on water. To me, that means we are putting a price on life. How much does a raindrop cost? That is the wrong way to go about it. We should let it flow from sky, down the mountains, and wherever it needs to go.

**Huelo and Ha'ikū**

- A professional engineering firm needs to come in, assess situation, and estimate how much it would cost to modernize the system and upgrade for public trust. We can pay that bond back by user fees. A Public Utility Commission can regulate. I have seen this done in Norway.
- Native cultural rights and ecology. The first one, Hawaiian rights, should be first. Always.
- Eminent domain – A&B should be forced to sell at a high price so their stockholders don't suffer. There should be a bond. The land



that controls the water should be in public hands. A&B shouldn't lose money, but their stocks should be frozen at current level and land should be bought out by eminent domain. Should be selling back to County or State.

- A&B has not a good track record. Pineapple fields saturated with plastics. Damage in massive amounts. Destroying in massive amounts. Cannot grow on pineapple fields. Has to go to public trust.
- We need to consider the origination of water and maintain that origin. Include people who were there, the nearshore and ocean.
- The water belongs legally to people. People who live in these valleys should have a voice and a say in the legal conversation of the water.
- I want that everything that has been said in the past 19 years, and in this meeting, is not just put in a report but something is really done about it.
- Public water is not private. Largest private water company in the world.
- It is absolutely ridiculous that we have been beating our head against a brick wall for close to 20 years! The Waiahole Ditch case that showed water is a public trust.
- Follow through on enforcement.
- In a community, you don't destroy what nurtures the life of the land. Their history is destruction of land for profit. Now it is way diminished from what it is now. Pollution. Public trust may be the way to go. Needs enforcement. Land, water, air. Everything has to be enforced by law. Land is sacred, water is sacred. What they are planning to do may them make a lot of money, but it will be all exported. The land will not be nurtured. There will be chemicals. They will take water and sell it. Will be destructive to all generations that come after. That is a crime. They are destroying the life opportunities of us and our descendants.
- We need impartial enforcement.
- Let streams flow as they should. I'm not for privatization.
- We need to take what sustains us seriously. We are making up for a hundred years of abuse. Now the area is destabilized with

invasive species because areas were left dry. Mountain to the sea flow and a consortium of all interests should be at the table.

- The system should be efficient and publicly managed for the benefit of all. Those who live on the stream and have cultural practice and rights should be on top of the consideration / justice. The communities that live along the stream should be recognized and have rights to enjoy the uses of the streams. And we need to dedicate ourselves to a management system that includes those who live in lease area as well as those who want use of water. I personally believe we should abandon parts of the system. We should have an engineering company evaluate portions that do not work. We need to take care of the watershed in partnership with A&B – joint and fully participate.

### **Environment and Sustainability**

- There is an unavoidable conclusion that public resources have to be managed by public, not by a corporation.
- We need to know what's available after things are in place. We need to know future needs and figure out the possibilities. If there is not enough water, then we allocate and find more sources.
- We don't even know what's available. The system was built at a time when the Model T was invented. Lowry Ditch built in 1890s, before cars were invented. We don't know what's available because we don't know what we have. If it were repaired, and we know what's available and then we can make a decision.
- By not having good impartial inventory, this feeds into the risk of ditch not being managed, and liability. We need an analysis of the entire system because of the risk of failure. Lining is inconsistent. The conditions of watershed mauka of these ditches need to be evaluated. At Iao, the big rains scour the whole area and the native species are much less likely to slide.
- Take care of watershed so there's water enough for everybody to share through cooperative management and monitoring and support communities in the watershed, as well as those outside the watershed.

### **Ke'anae / Wailuānui – Ko'olau Moku**

- I don't know anything in life that is so heartbreaking than the theft of water.

*Preliminary Community Issues*

- I want to know if sale is contingent on obtaining water. If it is, we're wasting our time here. If this sale goes through, they will get water by hook or by crook.
- What they should do is release all this wai. Then use all the water on the other side, the wells, even gray water at the sewage treatment plant. They're shooting down over 60 MGD in Kahului. This 80 to 90 MGD they want does not exist right now. They're down to 20 million. Their wells can produce millions of gallons every day. All of this has to be accounted for before they can come in and take more water. Remember the County and whoever else wants to take water from us, we have never challenged them. Not at all. And let us keep it that way because that is the public trust.
- Do what's right for us, the people. Too many generations we've been fighting. I don't want to see my son have to fight. It started from my great grandmother to me.
- We're going to keep fighting. We're cannot give up. We have to do it for this next generation. Our tutus taught us how to do this, how to live this life. Why do we have to change because of their greed? That's not happening.
- This school had 63 students at one time. Water impacted our community because our families had to move to town for employment. The remaining children go to school in Hana. Generations are impacted. This is cultural genocide.
- EMI took too much already. Pau already.
- Not only should A&B not get the water, but they should be responsible for paying all families for harms and for broken up. Fathers forced to work in construction and now not in a great place because their families were broken and changed. Not only should they not get water, but they should have to pay restitution and pay for people to clean streams. If they release water now, will bring invasive species. Need to come clean streams
- When they clean, take out invasive species.
- My generation has to go outside to support our families. We can't stay on the land because we have no water. We have to drive to Napili or Lahaina or Wailuku for construction jobs to support our families. We as one choose to have this EIS not conducted by A&B. We prefer someone else conduct this EIS.
- If you release the water, A&B has to deal with me and all these people.

*Preliminary Community Issues*

- Water is the most important matter in life. Without water, there is no life. Looking closely at island history, particularly ahupua'a land management system, A&B history is putting shareholder profits above the maka'āina and environment. Continuing to allow A&B to act as a broker of the public's water will continue to have a significant negative environmental impact for the island.
- I come from a place full of war, where water is gold (Israel). A&B needs to come and apologize. After they can sit at table and help people recover. Not just one year but generations. When I moved here, my kids asked where do I go to school. I told them the school is closed. Kids bussed one hour every day each way. That's too much. You took water. You took life. Bring us back our water, our life.
- If you take an analytical perspective of history, the answers lie in reconciliation. There have been a couple of overtures by bigshots. Mr. Benjamin, the CEO of A&B and the Governor asked to come here and apologize, to ask for forgiveness. We presented their request to community and they said "NO WAY! You return our water and we can talk about it." For me personally, I believe that peacemaking is part of our values. As long they persist in taking our resources it is difficult to find forgiveness. If they continue their efforts, it doesn't feel that their efforts are sincere. I don't know how our community can make amends for something so deep, for desecrating the land, people, the children, the kupuna, the resources, lost opportunities. I don't know if that's possible.
- That is the history. For these people to sit here and listen, it's the people, it's the lifestyle.
- The history of the last 140 years has been the reality. We are in a moment that could create change. Sugar is no longer a thing. The future of that land has not been settled. A&B, it is not your right, it is not your privilege, it is not your authority to take this water. By putting this in the statement of lease shows how clueless you are in Maui. It is your responsibility and privilege to help make right what you have done.
- Most of you were not raised in this school. I went here till 6<sup>th</sup> grade, then went to Kamehameha, then Maui High, then military. I never forgot my lifestyle here. I tried to bring my kids here but nothing for them here. My mom fought her own brother who worked as boss for EMI. They would fight because she said he is taking water for o'opu, hihiwai. My mom was opihi lady. She went from Maka'iwa to Kaupo. I was the bag boy.

*Preliminary Community Issues*

- I have seen a Hawaiian from this area nail an EMI employee with the cane knife. I seen them marching here, taking water, when I got back from Vietnam. What do you think I wanted to do to them physically? I like hurt um. But Hawaiian style, kupuna have the voice. We stay on the sidelines, humble. They put fear in our kupuna. That's why I stick this out. A&B throw them (kupuna) out the window. That's how I feel. No mercy. They had no mercy for us. I was Taro Farmer of the Year 1977. I watched water disappear. You don't know what I went through. I was small and I watched a kupuna with a cane knife split um open. Why? Wai. Our community was threatened many times in these 30 years. We never called police. We took care of ourselves. Our way. You are in a tough situation. You got to write like you said. I hope you write in mana.
- They raped the land for too long. This is our birthright. Our bodies are made from water. We can't live without water.
- A&B brainwashed people to think that they are in control of water. They were never in control. The EIS is being left to you (earthplan) to explain our views. We are always taught that we need to leave places better than how we left it. When they return the water, they need to clean up the irrigation systems and make it the best that it supposed to be. Wai is rich and plentiful. No money can repay what has been taken.
- What's gonna happen if this does go through? What will happen if they keep taking and taking? Money can't keep buying water. Do we start growing clouds? This is all about nature. They are destroying everything. What if there's nothing left? The big cities are taking from these small communities. Does not make sense.



## **4.2. April 2019 Follow-Up Community Interviews**

### **4.2.1 Purpose and Approach**

After the November 2018 focus group sessions were convened, A&B sold a significant portion of its Central Maui land holdings and related agricultural businesses to Mahi Pono. The subject lands and businesses are integral to the need for a long-term (30-year) water lease for the License Area.

To gauge how community issues may be affected by the change in ownership and agricultural operations, interviews were conducted with a cross section of key community leaders. In April 2019, interviewer Berna Cabacungan Senelly of Earthplan, contacted community leaders who helped convene the November 2018 focus groups and other community leaders who may provide insight not represented in the focus groups.

It is noted that these interviews were not intended to be statistically analyzed. Rather, they were intended to stimulate discussion about recent changes. Interviewees were informed that their comments would be presented and analyzed as an aggregate, and that no comments would be attributed to specific individuals.

Potential interviewees were contacted by phone and asked to participate in these follow-up interviews. All agreed to be interviewed. They were also informed that they may bring up to two other people to their interviews. Three people were interviewed by phone, and all others were interviewed at locations of their choosing.

#### 4.2.2 Profile of Those Interviewed

Eighteen people were interviewed and are identified in Table 13. Affiliations are provided so that the reader has an idea of the types of perspectives that may influence interviewees' responses. Each person was informed that, while their affiliations would be listed to indicate areas of interest, they are speaking as individuals and not on behalf of their organizations or companies. They chose which networks and organizations to include.

**Table 13: List of People Interviewed and Their Affiliations**

| Name              | Affiliation   |
|-------------------|---|
| Alika Atay        | Farmer, Pauwela<br>Consultant and Sales, Hawaiian Indigenous and Natural Farming<br>Former Maui County Councilmember  |
| Brendan Balthazar | Owner, Diamond B Ranch<br>Board member, Maui County Farm Bureau<br>Board member, Maui Cattlemen's Association<br>Member of Agricultural Working Group (informal group of farm owners who work on various agricultural issues)   |
| Sandy Baz         | Managing Director, Maui County<br>Board member, Maui Native Hawaiian Chamber Foundation<br>Group leader, King's Cathedral<br>Former Budget Director, Maui County<br>Former Director, Maui Economic Opportunity  |
| Faith Chase       | Hana resident<br>Secretary and Board member, Hawaii Farmers Union United, Maui-Mauna-Kahalawai-Chapter<br>Board member, Hawaii Organic Farming Association  |
| Lucienne deNaie   | Huelo resident and subsistence farmer<br>President, Ha'ikū Community Association<br>Vice President, Maui Tomorrow<br>Conservation Chair, Sierra Club<br>Secretary and Board member, Malama Hamakualoa Project (267-acre resource area)<br>Board member, Ha'ikū Living Legacy<br>Steering Committee member, Faith Action for Community Equity (FACE) |
| Gina Flammer      | President, Kula Community Association<br>Executive Assistant for Maui County<br>Councilmember Shane Sinenci   |

*Preliminary Community Issues*

| <b>Name</b>         | <b>Affiliation</b>   |
|---------------------|--|
| Alex Franco         | President, Maui Cattle Company, LLC (provides slaughterhouse, marketing and other services to seven ranches)<br>Board member, Maui County Farm Bureau<br>Former president, Hawaii Cattlemen's Council  |
| Bev Gannon          | Chef and restaurateur, Hali'imaile General Store   |
| William G. Jacintho | President, Maui Cattlemen's Association<br>Co-Owner, Beef and Blooms (Hawaii's first Certified Organic Ranch)<br>Retired Educational and Academic Support Program, assigned to Agricultural Program, University of Hawaii Maui College   |
| Dawn Lono           | Farmer and Owner, Ohana Lei and Flowers<br>Board member, Hana Business Council<br>Member, Hana School Community Council<br>Executive Assistant, Maui County Councilmember Shane Sinenci  |
| Dick Mayer          | Vice President, Kula Community Association<br>Coordinator, Alliance of Maui Community Associations<br>Former Vice Chair of Upcountry Community Planning Advisory Committee<br>Former Vice Chair, Maui Island General Plan Advisory Committee<br>Professor Emeritus, Geography and Economics, Maui Community College<br>Reviewer of Environmental Impact Statements, University of Hawai'i Environmental Center |
| Char O'Brien        | Huelo resident   |
| Albert Perez        | Executive Director, Maui Tomorrow  |
| Mark Sheehan        | Owner and farmer, organic farm in Ha'ikū<br>Real Estate Broker<br>Board member, Maui Tomorrow<br>Board member, Shaka Movement<br>Board member, Sustainable Action Fund for the Environment   |
| Lehua Simon         | Grant Writer, Organizer and Coordinator of Malamalama Maui (two-year [2017 – 2018] community-based project funded by Art Place America to promote arts and partnerships in agricultural initiatives)   |
| Mike Spaulding      | Real estate broker, Michael Spaulding Realty<br>Board member, Na Hale o Maui (a non-profit organization that acquires or develops affordable housing)<br>Advisory Board member, Trust for Public Land<br>Board member, Hawaii Preparatory Academy  |

*Preliminary Community Issues*

| <b>Name</b>     | <b>Affiliation</b>   |
|-----------------|--|
| Tony Takitani   | Chair, Hawaiian Host, Inc.   |
| Mahealani Wendt | Resident and farmer, Wailuanui<br>Community Advocate, East Maui<br>Nā Moku 'Aupuni 'O Ko'olau Hui<br>Former Executive Director, Native Hawaiian<br>Legal Corporation |

Collectively, those interviewed represent a broad cross section of community interests and involvement. Further, almost all interviewed indicated multiple affiliations. The following presents a profile of those interviewed.

- Nine of those interviewed participated in the November 2018 focus group sessions. The other nine people were invited by initially-contacted interviewees or were referred to the interviewer as possible interests that may not have been represented in the focus group sessions.
- Eight people are actively involved in farming and ranching. Some are subsistence farmers, while others raise flowers and livestock in businesses they own. Several have leadership positions in organizations that support ranching and farming.
- Eight people are business owners or executives. Their businesses are related to real estate, a restaurant, flowers, livestock and macadamia nuts.
- Eight people are active in community organizations that advocate for and address various community needs and interests. Their efforts are related to the community planning, resource management, the arts, education, religion, affordable housing and economic opportunity.
- Six people are community leaders in geographic-specific organizations in Ke'anae, Hana, Hā'ikū, and Kula.
- Three people are part of Maui County's public sector, and one is a former Maui County Councilmember.
- Three people are in leadership roles in environmental and sustainability organizations.

### 4.2.3 Interview Process

Those interviewed were initially asked to share their affiliations and any involvement or participation in the East Maui Water applications thus far.

The interviewer followed with an overview of significant changes that occurred since November 2018, and highlighted the following:

- The EIS purpose and intent remains the same.
- A&B sold land and related agricultural operations to Mahi Pono. The change in ownership involved 41,000 acres in Central Maui and EMI watershed land, as well operations involving Kulolio Ranch, Central Maui Feedstocks and a 250-acre trial of energy crops. In addition, Mahi Pono now owns 50 percent of the EMI Irrigation Aqueduct System and is the managing partner of the system. The former sugar mill site was not included in the purchase.
- Mahi Pono is a joint venture of Pomona Farming, LLC, and PSP Investments. A brief description of both was provided.
- It was noted that Mahi Pono extended employment to EMI employees and the A&B farm team. Almost all employment offers were accepted. It was noted that Mahi Pono's leadership team includes several people local to the Maui community.
- Mahi Pono is working on two farm plan alternatives, both of which involve 31,177 acres<sup>9</sup> and 1) tropical fruit and nut crops, 2) coffee and specialty crops, 3) diversified agriculture and 4) irrigated and unirrigated pasture lands. The diversified agriculture component includes community agriculture on lease land near the former sugar mill. Common support facilities such as a processing plant would help to support local farmers. Assumptions upon which the two farm plans are based are as follows.<sup>10</sup>
  - Available water in Farm Plan based on IIFS allocations
    - Surface water = 61.78 MGD
    - Brackish groundwater = 15.44 MGD (assume 25 percent of surface water to maintain appropriate salinity level)

---

<sup>9</sup> This acreage does not include lands west of Veterans Highway, which would be irrigated by West Maui water sources.

<sup>10</sup> The interviewer noted that the following information was provided by Mahi Pono, and she stressed that these numbers are preliminary and are subject to change as studies progress.



- Total = 77.22 MGD
- Available water in Farm Plan based on no stream diversion from State land
  - Surface water = 22.54 MGD (assume 25 percent of surface water to maintain appropriate salinity level)
  - Brackish groundwater = 5.64 MGD
  - Total = 28.18 MGD
- Based on these assumptions, it was estimated that there would be an approximate 65 percent decrease from what would be available based on IIFS allocations and no stream diversion from State lands. While most farm components would correspondingly and significantly decrease in acreage, acreage for unirrigated grass-fed cattle would double, from 11,000 to 22,000 acres. It was further noted that, with no stream diversion from State lands, approximately 9,577 acres of unirrigated cattle lands would be unproductive for agriculture. Alternative uses would need to be explored and would not include urban development.
- Mahi Pono's interim farm plan for 2019 and 2020<sup>11</sup> was also summarized for interviewees, and included:
  - 1,675 acres of citrus planted
  - 350 acres of coffee
  - 250 acres cleared for community ag park
  - 1,275 acres of avocado and macadamia nut
  - Approximately 550 acres of diversified row crops and tropical fruits

Those interviewed were then asked the following questions:

- What do you believe are positive aspects of project updates, if any?
- What do you believe are potential challenges and problems of project updates, if any?
- Please share suggestions that will help address the challenges and problems you identified.

---

<sup>11</sup> This information has since been superseded by a further refined and updated farm plan prepared by Mahi Pono.

## **4.2.4 Interview Findings**

### **4.2.4.1 Involvement and Participation in East Maui water lease Application**

Almost all of those interviewed were involved or participated in the East Maui water lease efforts and application in some way, as follows:

- Interviewees were involved in filing CWRM petitions, serving as expert witnesses and researchers. Several conducted research for their own edification and to develop organizational and personal positions. Many indicated that, while they may not have actually participated in legal proceedings, they closely monitored the process over many years.
- Many monitored the legislative session and various legislative bills over the years. Interviewees testified before the State Legislature in support of and opposing bills that would allow short-term revocable water leases for entities such as A&B. During the general time frame of these follow-up interviews, Hawai'i State House Bill 1326 (House Draft 2), which would allow seven-year revocable Water Permits for various agricultural and energy entities, was being considered. Interviewees testified for and against this measure.
- One person had participated in a Cultural Impact Study interview on this EIS, and another helped to convene a round table session on the East Maui long-term water lease.
- Two people lease land from A&B, and one has catered food for company events.
- Several people had recently met with Mahi Pono officials, and some reported participation in three group meetings in which Mahi Pono representatives were present.
- Two people had no previous participation on East Maui water lease efforts.

#### **4.2.4.2 Positive Aspect of Updates and Changes**

##### **Strong Desire for Continued Agriculture in Central Maui**

Those interviewed stressed that they wanted to see agriculture as a major land use on Central Maui. Several mentioned that the greenery experienced is an integral part of what makes Maui special. They said the green landscape is visually pleasing when driving along the coast and on mauka – makai highways. Interviewees talked about how they look forward to seeing this landscape as fly over the fields on the way to the airport.

It was often pointed out that this green landscape is a major attraction for visitors from aerial and at-grade perspectives.

Interviewees pointed out the agriculture needs to re-establish a major role in Maui's economy. With the loss of the sugar industry, they were concerned that agriculture might be replaced by less desirable economic alternatives, namely more urban development. They did not want to see undeveloped Central Maui lands populated by residential communities and business complexes.

Those interviewed saw the potential for supporting businesses that supply the agricultural industry, such as irrigation, fertilizer, equipment, and so on. Local food vendors and restaurants would also have access to locally grown food, the supply of which is currently limited.

Further, the continuation and promotion of agriculture encourages young people and future generations to consider farming as a way of life. Interviewees appreciated that Mahi Pono is reaching out to local educational institutions to develop agricultural programs.

##### **Optimism that Mahi Pono Would be Able to Bring Environment Friendly Large Scale Diversified Farming**

Interviewees tended to be optimistic, albeit cautiously for some, that the new owner may be able to constructively address previous community concerns about the East Maui long-term water lease. Further, they hoped that the contentious and divisive nature that often characterized A&B's efforts to secure a long-term water lease would evolve into a working relationship with the community to resolve past issues.

This optimism was based on direct interactions with Mahi Pono's officials, as well as their understanding of Pomona Farming, LLC, practices and operations. Several interviewees said that they personally met with Mahi Pono representatives, and three group meetings with Mahi Pono were reported, including the Alliance of Community Associations, Ha'i-kū and Huelo residents, and the Board of Nā Moku 'Aupuni 'O Ko'olau.

In these interactions, interviewees and their networks shared information with Mahi Pono officials regarding the need to use regenerative agricultural practices to ensure long-term farming viability. They stressed the need to rebuild soil that has been negatively impacted by a century of sugar cultivation and related damage to soil fertility. Section 4.3.4.4 provides more information regarding suggestions for regenerative agriculture.

Interviewees were heartened that Mahi Pono has publicly, and in one-on-one meetings, stated that no GMOs would be used in its agricultural operations. They were impressed with the Mahi Pono Farm Manager and his reported commitment that he would employ eco-friendly and Best Management Practices in Mahi Pono's agricultural operations. They also reported that he has been very receptive to suggestions and ideas on eco-friendly agriculture.<sup>12</sup>

A key positive aspect noted by interviewees is the wide variety of crops being discussed in farm plans and crop plans presented by Mahi Pono. They liked that one crop would not dominate the agricultural landscape. They noted that previous A&B discussions of possible monocrops were problematic because these crops, such as coffee, would dominate Maui's agricultural environment, only to be largely exported.

### **Recognition of Need for Water to Support Agriculture**

Though interviewees had different ideas about the source of and how much water would be needed for future agriculture, there was consensus that Central Maui agricultural activities will need water to remain economically viable. As one person stated, "Everything stands on water."

---

<sup>12</sup> The Mahi Pono Farm Manager cited by interviewees resigned after interviews were conducted. Source: <https://www.mauinews.com/news/local-news/2019/05/general-manager-of-mahi-pono-resigns/>

### **Opportunity to Re-Evaluate Ways to Achieve Balance Among Water User Groups**

“Balance” was a frequent theme among interviewees. They acknowledged that various groups need water originating from East Maui State watershed lands, and felt that users should have access to water they truly need. Of note is that, regardless of one’s own interest in the East Maui long-term water lease, no one wanted water withheld from other groups.

While it was noted that large scale agriculture is necessary to create a critical mass, it was also stressed that this scale of agriculture should be balanced by supporting individual livestock ranchers, small farmers and local businesses. Interviewees liked the community agricultural component proposed by Mahi Pono. They felt that, while it would provide land for small farmers, the consolidation of support, such as processing, equipment and marketing, would help lower costs for local farmers.

There was disagreement as to the source of water and how the water is allocated. Further, interviewees sometimes felt that A&B’s efforts towards a long-term water lease was self-serving and divisive. Nevertheless, people were hopeful that this contentious environment was coming to an end with the new owner. Those interviewed expressed willingness to explore options regarding water if community needs, such as local farming / ranching, food self-sufficiency, and so on, can be met.

Interviews also said that future agricultural activities would use “half the A&B water usage” and felt that this is good progress towards keeping more water in streams.

### **Opportunity for Food Self-Sufficiency and Reduction of Food Import**

Those interviewed hoped that future Central Maui agricultural activities would help Maui and Hawai‘i become increasingly food self-sufficient. As an island state, Hawai‘i is dependent on imported food and vulnerable to limitations on the quality of this food and transportation disruptions. They hoped that the potential large scale agricultural operations and production with the new ownership of Central Maui lands would provide food supply for Maui and Hawai‘i that can lead to food self-sufficiency.



Interviewees encouraged agricultural production that would include the local market as a major target, thereby increasing the potential for food self-sufficiency. They wanted to see a variety of crops catering to the local market, and suggested produce such as dryland taro, avocado, guava, sweet potato, macadamia nuts, and popular vegetables such as bok choy and eggplant. They also hoped that Maui restaurants, supermarkets and food vendors could acquire local foods that would be fresh, affordable and a constant supply.

Those interviewed expected that some of the agricultural produce would be exported as a necessary financial strategy. Interviewees wanted to see a healthy balance between allocating a portion of agricultural products for Maui food self-sufficiency and exportation for profit.

#### **4.2.4.5 Potential Problems and Challenges Related to Project Updates**

##### **What if Mahi Pono Does Not Have Access to Enough Water to Support Its Farm Plan?**

Without exception, those interviewed wanted Mahi Pono to succeed. This is based on what they had heard, learned and discussed with Mahi Pono thus far. While they still have concerns and cautions, their bottom line was that the new ownership and messages they have heard so far represent a possible positive outcome to what has been a contentious and difficult fight over the private use of stream water from State-owned watershed lands in East Maui.

The new ownership and related ramifications imply a future that had not been previously envisioned, a future that could possibly achieve acceptable community objectives, realize viable diversified agriculture in Central Maui, support food self-sufficiency, help local ranchers and farmers, and revive agriculture as a viable economic stimulus for Maui.

Hence, a problem for those interviewed is a scenario where these positive attributes may not be realized because Mahi Pono would not be able to implement its farm plan because of insufficient water resources. For them, the only alternatives they could envision was dry fallow land or urban development, neither of which were desirable.

### Initial Optimism was Tempered by Legislative Proceedings Related to State water leases

In the time frame during which interviews were being conducted, Hawai'i State House Bill 1326 (House Draft 2) was being considered. This bill would have granted a seven-year extension for Revocable (water) Permits issued by the Board of Land and Natural Resources. This bill would provide a process whereby the BLNR could consider extending A&B/EMI's existing Revocable Permits, , as well as Revocable Permits for water held by other agricultural and energy entities across the State of Hawai'i. Some of those interviewed testified in support of this bill.<sup>13</sup>

Other interviewees believed that this bill was introduced to allow A&B yet another extension of its Revocable (water) Permit. They did not believe that another extension was warranted, and felt that the legislative effort current in April 2019 was another A&B effort to continue an "illegal" permit. To illustrate their frustration with this legislative action, interviewees gave various accounts of the history of the East Maui long-term water lease, which is summarized as follows:

- It was noted that the first Revocable Permit was issued in 1986 and has been renewed several times over the years.
- Interviewees said that, in 2005, Judge Hifo ruled that an EIS is required to pursue a long-term water lease. They pointed out that an EIS is only now being prepared.
- They indicated that, in 2016, Judge Nishimura ruled that these Revocable Permits were invalid.
- Those interviewed said that, in June 2016, the Hawai'i State Governor signed Act 126, Relating to Water Rights, into law. This law allowed three consecutive one-year holdovers "until the pending application for the disposition of water rights is finally resolved." This holdover period ends on December 31, 2019.
- Hawai'i State House Bill 1326 (House Draft 2) would have extended the period of consideration another seven years.

---

<sup>13</sup> As of this writing, the bill did not pass, and is not expected to be pursued during the 2019 Legislative Session.

Those who are optimistic about Mahi Pono's vision, but critical of legislative attempts to extend Revocable (water) Permits, felt that A&B had enough time to rectify the situation and apply for a long-term water lease.

They were disappointed that legislative proceedings were occurring at the same time that Mahi Pono was reaching out to and meeting with various community members and small groups. Further, interviewees felt that Mahi Pono's representatives were not forthcoming and transparent about their attempts to lobby in support of House Bill 1326.

For those who experienced this disappointment, they have become cautious about the new landowner's motivations and integrity. As one person said, "We went from being cautiously optimistic to cautiously skeptical." Another person asked, "Is this just same old, same old?"

Interviewees stressed that they want Mahi Pono to succeed. They want to believe the messages they have received from company officials. For them to maintain this optimism, they believe that Mahi Pono needs to "walk the talk," meaning they need to see commitments in writing and actual work being done that reflects Mahi Pono's stated intentions.

### **Board of Land and Natural Resources Responsibility and Accountability**

Those interviewed felt that the ongoing delays in a long-term water lease for East Maui State watershed streams is due, in large part, to the State not having the staffing and appropriate process to accept, review and issue long-term water leases.

They also believed that the State DLNR has not been monitoring the condition of the EMI Aqueduct System in a timely fashion. One person said the DLNR was to have installed stream gauges 20 years ago and has yet to do so.

### Public Trust, Need for More Information on Water Needs, and Amount of Time Needed to Secure Proper Permits

As expressed in the November 2018 focus groups, many felt that, as a public trust, stream water from State watershed lands should not be diverted for private purposes. Those interviewed cited the requirement for A&B to rebate Mahi Pono up to \$62 million of the purchase price if the EMI Aqueduct System cannot deliver water sufficient to support Mahi Pono's agricultural activities.<sup>14</sup> They felt that this is akin to "one corporate entity selling a public trust to another corporation."

Interviewees wanted to see information about how much water is actually needed to carry out Mahi Pono's farm plan. The farm plan based on full access to IIFS allocation suggests that all of the available State watershed stream water would be used. They questioned whether all of this water is needed and asked for crop-specific water allocations.

It was pointed out that State watershed stream water used in the EMI Aqueduct System is one of four sources of water that can be used to support. Other sources reportedly include water from watershed lands owned by EMI, Central Maui water wells on lands now owned by Mahi Pono and the West Maui Ditch System.

Those interviewed questioned whether Mahi Pono and EMI needed the entire seven years called for in Hawai'i State House Bill 1326 (House Draft 2).<sup>15</sup> It was suggested that, regardless of whether the bill passes, Mahi Pono should estimate the amount of time needed to obtain a long-term water lease and proactively work with the community on their farm plan and proposed lease terms.

---

<sup>14</sup> A&B is required to rebate Mahi Pono \$31 million of the purchase price if the EMI Aqueduct System cannot "deliver irrigation water sufficient" for Mahi Pono to implement its farming plan, also known as a Productivity Loss Event. If A&B hasn't corrected the problem a year after the first event, it will owe an additional \$31 million to Mahi Pono. If Mahi Pono doesn't have the appropriate state water lease rights after five years, it will receive another \$31 million back from A&B.

Source: <https://mauitime.com/news/business/mahi-pono-purchase-agreement-lots-of-legal-ese-with-a-few-tasty-nuggets/>

<sup>15</sup> This bill did not pass in the 2019 Legislative Session.

### **Concern that Agricultural Exportation May Take Precedence Over Local Market**

Those interviewed wanted to believe that Mahi Pono will seek a healthy balance between out-of-State exportation and meeting local consumption need, helping to promote food self-sufficiency and supplying local food vendors and restaurants.

They were concerned that a significant portion of future agricultural efforts will support exportation to off-island markets for profit. Major exportation, they believed, would also siphon profit away from the local community.

### **Use of Chemicals**

Interviewees were pleased that Mahi Pono representatives publicly stated that no GMO crops would be grown on their land. Those interviewed were unclear, however, about the extent to which chemical pesticides, fertilizers and soil additives would be used in agricultural operations. They urged Mahi Pono to share this information with the community.

Moreover, those interviewed felt the use of chemicals would further “kill the soil” and is contrary to regenerating the soil and organic farming practices. It was noted that chemicals used even in the short-term time frame may detract from Mahi Pono’s qualification to qualify for organic farming status.

### **EMI Aqueduct System Conditions**

An issue often raised in the November 2018 focus group sessions was the reportedly poor condition of the EMI Aqueduct System. Interviewees also discussed this topic from the perspective of reducing water losses. They said that the reduction of water losses would reduce the amount of water required for agricultural operations.

These interviewees wanted to know how Mahi Pono will ensure that continued use of the EMI Aqueduct System will be monitored and operated for efficient use of water, which is valued as a public trust, an integral environmental resource, and essential for healthy ecosystems.



### **Labor Source**

Interviewees appreciated that many agricultural jobs would result when Mahi Pono's farm plan is implemented. They were concerned, however, that, with the current low unemployment rate, several deterrents may make it difficult to fill new employment positions.

One problem, they noted, is the current lack of affordable housing. Interviewees said that the housing market intended for Maui's local working population is typically filled by retirees moving to Maui who can afford the average-priced homes. This results in keeping housing costs high and pricing out local buyers. Maui residents therefore have difficulty in finding affordable housing that will allow them to remain on Maui.

Another problem cited was high labor costs and unionization. These present economic challenges to many businesses operating in and starting up on Maui. One person felt that unionization and high labor costs may be economic deterrents in establishing Best Management Practices, the requirements of which exceeds minimal industry standards.

Interviewees wanted to see these challenges addressed so that there is an optimal labor supply to support Mahi Pono's Farm Plan.

### **Lack of Clarity on How Individual Ranchers will be Incorporated in Mahi Pono's Farm Plan**

Interviewees appreciated that Mahi Pono intends to support local farmers by leasing various acreage levels to small farmers and providing common support, such as processing, equipment and management. It is noted that none of the interviewees indicated that they were personally involved in crop farming activities that may be part of the community farming program, nor did they know anyone who had been approached with this opportunity.

Those interviewed were concerned that such an offer has yet to be discussed with those engaged in small-scale livestock farming, including cattle, pigs, sheep, goats and horses. They distinguished between ranches and ranchers, the latter of which are typically individuals and families who raise livestock often on leased land.

It was understood that Mahi Pono now owns Kulolio Ranch, a 5,500-acre parcel which is leased by Maui Cattle Company for grass-fed cattle operations. Maui Cattle Company serves several large ranches by consolidating “finishing,” and coordinating other services such as a slaughterhouse.

While interviewees were supportive of these operations, they also hoped that Mahi Pono would work with independent livestock ranchers and incorporate them in Central Maui operations.

### **Need for Pono with East Maui Native Hawaiian Community**

Interviewees pointed out that, even though the CWRM IIFS decision restored several streams in East Maui, the social and cultural effects of historical and significant stream diversions have yet to be rectified. This belief was reiterated several times in the November 2018 focus groups, and expressed by those interviewed.

While there has been interaction between Mahi Pono and East Maui residents, there still needs to be acknowledgement of past wrongs and a “path to healing” that will allow residents and the new landowner to have a constructive relationship.

Those interviewed understood that Mahi Pono is not responsible for whatever occurred during A&B’s tenure. Mahi Pono inherited a legacy that developed for over one hundred years. Nevertheless, to move forward as an integral part of the Maui community, Mahi Pono needs to “make pono” with East Maui so that everyone can move forward. One person said, “There needs to be apology, repentance and reparation.”

### **Need for Consistent and Transparent Communication**

Interviewees appreciated interactions with Mahi Pono thus far, but noted that many statements have been verbal, and there has been little, if any, commitment in writing or through action. They felt that the company’s challenge is to continue community dialogue with progressively tangible evidence in writing that Mahi Pono will follow through on verbal commitments. Further, interviewees felt that Mahi Pono needs to connect with as many people as possible to balance information from the “vocal opposition.”

#### **4.2.4.4 Suggestions to Address Potential Problems and Challenges**

##### **Regenerative Agriculture**

Interviewees shared information with Mahi Pono regarding the significant contribution of agriculture on climate change. It was noted that agriculture is responsible for a significant portion of greenhouse gas emissions, and is therefore a main contributor to climate change. They explained that regenerative agriculture integrates farm management practices to systematically improve soil health. Healthy soil would improve crop yields and resistance to pests.

It was pointed out that regenerative agriculture reduces water use through the selection of crops that adapt well to local climate. If done properly, this practice can decrease reliance on agricultural chemicals, including fertilizers and biocides. Regenerative agriculture also integrates livestock that are humanely raised into crop production.

##### **Conduct an Engineering and Biological Audit of Entire EMI Aqueduct System**

Interviewees stressed that the community does not know the condition of the EMI Aqueduct System, and they suspect that neither DLNR nor EMI have a full understanding of its condition. It was suggested that an audit of the entire system be conducted to assess what needs to be repaired to reduce water losses and improve functionality. It was stressed that, if Mahi Pono conducts such an audit and invests in system improvements, benefits would extend to both company needs, the environment and communities near the system. "It would be a different conversation," as one person put it.

##### **Water Management Plan**

Related to interviewees' requests for water allocation information and an EMI Aqueduct System audit, it was suggested that Mahi Pono integrate this information in an overall Water Management Plan. The Plan should outline improvements to the EMI Aqueduct System, propose how the watershed rainforests would be protected and maintained including brush fire prevention, and relate water needs to specific crops.

### Invest in Maui

Those interviewed wanted to see Mahi Pono become an integral part of the Maui community. They suggested various ways to invest in the well-being and future of Maui, including:

- Provide land for or facilitate affordable housing for agricultural employees. One person suggested “tiny houses” on 500 acres of Mahi Pono land or on land that the company secures for this purpose. Another person suggested that Mahi Pono find ways to collaborate with non-profit associations and Maui County to provide affordable housing for low-income families.
- Invest in improving Central Maui water and wastewater systems.
- Facilitate ways to help local farmers and ranchers conduct their agricultural activities on Mahi Pono lands.
- Actively facilitate internship programs and educational activities that will help young people learn about agriculture, food self-sufficiency, and resource stewardship.

### Expand Communication Efforts

Interviewees suggested that Mahi Pono expand its communication efforts by: 1) convening community-wide forums to present information and solicit feedback and 2) organizing an impartial Citizens Advisory Committee that would evaluate Mahi Pono’s proposals, provide feedback and present recommendations.

## 4.2.5 Analysis of Follow-Up Interviews

### Discernible Shift in Focus from Past to Future

There has been a shift in attitude from the November 2018 focus group sessions and the April 2019 interviews. Previous focus groups sessions emphasized a context based on a past characterized by contentious legal proceedings, confrontational history between A&B and the community, and frustration about the lack of constructive dialogue about the East Maui long-term water application.

The context of the April 2019 interviews was based on change – in ownership, farms plan options and near-term proposals.

The change in context shifted the focus from feelings entrenched in the past to one that looked toward future possibilities.

## **Two Prevalent Themes – Hope and Balance**

With a focus on future possibilities, interviewees tended to express hope that with the new owner, things could be different. They note that diversified agriculture options have become more specific. They believe that the new owner embraces environmental stewardship and sustainability. They appreciate that Maui farmers and local crops are integral in Mahi Pono's farm plan.

Those interviewed also renewed their hope that there is an opportunity for balance of water users and water uses. While balance was encouraged in focus group sessions, people at that time felt frustrated that divisiveness and contention discouraged dialogue about balance.

## **Community Willingness to Work with Mahi Pono and with Each Other**

Many of those interviewed had met with Mahi Pono officials individually and in group settings. They were willing to continue constructive dialogue and encouraged settings conducive to general public participation.

## **Credibility and Accountability**

Though optimistic, albeit cautiously for some, those interviewed felt that to proceed in a positive and constructive manner, they need proof of commitments that have been verbally expressed. Their trust in the new landowner is dependent on actions or written commitments.

Some felt that their questions have not been answered, and understand that it might be too early for specific answers regarding crop-based water allocation, proportion business targeting local market, and so on. Nevertheless, they feel that these answers will give them a better sense of corporate credibility.



## 5. Potential Social Impacts

As discussed in Section 1, the overall framework for SIA is anticipatory research, seeking to place the expectation and attainment of outcomes on a rational and reliable basis. Commonly identified uses of SIA include:

- Understanding the ability of a community or group to adapt to changing conditions
- Defining the problems or clarifying the issues involved in a proposed change
- Illuminating the meaning and importance of anticipated change
- Identifying mitigation opportunities or requirements

From an SIA perspective, the proposed action is distinct from typical changes analyzed in an SIA context. First, the fundamental proposed action, which includes a long-term water lease, does not change conditions that have occurred in the past. The proposed action is in many respects a continuance of an action that has occurred for over a hundred years with the primary change being the amount of water that can be diverted per the IIFS Decision and Order, and the change in the manner of agricultural use of the Central Maui fields.

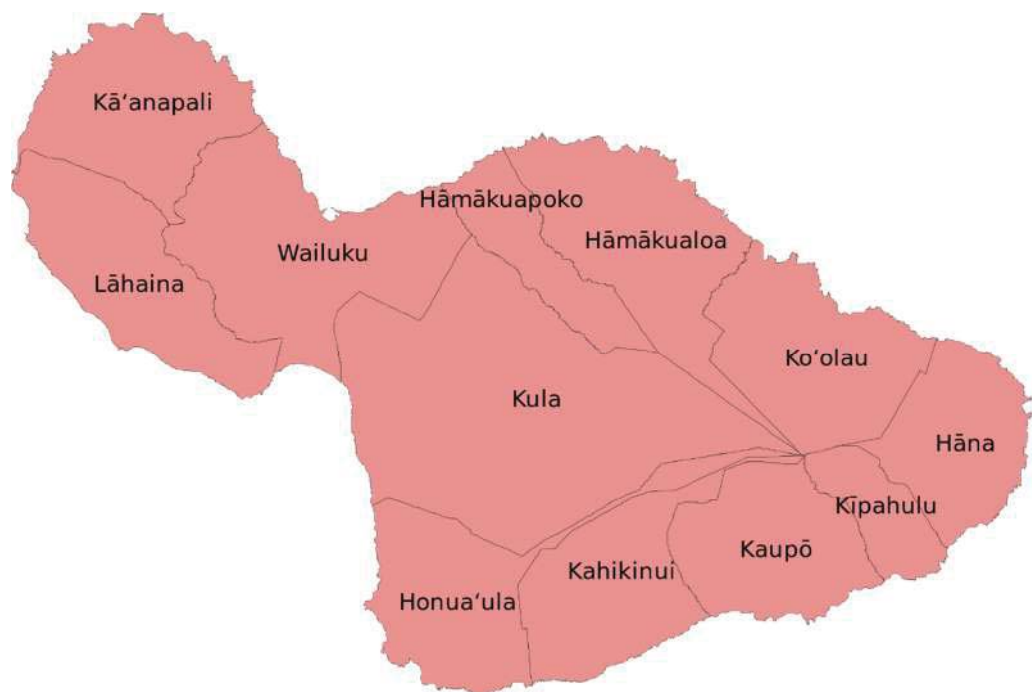
Second, while the fundamental action and the proposed use of the water are in some respects unchanged, implementation conditions are very different from past practices in terms of use and user. The original leases were intended to primarily support sugar cultivation by A&B. The sugar plantation closed in 2016. The current proposed use of the future leased water is diversified agriculture, the components of which have been surmised, but not determined. Also, after the initial focus group meetings, A&B sold most of the lands that would be served by the water lease, to a farming company with a diversified agricultural plan for these lands. Hence, the user of the leased water changed from A&B to the new owner; the operation of EMI will change as well.

This section begins the discussion of potential social impacts with a description of the social environment in Section 5.1. This is followed by an overview of the relationship of A&B to this social environment, in terms of historic and current conditions in Section 5.2. Section 5.3 presents potential social impacts and recommended mitigation.

## 5.1. Overview of Social Environment

### 5.1.1 Maui Island

Early Hawaiians arrived in at least three waves from southern Polynesian islands. They developed a complex and effective land tenure system with the island of Maui divided into twelve districts or moku, each with several village communities. When used as a term of traditional land tenure, a moku is similar to a political district. Figure D depicts moku of Maui, which is still referred to by residents with generational ties to the island.



**Figure D: Maui Island Moku**

Source: Available at

[https://commons.wikimedia.org/wiki/File:Historic\\_Mokus\\_of\\_Maui\\_Map.svg](https://commons.wikimedia.org/wiki/File:Historic_Mokus_of_Maui_Map.svg)

Each moku was partitioned into smaller portions of land that extended from the mountain to the ocean. Within an ahupua'a, tenants were granted kuleana for home sites and kalo patches. All the chiefs and tenants held land in trust and owed the king a land tax and labor that could be called for at any time.

Irrigation water, which was diverted from streams through ditches, or 'auwai, to kalo and other agricultural fields, was carefully regulated. There were rules setting allowed diversion times. No more than half of the stream water could be diverted into the 'auwai.

Construction of the 'auwai was organized by the chief. Day-to-day management was the responsibility of the appointed agent, or konohiki. Hawaiian water rights were assigned to plots of taro land, or lo'i. The quantity of water allocated to each rights holder was proportional to the amount of labor furnished for construction of the 'auwai

Until the 15th century Maui comprised three chiefdoms: Wailuku, Lele (Lahaina), and Hāna. Eventually all West Maui was consolidated at Wailuku, with Hāna remaining an independent chieftaincy. West Maui and East Maui permanently merged about 1550 when King Pi'ilani married the daughter of Ho'olae, the 6th Ali'i Nui of Hāna. From that time until conquest, Maui was ruled by a single joint royal family. Pi'ilani and his successors were known for the peace and prosperity that followed. They constructed a roadway that circled the island along its coast; remnants of which still exist.

The first outsiders visited Maui in the late 1780s.<sup>16</sup> Soon, missionary work, the whaling industry, and flourishing trade of diverse goods brought Americans and Europeans to the island.

By the mid-1800s, most of Maui's population lived in the towns of Hāna, Makawao, Wailuku and Lahaina due to the arid and inhospitable nature of the rest of the island. As noted in Section 2, the Hawaiian population decreased significantly due to no resistance to Western diseases, namely influenza, tuberculosis and smallpox.

The distribution of people and settlement patterns was altered dramatically with the Māhele established by King Kamehameha III in 1848. It established a land commission that adjudicated land claims. Hawaiians had been living for hundreds of years with the self-sufficient ahupua'a land tenure system and communal subsistence. In this scenario of cultural unfamiliarity and legal and logistic constraints, foreign acquisition of lands intended for Native Hawaiians occurred at an unprecedented scale.<sup>17</sup>

---

<sup>16</sup> County of Maui Department of Planning, **Maui Island Plan: Island of Maui, General Plan 2020**, p. I-6

<sup>17</sup> *Ibid*, p. I-7

*Potential Social Impacts*

Hawai'i was moving through many economic and demographic shifts in the late 1800s following the intensification of Western commerce, including the continued drift of rural populations toward town centers, which made water a highly contested and protected resource on islands such as O'ahu where these demographic trends were most pronounced. This is largely because water had to be diverted from distant watersheds to support growing cities. The legality surrounding watershed catchment was continuously challenged for leaving too little water for residents where streams were diverted by the government. Regardless of the dismay this may have caused, the costs of abandoning water catchment had to be carefully balanced by the Kingdom, since much more than the municipal water supply hung in the balance.

By developing and using water for sugar cultivation, Hawai'i moved steadily through this transition because it always had something that it could trade. At first the Orient traded for Hawaiian sandalwood. Then the whaling fleet needed crew and provisions. There was California Gold Rush market and newcomers wanted land. These commodities all became available. Both the markets and the resources, however, were limited, and before long they were "used up." Unless it developed a new commodity, Hawai'i ran the risk of becoming a political and economic non-entity, a backwater nation. This did not fit the vision that the monarch, the resident haole, or the people had for the future of the kingdom.

The prospect of growing sugar in Hawai'i was very appealing to the Kingdom as it would provide a renewable economic base. This view was further exemplified in 1876 by "An Act to Aid the Development of the Resources of the Kingdom" in which eminent domain rights reserved for public purposes, such as water, could be applied by the government to private enterprises for the development of sugar. Along with the Reciprocity Act of 1876 that allowed the duty-free export of Hawaiian sugar to the mainland U.S., the groundwork had been set for the start of the industrialization of sugar in Hawai'i.

Pineapple cultivation took hold in the 1890s and became Maui's second largest industry. Cattle ranching was formalized in the 1800s when King Kamehameha III summoned vaqueros of Mexican Spanish descent from Vera Cruz to teach Hawaiians how to handle horses and herd cattle. Cattle ranching quickly flourished under the hands of the Hawaiian cowboys, or paniolo. Multiple ranches were located on the less-fertile upper elevation lands that were left uncultivated. Cattle ranching grew to Maui's third largest industry next to sugar and pineapple.

With the in-migration of laborers for plantations came a significant diversification of people and cultures. World War II added another dimension of change in Maui. The war brought new immigrants and significant investment infrastructure to serve the military, including roads, harbors and airports. The war-years military population on Maui reached approximately 200,000 persons and outnumbered local residents four to one.

Significant changes for the sugar and pineapple industries occurred after World War II. As these industries were becoming more mechanized, labor unions were increasing their influence in the work place and among union members. Eventually, plantation camps were closed as workers found other employment opportunities, and private landownership became more available.

As the economic landscape evolved so did the physical landscape. New towns attracted plantation workers with increasing prosperity, as well as returning military personnel eligible for low-interest loans enacted through the GI Bill of 1944. Kahului and Wailuku became the center of commerce, as well as the center of the island's population. The growth of these areas was envisioned and guided by the first General Plan prepared in 1962 and County-initiated planning initiatives continue to shape the island's future.

The visitor industry emerged as the island's major economic engine. Hotels dotted coastal areas in West Maui, and Kā'anapali was the first resort destination in Hawaii. Its collective hotels, restaurants, shopping center and golf course set a statewide precedent that led to the subsequent development of Wailea and Kapalua.

## **5.1.2 Study Area Communities**

### **5.1.2.1 Upcountry**

Upcountry Maui comprises four major towns, including Kula, Pukalani, Makawao and Ha'ikū, and several smaller communities.

#### **Kula**

Kula, which means "open meadow," is the largest Moku in Maui, and diverse in landscape and weather.



*Potential Social Impacts*

Lower Kula communities such as Waiakoa, Pulehu, Ōma'opio, and Kēōkea each have distinct ethnic histories. As the first immigrants, Portuguese and Chinese, fulfilled their sugarcane plantation contracts many settled in Kula and became vegetable farmers. In the late 19<sup>th</sup> century they produced potatoes for shipment to California's Gold Rush. Later the Japanese followed them into the fertile farming area.

The farming tradition continues today producing a wide variety of vegetables including its well-known onions, cabbage, tomatoes, and cauliflower from small farms. There are many flower farms producing a wide variety of proteas and cut flowers. Almost all the carnations used for lei are grown in Kula.

Along the old lower Kula road there are few businesses but there is one notable landmark, the Holy Ghost Catholic Church with its octagonal shape. Built by the Portuguese in 1894, its turret can be seen from lower Central Maui.

The junction of Haleakala Highway with Kula Highway in Pukalani marks the northern edge of Upper Kula. The upper road, Kekaulike Avenue, or State Highway 377, wanders through eucalyptus groves and green pastures. In the late spring Blue Jacaranda displays beautify the slopes. Upper Kula surrounds Kekaulike Avenue. Beyond the Kula Lodge the road swings upward to Haleakala National Park.

Along Kekaulike Avenue, there is little commercial development except the Kula Botanical Gardens and Ali'i Kula Lavender Farm. Small farms take advantage of fertile soil, filtered sunlight and mild weather.

According to the U.S. Census Bureau, Kula CDP residents numbered almost 6,500 persons in 2010.

Kēōkea is also located within the Kula Moku. Chinese settlers are credited with founding the town of Kēōkea during the height of the sugarcane boom in the 19th century. By 1900, roughly 700 immigrants known as the Hakka forced out of their homeland in the Pearl River Delta, settled on the edge of Kula in Kēōkea after completing their labor contracts and choosing not to return to China. They made up a quarter of Maui's Chinese population at the time. Many became farmers raising vegetables.

They served a key but, largely unknown role in the California Gold Rush, transporting wagonloads of potatoes down to the Kīhei coast for shipments to California miners and railroad workers. The return ships brought miner's soiled clothes for hand laundering. This was a vital connection between Maui and California.

---

*Potential Social Impacts*

The Chinese past in Kēōkea is evident in today's make-up of this small community. The well-preserved wooden and currently active Episcopal Church, St. John's Church, was founded by the Chinese. Off what was known as "Old Chinatown Road", a narrow passage more drive-way than street, is the Kwok Hing Society Building, the first two-story structure erected in Upcountry Maui, a refuge that once provided assistance to Chinese sugar cane laborers.

Kēōkea also is known as the adopted home of the Dr. Sun Yat-sen, revolutionary of the Qing Dynasty. Sun Yat-Sen sought refuge with his family after his failed attempts to reform China, returning to his brother Sun Mei's ranch that stretched for thousands of acres near Kēōkea known as "Kula Chinatown."

The U.S. Census Bureau estimated that approximately 1,600 people live in Kēōkea in 2010.

### **Makawao**

In 1845, King Kamehameha III granted commoners in Makawao the right to own land, a right previously only held by ali'i or chiefs. The Māhele, three years later, established a policy of private land ownership throughout the kingdom.

Open spaces, cool seasonal temperatures and ample rainfall enabled wheat growing in Makawao during the 1850s. That was replaced by sugar in 1857 when H. A. Spencer started the East Maui Sugar Plantation. Tong Akana started the Pi'iholo Plantation in the 1870s. The most notable of Makawao's sugar industry started in 1869 when Henry P. Baldwin and Samuel T. Alexander purchased a twelve-acre homestead to raise sugar cane. They later expanded their holdings with the 559-acre Bush Ranch in the Sunnyside area.

There was some wheat planting in the 1850s to supply the California Gold Rush market but that faded as cattle ranching started dominating the open spaces. Haleakala Ranch of 30,000 acres almost surrounds the Makawao area. By the 1930s no acre of sugar cane could be found on the Ranch.

Pineapple was a later development on Haleakala Ranch in the 1930s but most acreage was devoted to thousands of head of cattle.

Ranching was a source of year-round employment for Hawaiians and Chinese who first populated the area. More immigrants, Japanese and Portuguese, started their own farms or worked on ranches surrounding Makawao. By the 1920s and 30s the town had general stores, a theater, a meat market, slaughterhouse, two service stations, a harness shop and three blacksmiths. The T. Komoda Store and Bakery remains today.

Makawao has maintained a paniolo ambiance with older store front buildings and its fourth of July Makawao Rodeo and Parade.

According to the U.S. Census Bureau, the Makawao CDP, which is a portion of the Makawao District, was home to approximately 3,300 people in 2010.<sup>18</sup>

### **Pukalani**

Pukalani is a suburban community comprising several neighborhoods. The first neighborhood is Pukalani Terrace, built in the early 1970s. The most recent development is Kualono Upcountry Living, a 49-lot subdivision. Kua'Āina is a 3 6-unit subdivision is in its pre-sale stage. Kulamalu Hale is a 56-unit apartment complex that was funded by the Affordable Housing Program.

Commercial services in Pukalani cater to both neighborhood and regional customers. The Pukalani Terrace Center is Upcountry's main shopping center located on Pukalani Street. Kulamalu is a new mixed-use commercial center along Kula Highway.

The Mayor Hannibal Tavares Community Center & Upcountry Pool is a recreational resource serving all of Upcountry. This 20-acre complex includes various athletic fields and a swimming pool. The 160-acre Pukalani Golf Course, Upcountry's only golf course, was built in 1980.

The U.S. Census Bureau indicates that 7,574 people resided in Pukalani in 2010.

---

<sup>18</sup> Section 2.1.2 explains the different geographic designations.

## **Ha'ikū / Huelo**

The Ha'ikū district has a long agricultural history of sugar and pineapple plantation development. During the 19th century, the tops of the ridges between the many gulches were cleared and planted in pineapple and sugar cane. Two sugar mills were in operation in the Huelo area, and a mill was located at Ha'ikū, on the makai side of Pu'u-o-'Umi (Ha'ikū Hill).

George Douglas started the Ha'ikū Sugar Plantation in 1858. The first Ha'ikū Sugar Mill was erected in 1861 on the east side of Maliko Gulch. Products were stored there and shipped by schooner to Honolulu. The Ha'ikū Mill was successful for about eighteen years until the soil was exhausted and the mill moved to the west side. The completion of the Hamakua Ditch, in 1879, by Henry P. Baldwin and Samuel T. Alexander made possible utilization of richer lands outside the rain belt.

A commercial landing was built at Ho'olawa, primarily for transporting milled sugar to Honolulu. During the 1880s the Pacific Navigation Company ran three trips each week between Honolulu and Ha'ikū, bringing 100 tons of sugar per week to Honolulu. As soon as the railroad line from Kahului to Ha'ikū was completed, commercial transportation by water from this area ceased.

D.D. Baldwin inspired the organization of the Ha'ikū Pineapple Company. He experimented on his farm in Ha'ikū, with numerous costly varieties. He eventually confined his cultivation to a variety called Smooth Cayenne. In 1901, his first plantings at his Ha'ikū farm were so successful that Maui's first pineapple company, Ha'ikū Fruit & Packing Company, Ltd. was formed. In 1904, Ha'ikū Fruit & Packing Company, built a successful can-making plant and cannery in Ha'ikū.

World War II brought Maui into focus as a Naval, Marine and Seabees training and operations center for the Pacific. Maui was the largest training grounds for naval air groups in the United States and was the rehabilitation center for the wounded and those on R&R. The most famous of them, the Fourth Marine Division, is remembered at their old headquarters site, Camp Maui, with Ha'ikū park and community playground.

During the 1970s two-and-a-half-acre lots legally known "agricultural subdivisions" are seen with large homes. The largest parcels are open to competitive bids of state lands for growing pineapple or other agricultural uses.

A well-known landmark is the Door of Faith Road, which brings you to the Kaulanapueo Church in Huelo. This historic Protestant church was established in 1853 and is still used for worship, with services in the Hawaiian language.

Twin Falls is a popular local and visitor destination featuring hiking trails and several lower and upper waterfalls. Access to this area is via Wailele Farm, a 39-acre tropical plant and fruit farm. Although there is no fee for access to the falls, farm tours and nature hikes are available for a fee.

#### **5.1.2.2 East Maui**

The Study Area East Maui communities comprises the Koʻolau Moku, which encompasses several ahupuaʻa. The following discussion focusses on Keʻanae and Wailuānui, as well as Nāhiku.

##### **Keʻanae / Wailuānui**

Keʻanae is reported to have been an active agricultural community historically and during pre-contact times. Its lands have been used intensively for wetland kalo cultivation. The need for kalo significantly declined as Native Hawaiian populations declined with the arrival of western disease. The result was unattended loʻi in the Keʻanae area.

A new market emerged, however, in the second half of the nineteenth century, with the increased market for rice due to the increase of Chinese laborers on sugar plantations in Hāna. When their labor contracts were completed, Chinese immigrants grew rice, with the advantage of a pond field irrigation system already in place in Keʻanae. They leased former loʻi lands from Hawaiian owners for rice cultivation in Keʻanae and Wailuānui.

The Chinese farming community flourished in Keʻanae, and with an increase in population came the construction of buildings necessary for production and housing related to the rice plantations, as well as the establishment of socially-related organizations. Rice farming declined sharply after 1910 and ceased by 1935.

Of significance, around 1920, many Hawaiians returned and began commercially cultivating taro on Keʻanae Homesteads. Due to its important cultural and historical significance, the Keʻanae Peninsula taro complex has been designated as a State Inventory of Historic Places, or SIHP.



---

*Potential Social Impacts*

A major influence in social environment for Keʻanae and Wailuānuī has been the development of roadway infrastructure. In 1912, a narrow road and bridges were completed that connected Kailua to Nuaʻailua Bay near Keʻanae, and by 1915, other contractors had built a road connecting Hāna to Keʻanae. In June 1925, the grand opening of the Kailua-to-Keʻanae portion of the Belt Road was celebrated by a procession of automobiles to Keʻanae.

The Keʻanae Protestant Church on the Keʻanae peninsula, also referred to as Keʻanae Congregational Church or Keʻanae Church, is designated as an SIHP. It was dedicated in 1860 and completed in 1863. Of note, this was the only structure left standing on the peninsula when an April 1946 tsunami hit this coastline.

The Keʻanae School was built in 1912 and subsequent additions expanded the original building. Due to decreasing enrollment, the school closed in 2005 and Keʻanae students travel every day to schools in Hana.

It is estimated that in 2010, Keʻanae – Wailuānuī – Nāhiku was home to 1,056 residents.

### **Nāhiku**

The Archaeological Literature Review and Field Inspection for the Proposed Lease for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for this EIS (Cultural Surveys 2018) indicates that studies of historic land use refer to flat and terraced lands within Koʻolau Moku were intensively and continuously used for wetland taro cultivation or loʻi agriculture from the pre-Contact era through the present day.

East Maui's experience with the growth of early sugar was two-fold. First, Samuel T. Alexander proposed a massive construction project to bring mountain water from East Maui streams to their plantations to the west along the slopes of Haleakalā. In July 1877, the first water began flowing out of East Maui through the EMI Aqueduct System.

At the same time, Hāna and the undeveloped slopes of East Maui were described as one of the last natural environments that offered the potential for commercialized agriculture, including sugar, coffee and rubber plantations. In 1898, large parcels of land in Nāhiku were sold, and the Nāhiku Sugar Company was formed. Water rights for the Makapipi watershed were jointly shared between the sugar company and multiple homesteaders who collectively formed the body of the company's sugar growers. Sugar cultivation in Nāhiku was dependent on local farmers because a significant portion of the cultivated land was deeded to the same farmers who had water rights.

For a brief period, A&B acquired Nāhiku Sugar Company in 1899. Even with this financial backing, profits declined and by mid-1900, development work on the plantation ceased.

The Nāhiku Sugar Company completed the construction of a landing for the Territorial Government of Hawai'i in 1901 and constructed rail lines for a derrick at the landing. There is no record of the use of locomotives on the rail lines that were constructed. The construction of the landing at Nāhiku placed the plantation owners in additional financial hardship and House of Representatives deferred the landing's construction cost to the government.

In 1902 local homesteaders petitioned their congressional representation not to grant additional water rights to the Nāhiku Sugar Company that would infringe on the already established rights of local farmers who had since had a falling out with the Company. It is noted that water rights and land were shared from the start, so when local homesteaders refused to plant additional cane for the mill in response to a perceived threat to their individual water rights, the Nāhiku Sugar Company petitioned for additional water rights from neighboring watersheds in inaccessible gulches to the northwest to supplement the shortage. Since the initial licenses were upheld, and the homesteaders' rights protected, the Nāhiku Sugar Company was forced to increase cultivated land or cease the plantation.

When the founding homesteaders ceased their relationship with the sugar company, it put the company at risk of collapse due to insufficient land and water access for continued cane cultivation.

In 1902, a merger was planned with the Hāna Sugar Plantation by which the plantation would pay an annual rental of \$4,500 over a 26-year lease which included water rights. In 1904, A&B bought the remaining stock in the Nāhiku Sugar Company. After a brief boom with an unsuccessful rubber plantation, all the former sugar plantation land at Nāhiku was acquired by HC&S and EMI under the parent corporation of A&B.

Today, A&B supplies MDWS approximately 20,000 to 45,000 GPD of water, dependent on weather conditions, directly from the EMI Aqueduct System that is serviced to Nāhiku through a development tunnel in the Ko'olau Ditch near Makapipi Stream.

## 5.2. A&B Relationship in Social Context

The role and relationships between A&B and the social environment evolved over a hundred years and influenced land use, the economy, the natural environment and many people and cultures. Section 5.2.1 provides an historic perspective and Section 5.2.2 describes the current conditions that are part of the overall framework in which the proposed water lease is being considered.

### 5.2.1 Historic Perspective

#### 5.2.1.1 The Sugar Industry

Sugar cane was brought to Hawai'i by early Polynesian voyagers before European contact. It was cultivated in a land system described in Section 5.1.1 and used for centuries before it was grown commercially.

Around 1869, two young men, Samuel Thomas Alexander and Henry Perrine Baldwin, sons of pioneer missionaries, started a sugar business on twelve acres of Bush Ranch in the Sunnyside area of Makawao. In 1870, they paid \$8,000 for an additional 559 acres, marking the birth of what would become Alexander & Baldwin, Inc., or A&B.<sup>19</sup>

---

<sup>19</sup> C. Allan Jones, and Robert V. Osgood, **From King Cane to the Last Sugar Mill** (University of Hawaii Press, 2015), p. 31.

By 1876, the partners had expanded their sugar acreage and began to seek a reliable source of water for their crop. Alexander devised an irrigation system that would bring water from the windward slopes of Haleakalā to Central Maui to irrigate 3,000 acres of cane on their lands as well as neighboring plantations. Baldwin oversaw development of Alexander's vision which became known as the Hamakua Ditch. Within two years the ditch was complete. This system would later become a model for similar Hawai'i irrigation projects.

Over the next 30 years, the two men became agents for nearly a dozen plantations. They eventually expanded their plantation interests by acquiring Hawaiian Commercial & Sugar Company (HC&S).

Seven constructed water catchment / diversion ditches plus various tunnels, flumes, intakes, reservoirs, inverted siphons, a solar powered radio telemetry system to monitor ditch flow, and other devices comprise the EMI Aqueduct System, which was formed in 1908.<sup>20</sup> The ditches, in the order in which they were built, are: Old Hamakua, Ha'ikū, Manuel Luis / Lowrie / Center, Ko'olau, Kauhikoa, New Ha'ikū, and Wailoa.

Water collection begins at roughly the 1,300-foot elevation and is ultimately delivered to Central Maui, covering a linear distance of 25 miles from the ditch system's western to eastern extent. Historically, an estimated 60 billion gallons per year at roughly 165 million gallons per day (MGD) was collected and delivered to Central Maui. Built at a time when Hawai'i was still an independent kingdom, the EMI Aqueduct System was the first of its kind both in the Pacific and on the U.S. West Coast.

Upon completion of the major ditch features, the EMI Aqueduct System collects the runoff water from the Collection Area that is approximately 50,000 acres, of which EMI owned approximately 17,000 acres and the State of Hawai'i owns approximately 33,000 acres.

In addition to supplying A&B's former sugar cane plantations with water, the EMI Aqueduct System also supplies the MDWS with an estimated 2 billion gallons of potable water per year for domestic and agricultural purposes from the Collection Area.

---

<sup>20</sup> *Ibid*, pp 110 -113.

The sugar industry suffered many challenges and in 2015, A&B reported an operating loss of approximately \$30 million in agribusiness. It was difficult to sustain such losses, and the Pu'unēnē Sugar Mill harvested its final harvest in December 2016.<sup>21</sup>

#### 5.2.1.2 Plantation Camps and Community Building

In addition to its reshaping of the sugar industry by redirecting abundant stream water from East Maui, A&B also significantly contributed to the social fabric of Maui due to its immigrant labor force and by providing its workers with a communal environment.

A&B supplemented the local Maui labor force with immigrant workers permitted under the 1850 Masters and Servants Act (see Section 2.1). Immigrants arrived by the thousands from China, Japan, the Philippines, the Portuguese Islands of Madeira and the Azores, Puerto Rico, Korea, and Spain.

There were 25 camps housing workers in the 1940s. These camps were located near the Pu'unēnē and the Pā'ia Sugar Mills. The camps were communities. Collectively, they contained churches, public schools, Japanese-language schools, two hospitals, theaters, swimming pools, a gymnasium and child care nurseries.

By 1951, the plantation employed 11,000 people, many with families. Plantation workers were reportedly increasingly comfortably housed, well paid with field wages high compared to sugar workers in Florida, Louisiana and Puerto Rico. While camps were generally ethnically organized, such as Japanese camps, Filipino camps, Chinese camps, Portuguese camps, and so on, workers often mingled in recreational, religious and social activities.

Through its subsidiary HC&S, A&B provided medical care to its workers. It renovated Pu'unene Hospital, which operated until 1956, after which time worker patients were sent to the Central Maui Memorial Hospital. Plantation doctors joined to open the Maui Clinic in 1959 to serve patients covered by the company's medical plan.

---

<sup>21</sup> "End of an era: Hawaii's last sugar mill wraps up final harvest," **Star Advertiser**, December 12, 2016.



---

*Potential Social Impacts*

The plantation established recreational facilities, such as the F.F. Baldwin Park in Pu'unene. These facilities were managed by community association and were eventually dedicated to Maui County or reverted to cane land. Often, plantation camps sponsored baseball teams, boxing leagues and bowling tournaments, as well as scouts programs.

A memorable story is the Three-Year Swim Club. Coach Soichi Sakamoto, a teacher at Pu'unene School, taught plantation children how to swim in the irrigation ditches. The steady flow of ditch water was used to help develop new techniques to train swimmers in the Three-Year Swim Club to compete in the Olympics. When the F.F. Baldwin Park opened in 1936, the swimmers practiced the community pool and easily beat their competition. Although World War II would interrupt their progress toward the Olympics, the swimmers won Hawai'i and Mainland competitions. In the 1948 Olympics in London, one of the club members captured gold medals in two swimming events.

After World War II, it was increasingly clear that plantation camps were becoming a thing of the past. The agriculture industry was becoming more mechanized and the demand for workers lessened significantly. The rise of unionization required increased compensation and benefit plans. Plus, the economy offered many people more options in employments, options less rigorous than field and mill jobs.

As plantation camps deteriorated and were closing, the demand for single-family housing became more evident. HC&S prepared a plan for the sugarcane fields around the Kahului Harbor. It called this area "Dream City," which was a large-scale master planned community comprising single family homes, businesses, schools, churches and parks.

The intent was to offer home ownership for plantation workers and other residents. Fee simple house and lot packages were offered between 1950 and 1963. The first owners moved into their house in July 1950. The Kahului Shopping Center was built in 1951. Dream City homes originally purchased for less than \$9,000 in the 1950s currently sell for between \$590,000-\$650,000.

This urbanization significantly changed the physical landscape in the Kahului and Wailuku area by centralizing a major portion of Maui's population, its commerce activities and government services. It also altered the social environment irrevocably by replacing the 25 plantation camps with a consolidated and integrated planned development.

## 5.2.2 Current State

### 5.2.2.1 CWRM IIFS Decision

As earlier discussed, the proposed action is different from typical SIA subjects, which generally deal with a change, whether it is public policy, land use development or infrastructure systems. The proposed action is a continuation of the use of water from State-owned land through an existing system that has been operational for over a century. Yet, the circumstances of the use and users of this water have changed dramatically. These changes need to be clearly articulated to analyze possible social impacts in its proper context.

There are three fundamental changes from A&B's previous long-term leases and subsequent revocable permits as hereby discussed.

#### **Commission on Water Resource Management Decision and Order**

On June 20, 2018, the State of Hawai'i Commission on Water Resource Management (CWRM) issued its Findings of Fact, Conclusions of Law, and Decision and Order (D&O) setting Interim Instream Flow Standards (IIFS) for the East Maui Streams that had been the subject of IIFS petitions that evolved through several CWRM proceedings since May 2001.

In setting IIFS, CWRM is required to weigh the importance of the present or potential instream values with the importance of the present or potential uses of water for non-instream purposes, including the economic impact of restricting such uses.<sup>22</sup>

In setting the IIFS for these East Maui streams, CWRM prioritized the instream uses that allowed the stream species to flourish, traditional and customary native Hawaiian rights, both appurtenant and gathering rights, to be actively practiced, and non-municipal domestic uses to be supported.

CWRM also recognized that there are streams for which restoration of flow would not result in significant biological or ecological gains and that the water may be better used for non-instream uses. For those streams, a connectivity flow to allow for movement of instream biota would be sufficient.

---

<sup>22</sup> HRS § 174C-71(2)(D)

CWRM recognized that there is significant value in the non-instream uses which include municipal use, such as domestic and agricultural use. The value of the non-instream uses goes beyond mere economic value to the users. It supports uses that range from households, schools and hospitals to small truck farms and large agricultural concerns. It also assures the continued presence of agriculture in central Maui, a value which has been incorporated by the community through its inclusion in the Maui Island Plan/General Plan 2030, the Countywide Policy Plan, and the various Community Plans.

In explaining the IIFS decision stream by stream, CWRM generally described the following categories of streams.

- **Conveyance of Water to Kalo Growing Areas for Community Use**

CWRM ordered that all diversions on the following streams cease to allow for all water to flow to the taro growing areas or for community and non-municipal domestic uses: Honopou, Huelo (Puolua), Hanehoi, Pi'ina'au, Palauhulu, Waiokamilo, Wailuānui, Ohia, Waianu, Kualani, and Makapipi.

- **Water for Streams With High Biological Value**

Hawai'i's streams support a unique variety of native fish, shrimp, mollusks and insects that live a diadromous lifecycle. This is characterized by "two runs," one to the ocean as newly hatched larvae and subsequent return from the ocean to fresh water as juveniles. The best scientific evidence currently available indicates that 64 percent of median base flow (BFQ50) generally represents the flow necessary to restore 90 percent of the habitat in a stream (H90). Absent any physical barriers to upstream or downstream migrations or interruptions in connectivity, the H90 flow is believed to provide suitable conditions for growth, reproduction, and recruitment of native stream animals as well as protection of traditional and customary native Hawaiian gathering rights, which are affected by the size of native animal populations in a stream.

*Potential Social Impacts*

CWRM expects that the restoration of flows to streams that are spread out geographically will provide greater protection against localized habitat disruptions, will produce a wider benefit to estuarine and near-shore marine species, and will result in improved comprehensive ecosystem function across the entire East Maui watershed. CWRM identified the following streams as having the potential to benefit greatly from restoration of flow to a minimum H<sub>90</sub> level based on the biological diversity and habitat that already exists under diverted conditions: Pi'ina'au, Wailuānui, Honomanu, Waikamoi, Nua'ailua, East Wailuaiki, Kopiliula, and Waiohue. Restoration of these streams should allow the stream species to flourish and reproduce, benefiting not only the natural environment but also allowing for better opportunity for the exercise of traditional and customary native Hawaiian rights.

Additionally, CWRM ordered full restoration of West Wailuaiki Stream and Honomanu Stream. West Wailuaiki presents a unique research opportunity to collect valuable information regarding the impact of full restoration of a stream versus habitat restoration H<sub>90</sub>. East and West Wailuaiki lie in close proximity to each other with similar biological values and similar habitat and biota, and the study of these two streams in combination with one another should provide information regarding the impact, if any, of full restoration versus habitat restoration. Honomanu Stream, despite having several diversions on it, has a high biological rating with a potential for high natural habitat gains with the restoration of flow to the dry reaches. Thus, CWRM ordered that Honomanu Stream should have full streamflow restoration below the Lower Kula Ditch diversion, which provides water for the MDWS system that is used for domestic and agricultural uses.

- **Water for Streams That Have Barriers to Biological or Ecological Improvements**

Other streams, because of the geomorphology of the stream or the presence of groundwater input through the presence of streams, are gaining streams and no additional release of water past the diversions are believed necessary to maintain habitat below the diversions at this time. To allow for the movement of biota, CWRM ordered that there be a minimum connectivity flow across the diversion structures to allow for passage of biota upstream. This minimum connectivity flow would be twenty percent (20%) of the instream flow. Streams that are set at connectivity flow are: Kapaula, Pa'akea, Pua'aka'a, Puohakamoa, Ha'ipua`ena, Nua'ailua, Waiaaka, and Hanawi.

- **Non-instream Use of Water for Municipal and Agricultural Uses**

CWRM acknowledged that in the context of a proceeding to set IIFS, it does not have the authority to determine how much water may be used for non-instream use for municipal and agricultural uses. That authority lies with the BLNR in issuing a water lease pursuant to HRS § 171-58, subject to the IIFS set by CWRM. Recognizing that the non-instream uses, especially municipal use, are valued uses, CWRM set the IIFS to allow MDWS to continue to divert water through its Upper and Lower Kula pipelines. In not requiring full restoration of all streams, CWRM has allowed some streams to continue to be diverted so that BLNR may continue to license the diversion of water not needed to meet the IIFS from those streams for non-instream use. The available water would also include freshets and stormwater which are not included in the calculation of the IIFS.

CWRM recognized that the EMI Aqueduct System remains a valuable asset that delivers non-instream public trust benefits, such as drinking water, as well as other reasonable and beneficial uses. The reduction in diversions does not, by itself, compromise the structural integrity of the EMI Aqueduct System so long as it continues to be maintained as a single coordinated system. CWRM considered factors that contribute to the operational capacity of the existing EMI Aqueduct System by allowing some water diversions from streams in the higher elevation eastern portion of the watershed.

Further, CWRM recognized that the water that may be licensed by the BLNR from the petitioned East Maui streams may not be sufficient to satisfy the full implementation of A&B's Diversified Agricultural Plan. It expected that a sufficient amount of non-instream water would be available to provide the initial phase of allowing lands already designated as Important Agricultural Lands in central Maui to be developed for diversified agriculture.



### 5.2.2.2 Diversified Agriculture Replaces Sugar Mono Crop

The original water leases were issued to support thousands of acres of sugar cultivation. Sugar operations provided predictable employment, and its process from field to cane burning to processing was generally understood by local residents. And though cane burning was bothersome for some, the cane fields provided a green backdrop appreciated by residents and visitors alike. Sugar cultivation ceased with the 2016 closure of the sugar mill.

The current proposed water lease is intended to support diversified agriculture, a departure from the mono crop nature of sugar. A&B presented possible diversified agricultural ventures, including forestry crops, livestock, pasture-fed dairy operations, biogas feed crop, beverage crops, orchard crops including pongamia, and mechanized harvested crops. However, these options were presented as possibilities, not as firm and exact plans. Further, more specific information regarding diversified agriculture has been developed by the new landowner and is presented in the next section.

### 5.2.2.3 New Landowner

Effective January 1, 2017, A&B converted to a real estate investment trust, or REIT. The move was intended to operate commercial real estate business within the REIT structure, and continue to operate active real estate development for sale projects, diversified agricultural activities and materials and construction business through a taxable REIT subsidiary.<sup>23</sup>

---

<sup>23</sup> "Hawaii Real Estate Platform Through Real Estate Investment Trust (REIT) Structure," available at <https://www.prnewswire.com/news-releases/alexander--baldwin-to-strengthen-hawaii-real-estate-platform-through-real-estate-investment-trust-reit-structure-300485020.html>

On December 20, 2018, A&B announced that it sold approximately 40,000 acres of former HC&S lands for \$262 million to Mahi Pono for the purposes of cultivating a variety of food and energy crops. This was to ensure the continued agricultural use of these Central Maui lands, the preservation of green open space in Central Maui, and a consistent and long-term source of revenue for the local economy. Mahi Pono will also partner in the ownership and management of the EMI Aqueduct System.<sup>24</sup>

Mahi Pono is a joint venture of Pomona Farming, LLC, and PSP Investments. Pomona Farming, LLC, is a California-based agricultural group. This global investment and food branding company manages 93,000 acres of farmland. PSP Investments is one of Canada's largest pension investment managers and services Canadian public service, Armed Forces and Royal Canadian Mounted Police and Reserve Force.

A&B sold land and related agricultural operations to Mahi Pono for \$262 million. The change in ownership involved 41,000 acres in Central Maui and EMI watershed land, as well operations involving Kulolio Ranch, Central Maui Feedstocks and a 250-acre trial of energy crops. Additionally, Mahi Pono now owns 50 percent of the EMI Irrigation Aqueduct System and is the managing partner of the system. The former sugar mill site was not included in the purchase.

Mahi Pono extended employment to EMI employees and the A&B farm team. Almost all employment offers were accepted. Mahi Pono's leadership team includes several people local to the Maui community.

At the time of this writing, Mahi Pono is working on two farm plan alternatives, both of which involve 31,177 acres<sup>25</sup> and include

- tropical fruit and nut crops
- coffee and specialty crops
- diversified agriculture, including land set aside for community agriculture near the former sugar mill, and
- irrigated and unirrigated pasture lands.

---

<sup>24</sup> "A&B agreement with Mahi Pono launches new era of agriculture on Maui: Former HC&S lands to be repurposed as diversified agriculture farms, available at [https://www.prnewswire.com/news-releases/ab-agreement-with-mahi-pono-launches-new-era-of-agriculture-on-maui-300769828.html?fbclid=IwAR1GS\\_AQvwiD67UlzfiBhp5BsPOBI2S6\\_py3AUIPGafEzYqcUr-ABkWljZ8](https://www.prnewswire.com/news-releases/ab-agreement-with-mahi-pono-launches-new-era-of-agriculture-on-maui-300769828.html?fbclid=IwAR1GS_AQvwiD67UlzfiBhp5BsPOBI2S6_py3AUIPGafEzYqcUr-ABkWljZ8)

<sup>25</sup> This acreage does not include lands west of Veterans Highway, which would be irrigated by West Maui water sources.

Assumptions upon which the two farm plans are based are as follow.

- Available water in Farm Plan based on IIFS allocations
  - Surface water = 61.78 MGD
  - Brackish groundwater = 15.44 MGD (assume 25 percent of surface water to maintain appropriate salinity level)
  - Total = 82.35 MGD
- Available water in Farm Plan based on no stream diversion from State land
  - Surface water = 22.54 MGD (assume 25 percent of surface water to maintain appropriate salinity level)
  - Brackish groundwater = 5.64 MGD
  - Total = 28.18 MGD<sup>26</sup>

Based on these assumptions, it was estimated that there would be an approximate 65 percent decrease in available water. While most farm components would correspondingly and significantly decrease in acreage, acreage for unirrigated grass-fed cattle would double, from 11,000 to 22,000 acres. Further, with no stream diversion from State lands, approximately 9,577 acres of unirrigated cattle lands would be unproductive for agriculture. Alternative uses would need to be explored and would not include urban development.

Mahi Pono recently announced its 2019 crop plan<sup>27</sup> for approximately 1,500 to 2,000 acres in Central Maui. The first crops to be planted include: avocados, bell peppers, potatoes, papaya, guava, lilikoi, white pineapple, oranges, mandarin oranges, lemons, limes, coffee and macadamia nuts, as well as cover crops such as alfalfa. Mahi Pono's long-term plans will include scaling up citrus fruit, coffee and grass-fed beef.

For 2019, EMI estimates its water deliveries to be approximately 30-35 million gallons per day (MGD). The total amount includes water used by approximately 35,000 Upcountry Maui residents served by the Maui County water system, Mahi Pono, and other water users served by EMI. This level of water use remains well within the amount of water available under the CWRM IIFS decision.

---

<sup>26</sup> At the time of this writing, there have been updated iterations of crop plans and related water implications. From an SIA perspective, the estimated numbers are important in terms of scale and magnitude. The differences that occurred in this time frame do not indicate significant change in magnitude that would change the social context.

<sup>27</sup> This crop plan is an update of what was presented in the April 2019 interviews and discussed in Section 4.2.3.

Further, EMI has completed work on 29 diversion structures in the EMI Aqueduct System and has secured permits to modify or permanently abandon another 30 diversions, with the approval of the additional remaining eleven diversions under review by CWRM.<sup>28</sup>

## 5.3. Potential Social Impacts

### 5.3.1 Overall Community

The larger community, including Maui Island residents and those who are not directly affected by the proposed water lease may experience social impacts by the proposed action. This section identifies possible social impacts on the general population.

#### 5.3.1.1 Potential to Realize Public Policies

Public policy helps to establish a framework for community expectations for the future. Section 3 provides an overview of public intent for:

- The natural environment, including restoring wetlands and watersheds and stream flows
- Stewardship of the natural environment
- Protecting cultural access to mountain, ocean and island resources for traditional Hawaiian cultural practices
- Diversifying and expanding sustainable agricultures to feed the local population and support local farmers, and
- Ensuring a reliable and affordable supply of water.

These public policies help to articulate common goals and objectives that private and government sectors can coordinate and implement. They provide a benchmark of the community's aspirations and an expectation for the future.

---

<sup>28</sup> Source: Mahi Pono, "MAHI PONO ANNOUNCES 2019 MAUI CROP PLAN: The plan covers approximately 1,500 – 2,000 acres to be planted this year, May 8, 2019

By itself, the proposed action has tested the community's ability to trust that public policy will be realized. A long-term water lease to access State watershed streams, without assurances of a viable future for sustainable diversified agriculture, support for local farmers, efficient water transmission, Upcountry Maui domestic and agriculture water supplies and environmental stewardship, can be perceived mostly as just benefitting a private for-profit entity.

The introduction of Mahi Pono and its attendant vision, agricultural focus, and stated objectives regarding environmental responsibility and sustainability, diversified agriculture, and support for local farmers shifts the paradigm from an uncertain future to a possible scenario that may realize, at least in part, community values and vision embodied in public policy.

The possibility that these policies may come to fruition has positive social value. It can guide community expectations towards a more hopeful future. This possibility can encourage people to be willing to reach across the table to opposing views, to build bridges that connect rather than divide.

#### **5.3.1.2 Sustainable and Local Agriculture**

In focus groups and interviews, people shared certain values about agriculture. They tend to feel that the time for mono crops is past, that mono crops tend to be exported and profits benefit big companies and off-island economies.

There was consensus that diversity is the way of the future. Diversified agriculture presents a tapestry of farming landscapes, increases opportunities for local products, and provides possibilities for a variety of scales, from small family ranches and farms to corporate agricultural operations.

There was also a desire to increase food self-sufficiency for the island community. The local market should be integral for future agricultural efforts, thereby ensuring that Maui will have a reliable and accessible food supply.

In and of itself, a long-term water lease does not ensure that these values regarding agriculture and food supply can become reality. The context for the long-term water lease has expanded, however, to include a new landowner whose business is agriculture and who claims to embody these values.



If Mahi Pono's stated vision and farm plan objectives are implemented, then this would have a positive effect on the social environment. Viable diversified agriculture, agricultural products that cater to local market and eateries, support for local farmers and ranchers, and food self-sufficiency will contribute positively to quality of life and social well-being.

## **5.3.2 Affected Groups**

### **5.3.2.1 East Maui**

East Maui residents, farmers and cultural practitioners have been advocating for the reduction of stream diversions and the return of full stream flows. Focus group participants and interviewees stressed that previous water leases have had significant impact on their culture, social well-being and generational ability to thrive in East Maui.

While the recent CWRM decision addresses or mitigates that impact to some degree, the proposed long-term water lease would still affect streams in their area. The proposed action is viewed as a continuation of taking East Maui water to support a private for-profit company. The proposed action is not seen by focus group participants as part of a solution, but rather as an extension of past wrongs. Focus group participants vowed to continue to oppose the proposed water lease, and advocate the removal of all diversion structures from the kalo and community streams designated for full restoration. They also noted that East Maui streams have been flowing well since sugar cultivation ceased. They were very concerned that once active steam diversion resumes, stream flow in the majority of East Maui streams will be lessened and again restricted.

EMI has indicated that it is modifying or removing several diversion structures to complete restoration of diverted streams that have been designated for full flow. This has positive social value for East Maui because it represents progress in stream restoration. Stream restoration addresses physical mitigation and will support cultural and food gathering practices.

In follow-up interviews, there was hope that Mahi Pono would address problems with physical infrastructure by improving stewardship of the EMI Aqueduct System. It was stressed, however, that, while physical and environmental mitigation is crucial, there is still a fundamental need to rectify social, cultural and emotional impacts that have developed for over one hundred years. Although Mahi Pono did not cause these impacts, the company has inherited a legacy that is generational and needs to be addressed to help these East Maui community move forward.

#### **5.3.2.2 Ha'ikū and Huelo Downstream Residents and Farmers**

For Ha'ikū and Huelo residents and farmers downstream of the EMI Aqueduct System, the proposed water lease is often perceived as a continuation of what they have been experiencing for many decades. Focus group participants and interviewees cited problems with the management of the EMI Aqueduct System in terms of both diversion activities and infrastructure condition.

In addition, the proposed action is considered a continuation of restrictions on their ability to access and use stream water on their properties.

#### **5.3.2.3 Local Farmers and Ranchers**

The effect of the proposed water lease on Maui-based farmers, ranchers and flower growers will depend on whether they can participate in future diversified agriculture in Central Maui. Thus far, there has been discussion regarding setting aside land for local farmers and eventually creating support facilities and services intended to provide means to reduce costs for individual farms. Little or no mention has been made regarding including livestock farmers in Mahi Pono's farm plan.

For Upcountry Maui farmers in the current and 262-acre expansion of Kula Agricultural Park, the effect of the proposed action will depend on how much water they can receive if the water lease is granted. There is a current allocation for the Kula Agriculture Park and the 262-acre expansion.

For East Maui farmers, the proposed water lease would continue to divert water from streams not designated for full restoration, although some are mandated to have partial restoration to support the stream habitat. When active diversion resumes, it is expected that an overall decrease in stream flow will occur in East Maui when compared to current conditions, but there will be an overall increase in stream flow compared to when sugar was fully operational in Central Maui.

#### **5.3.2.4 Upcountry Domestic Users**

The effect of the proposed action on Upcountry Maui domestic water users will depend on how much water will be released from the EMI Aqueduct System for MDWS use. If Upcountry Maui water needs exceed its water allocation, other sources of water will need to be developed. The cost of well development and pumping is expected to result in increased water fees.

## 6. Recommended Mitigation

### 6.1. Core Working Group

As discussed in Section 1.3, the SIA process and studies are about relationships, between people, the environment, government, businesses and so on. Two areas of mitigative measures are recommended for consideration, should the proposed water lease be granted by the BLNR. These measures are intended to establish an ongoing working relationship between the community, Mahi Pono and EMI, and related public agencies, as well as continue resolution with East Maui communities.

#### **Consensus**

It is recommended that interest groups, or stakeholder groups, are clearly defined so that there is recognition of who will be affected by the proposed water lease. Groups should include geographic communities, environmental, agriculture and business interests, and public agencies. Each group would be encouraged to reach consensus on their own needs, concerns, opportunities and possible solutions.

A starting point for identifying stakeholder groups could be interviewees and focus group participants and their networks.

#### **Collaboration**

It is recommended that interest groups are equitably represented in a "Core Working Group" that would serve as a forum for exchanging ideas and collaborative efforts, as well as provide feedback and suggestions to Mahi Pono. Each member of the Core Working Group would be expected to reach out to their own networks to extend the discussion beyond the Core Working Group. While there would likely be strong differences in perspectives and opinions, the Core Working Group would need to find ways to establish core principles, common ground and manageable solutions.

### **Transparency**

The fundamental value that will help bring people to the same table is trust. The proposed action has elicited skepticism and distrust over many decades, and these feelings prevent willingness for participating in mediation and collaboration. While developing trust among the various groups will be challenging, the first step is transparency. Being open about intent, plans and activities can begin to establish credibility and open the door to dialogue. Given people's willingness to participate in focus groups and interviews for this SIA, it is believed that key community leaders would be willing to collaborate if there is trust and transparency.

## **6.2. Ke'anae-Wailuanui Reconciliation**

East Maui residents have a unique relationship with the proposed action. While impacts are first and foremost culture-related, they are also entrenched in a social context that is the basis for this mitigation recommendation.

The social impact of diverting water is generational, one that has affected livelihoods, family cohesion, the ability to integrate with environment for food gathering and recreation, resource stewardship, and personal connections or disconnections with values inherent in their lifestyles.

For the Ke'anae – Wailuanui community to move past historical impacts, there needs to be established a point of departure. Mitigation needs to go beyond the physical restoration of streams. It needs to address the social context and include apology and reconciliation. This needs to be done within a cultural foundation that binds the community together, and key players, including Mahi Pono, public agencies and elected officials. The manner and forum for this process should be defined by cultural leaders integral with the process.



## References

- Checkoway, Julie. ***The Three-Year Swim Club: The Untold Story of Maui's Sugar Ditch Kids and Their Quest for Olympic Glory.*** Grand Central Publishing; Reprint Edition (June 21, 2016).
- Chris Hart & Partners. ***General Plan 2030.*** Prepared for Maui County Long-Range Planning Division (September 2006).
- County of Maui. ***2030 General Plan: Countywide Policy Plan.*** Adopted by Ordinance No. 3732 (2010).
- County of Maui Office of Economic Development. ***Maui County Data Book 2015.*** Available at <https://hisbdc.org/BusinessResearchLibrary/MauiCountyDataBook2015.aspx>
- County of Maui Planning Department Long Range Division. ***Maui Island Plan, Island of Maui, General Plan 2030.*** Adopted by Ordinance No. 4004 (2012).
- Engledow, Jill. ***Sugarcane Days: Remembering Maui's Hawaiian Commercial & Sugar Company.*** Maui Island Press (2016).
- Group 70 International, Inc., Davianna McGregor, Cultural Surveys Hawaii. ***KALOKANUO KA 'AINA A CULTURAL LANDSCAPE STUDY OF KE'ANAE AND WAILUĀNUI, ISLAND OF MAUI.*** (May 1995).
- Hawaii Thousand Friends. ***The Public Trust Doctrine Brochure.*** Undated.
- Jones, C. Allan and Robert V. Osgood. ***From King Cane to the Last Sugar Mill.*** University of Hawaii Press. (2015)
- Maui Tomorrow. ***MĀLAMA 'AINA: A CONVERSATION ABOUT MAUI'S FARMING FUTURE.*** (2016).
- Permaculture Design International, LLC. ***Maui's Farming Future.*** Prepared for Maui Tomorrow. February 14, 2016.

---

References

State of Hawaii Commission on Water Resource Management. FINDINGS OF FACT, CONCLUSIONS OF LAW & DECISION AND ORDER. PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS FOR HONOPOU, HANEHOI/PUOLOA (HUELO), WAIKAMOI, ALO, WAHINEPEE, PUOHOKAMOA, HAIPUAENA, PUNALAU/KOLOA, HONOMANU, NUAAILUA, PIINAAU, PALAUHULU, OHIA (WAHIANU), WAIOKAMILO, KUALANI (HAMAU), WAILUĀNUI, WAIKANI, WES WAILUAIKI, EAST WAILUAIKI, KOPLUILA, PUAKAA, WAIOHUE, PAAKEA, WAIAAKA, KAPAULA, HANAWI, AND MAKAPIPI STREAMS. June 20, 2018.

U. S. Bureau of the Census. **American Fact Finder**. Various tables available at <https://factfinder.census.gov>

Yucha, Trevor, Zacariah D. Royalty, Hallet H. Hammatt. **Draft Archaeological Literature Review and Field Inspection for the Proposed Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas (East Maui Aqueduct System), Multiple Ahupua'a, Makawao and Hāna District, Maui Island TMKs: [2] 1-1-001:044, 50, 1-1-002:002, 1-2-004:005, 007 (por.), 2-9-014:001, 005, 011, 012, 017.** (October 2018).



---

# **APPENDIX H:**

## Economic and Fiscal Impact Study

Munekiyo Hiraga







# **Economic and Fiscal Impact Study**

## **PROPOSED WATER LEASE FOR THE NĀHIKU, KE‘ANAE, HONOMANŪ, AND HUELO LICENSE AREA**

**Prepared for:**  
**WILSON OKAMOTO CORPORATION**

**June 2019**


Copyright © 2019 by  
Munekiyo Hiraga



**MUNEKIYO HIRAGA**

Planning. Project Management. Sustainable Solutions.

**001752**



# **Economic and Fiscal Impact Study**

## **PROPOSED WATER LEASE FOR THE NĀHIKU, KE‘ANAE, HONOMANŪ, AND HUELO LICENSE AREA**

**Prepared for:**

**WILSON OKAMOTO CORPORATION**

**August 2019**

**Copyright © 2019  
by Munekiyo Hiraga**



# CONTENTS

|   | <u>Page</u> |
|---|-------------|
| I. INTRODUCTION .....   | 1           |
| A. PROJECT OVERVIEW .....                                       | 1           |
| 1. Background .....   | 1           |
| 2. History of Water Leases .....                                | 1           |
| 3. Purpose and Needs of Water Lease .....                       | 2           |
| 4. Overview of License Area .....                               | 3           |
| B. IMPACT ANALYSIS – BASELINE AND FUTURE CONDITIONS .....       | 8           |
| 1. Baseline Conditions .....                                    | 8           |
| 2. Future Conditions .....                                      | 9           |
| C. AREAS OF POTENTIAL EFFECT .....                              | 10          |
| 1. East Maui .....  | 11          |
| 2. MDWS Upcountry Water System Service Areas .....              | 11          |
| 3. Nāhiku Community .....                                       | 11          |
| 4. Central Maui .....   | 13          |
| D. METHODOLOGY .....  | 13          |
| 1. Economic Impact Assessment .....                             | 13          |
| 2. Fiscal Impact Assessment .....                               | 14          |
| E. REPORT ORGANIZATION .....                                    | 14          |
| II. EAST MAUI IRRIGATION COMPANY WATER USE AND OPERATIONS ..... | 16          |
| A. BASELINE CONDITIONS .....                                    | 16          |
| 1. Typical Sugar Cane Operations (2006) .....                   | 16          |
| 2. Recent Sugar Cane Operations (2008-2013) .....               | 17          |
| 3. Interim Diversified Agriculture Operations (2017) .....      | 20          |
| B. FUTURE CONDITIONS .....                                      | 21          |
| 1. Proposed Action .....  | 21          |
| 2. No Action Alternative .....                                  | 23          |
| 3. Reduced Water Lease Alternative .....                        | 24          |
| III. EAST MAUI .....  | 26          |
| A. BASELINE CONDITIONS .....                                    | 26          |
| B. FUTURE CONDITIONS .....                                      | 26          |
| 1. Economic Impact Assessment .....                             | 26          |
| 2. Fiscal Impact Assessment .....                               | 28          |

|       |  |    |
|-------|--|----|
| IV.   | UPCOUNTRY MAUI.....                                    | 29 |
| A.    | IMPACTS ON DOMESTIC WATER USE.....                     | 31 |
| 1.    | Baseline Conditions.....                               | 33 |
| 2.    | Future Conditions.....                                 | 35 |
| B.    | IMPACTS ON AGRICULTURAL WATER USE.....                 | 40 |
| 1.    | Baseline Conditions.....                               | 41 |
| 2.    | Future Conditions.....                                 | 41 |
| V.    | NĀHIKU.....  | 46 |
| A.    | BASELINE CONDITIONS.....                               | 46 |
| 1.    | Recent Sugar Cane Operations (2008-2013).....          | 46 |
| 2.    | Interim Diversified Agriculture Operations (2017)..... | 46 |
| B.    | FUTURE CONDITIONS.....                                 | 46 |
| VI.   | CENTRAL MAUI.....                                      | 47 |
| A.    | BASELINE CONDITIONS.....                               | 47 |
| 1.    | Typical Sugar Cane Operations (2006).....              | 47 |
| 2.    | Recent Sugar Cane Operations (2008-2013).....          | 50 |
| 3.    | Interim Diversified Agriculture Operations.....        | 51 |
| B.    | FUTURE CONDITIONS.....                                 | 51 |
| 1.    | Proposed Action.....                                   | 52 |
| 2.    | No Action Alternative.....                             | 54 |
| 3.    | Reduced Water Lease Alternative.....                   | 56 |
| VII.  | SUMMARY.....   | 57 |
| A.    | EMI OPERATIONS.....                                    | 57 |
| B.    | EAST MAUI.....   | 58 |
| C.    | NĀHIKU.....  | 58 |
| D.    | UPCOUNTRY MAUI.....                                    | 59 |
| 1.    | Domestic Water Use.....                                | 59 |
| 2.    | Agricultural Water Use.....                            | 60 |
| E.    | CENTRAL MAUI.....                                      | 60 |
| VIII. | REFERENCES.....  | i  |

\\MH03\DRIVE\_F\DATA\WOC\E MAUI WATER LEASE\APPLICATIONS\ECONOMIC AND FISCAL STUDY\ECONOMIC AND FISCAL IMPACT.REPORT (REVISED).DOCX

## LIST OF FIGURES

|  | <u>Page</u> |
|--|-------------|
| <b>Figure 1.</b> Map of License Area.....                            | 4           |
| <b>Figure 2.</b> Upcountry Water System and Central Maui Fields..... | 12          |
| <b>Figure 3.</b> Upcountry Maui Water System Service Area.....       | 30          |

# LIST OF TABLES

|   |    |
|---|----|
| <b>Table 1.</b> License Area.....   | 3  |
| <b>Table 2.</b> Streams in the License Area .....                               | 6  |
| <b>Table 3.</b> Amount of Water Diverted, Future Conditions .....               | 10 |
| <b>Table 4.</b> EMI Water System Economic and Fiscal Impacts .....              | 18 |
| <b>Table 5.</b> East Maui Economic and Fiscal Impacts .....                     | 27 |
| <b>Table 6.</b> MDWS Upcountry Water System .....                               | 29 |
| <b>Table 7.</b> Upcountry Maui - Domestic Economic and Fiscal Impacts .....     | 32 |
| <b>Table 8.</b> Upcountry Maui – Agricultural Economic and Fiscal Impacts ..... | 43 |
| <b>Table 9.</b> Central Maui Agricultural Economic and Fiscal Impacts .....     | 48 |



# INTRODUCTION



# I. INTRODUCTION

This Economic and Fiscal Impact Study has been prepared for the Environmental Impact Statement (EIS) for the proposed Water Lease for the Nāhiku, Ke‘anae, Honomanū, and Huelo license areas (collectively the License Area).

## A. PROJECT OVERVIEW

### 1. Background

In May 2001, Alexander & Baldwin, Inc. (A&B) and its subsidiary, East Maui Irrigation Company, Limited (EMI) (also collectively referred to as A&B requested that the State, pursuant to Hawai‘i Revised Statutes (HRS) § 171-58, offer a long-term (30 year) lease at public auction for the “*right, privilege and authority to enter and go upon*” State-owned lands at Ko‘olau Forest Reserve and Hanawī Natural Area Reserve, Hāna and Makawao, Maui, for the purposes of developing, diverting, transporting and using government-owned waters. The requested lease (Water Lease) would allow the use of government-owned waters from the Nāhiku, Ke‘anae, Huelo, and Honomanū license areas.

### 2. History of Water Leases

Since 1878, A&B, or its predecessors and affiliates, have operated the EMI Aqueduct System, which is an integrated system of diversions, ditches, intakes, siphons, flumes, and tunnels that collects water from streams located on the rainy windward slopes of East Maui. The EMI Aqueduct System transports water to agricultural fields<sup>1</sup> in Central Maui, as well as to the Maui County Department of Water Supply (MDWS) for the domestic-water needs of Upcountry Maui and the Nāhiku community and the irrigation needs of small farms throughout Upcountry Maui, including the County’s Kula Agricultural Park (KAP).

Historically, A&B has had leases from the State of Hawai‘i that authorized the development, diversion, transportation, and use of government-owned waters emanating from approximately 50,000 acres of land (herein referred to as the Collection Area), of which approximately 33,000 acres are owned by the State of Hawai‘i (License Area) and approximately 17,000 acres were owned by A&B. Pursuant to historical rainfall data and long-standing agreements, “government-owned waters” is deemed to be 70 percent of waters that can be diverted from the

---

<sup>1</sup> The Central Maui Agricultural Fields were owned by Hawaiian Commercial & Sugar Company (HC&S), a former division of A&B. Herein, HC&S will be referred to as A&B, collectively with A&B and EMI.

Collection Area east of Honopou Stream; 30 percent of waters from the Collection Area comes from private lands. After the expiration of the terms of the last long-term water lease, the BLNR issued year-to-year revocable permits for the License Area.

It is noted that on June 20, 2018, the Commission on Water Resource Management (CWRM) adopted Findings of Fact, Conclusions of Law, and Decision and Order, setting the Interim Instream Flow Standards (IIFS) for 24 East Maui Streams located within the License Area (CWRM D&O).<sup>2</sup> The proposed Water Lease will be subject to the CWRM D&O and any future in-stream flow standard decisions made during the term of the Water Lease. As a result, the potential future flow of surface water from East Maui will be significantly reduced compared to past water diversions that occurred for over 90 years.

### **3. Purpose and Needs of Water Lease**

The objectives of the proposed Water Lease are:

- **Preserve and maintain the East Maui aqueduct system**

As mentioned above, A&B has had water leases and revocable permits from the State of Hawai'i that authorized the collection of water and operation of the EMI Aqueduct System since 1878. The issuance of the Water Lease would allow the EMI Aqueduct System to continue to provide water to enable approximately 30,000 acres of fields in Central Maui to remain in agriculture, and to supply water to MDWS, which in turn provides water for domestic and agricultural water needs in Upcountry Maui, including the KAP, and for the domestic water needs in the Nāhiku community.

- **Continue to meet domestic and agricultural water demands in Upcountry Maui**

The EMI Aqueduct System supplies water to the MDWS Upcountry Water System, which is the second largest system in the County. It services the

---

<sup>2</sup> The chart on pages 268-269 of the CWRM D&O identifies 25 streams and tributaries, one of which (Ohia/Waianu) is located below the EMI Aqueduct System and has never been diverted into the EMI Aqueduct System. Although the original Petitions to Amend the Interim Instream Flow Standards identified 27 streams, CWRM found that there were 24, not 27, streams that were the subject of the contested case. The difference being that (i) Waikani is not a stream but a waterfall of Wailuānu Stream; (ii) Alo is a tributary of Waikamoi Stream; (iii) Pua'aka'a is a tributary of Kopiliula Stream; and (iv) Piinaau and Palauhulu are separate streams that join together before reaching the ocean. See CWRM D&O, Findings of Fact 56, 2018.

communities of Kula, Pukalani, Makawao, Ha'ikū, Hali'imaile, Waiakoa, Kēōkea, Waiohuli, 'Ulupalakua, Kanaio, Olinda, 'Ōma'opio, Kula Kai, and Pūlehu. The continuation of the use of water through the proposed Water Lease is necessary to continue MDWS's service for agricultural and domestic purposes in Upcountry Maui. In addition, the KAP also draws non-potable water from the MDWS Upcountry Water System to support 31 farm lots. Furthermore, Maui County recently purchased an additional 262 acres in Upcountry Maui, which will be the first phase of a new County agricultural park, in the vicinity of the KAP. The source of water for the new agricultural park will be the same as for the KAP, Reservoir 40, which is sourced by the EMI Aqueduct System.

- **Continue to serve community water demands in the Nāhiku Community**

The Nāhiku community, a small community in East Maui, also draws water directly from the EMI Aqueduct System, with the source of that water being a development tunnel located east of Makapipi Stream, that feeds into the Ko'olau Ditch and is accessed by MDWS. The water serves 43 water meters located along Nāhiku Road (County of Maui, Department of Water Supply, 2019). As stated above, the proposed Water Lease will enable the continued provision of water supply for the Nāhiku community.

- **Continue to provide water for agricultural purposes in Central Maui**

The proposed Water Lease will enable the EMI Aqueduct System to provide continued water service for the cultivation of naturally non-arable lands in Central Maui. Sugar cane activities were terminated in 2016. The Central Maui agricultural lands as well as other lands formerly owned by A&B are now owned by MP Central A LLC, MP Central B LLC, MP CPR LLC, MP East A LLC, not. MP East B LLC, MP West LLC, and MP EMI LLC (individually or collectively referred to as Mahi Pono) which acquired these lands from A&B in December 2018. Since early 2019, MP EMI LLC owns 50% of EMI and is the managing member of EMI; A&B is the other member of EMI. Mahi Pono has prepared a Farm Plan to put as much of the former sugar cane lands into agricultural uses as economically feasible.

#### **4. Overview of License Area**

Collectively, the Nāhiku, Ke'anae, Honomanū, and Huelo License areas encompass approximately 33,000 acres of State Forest Reserve on the north slope of Haleakalā and collectively comprise the License Area. The location of the License Area is illustrated in **Figure 1** and described in **Table 1**.

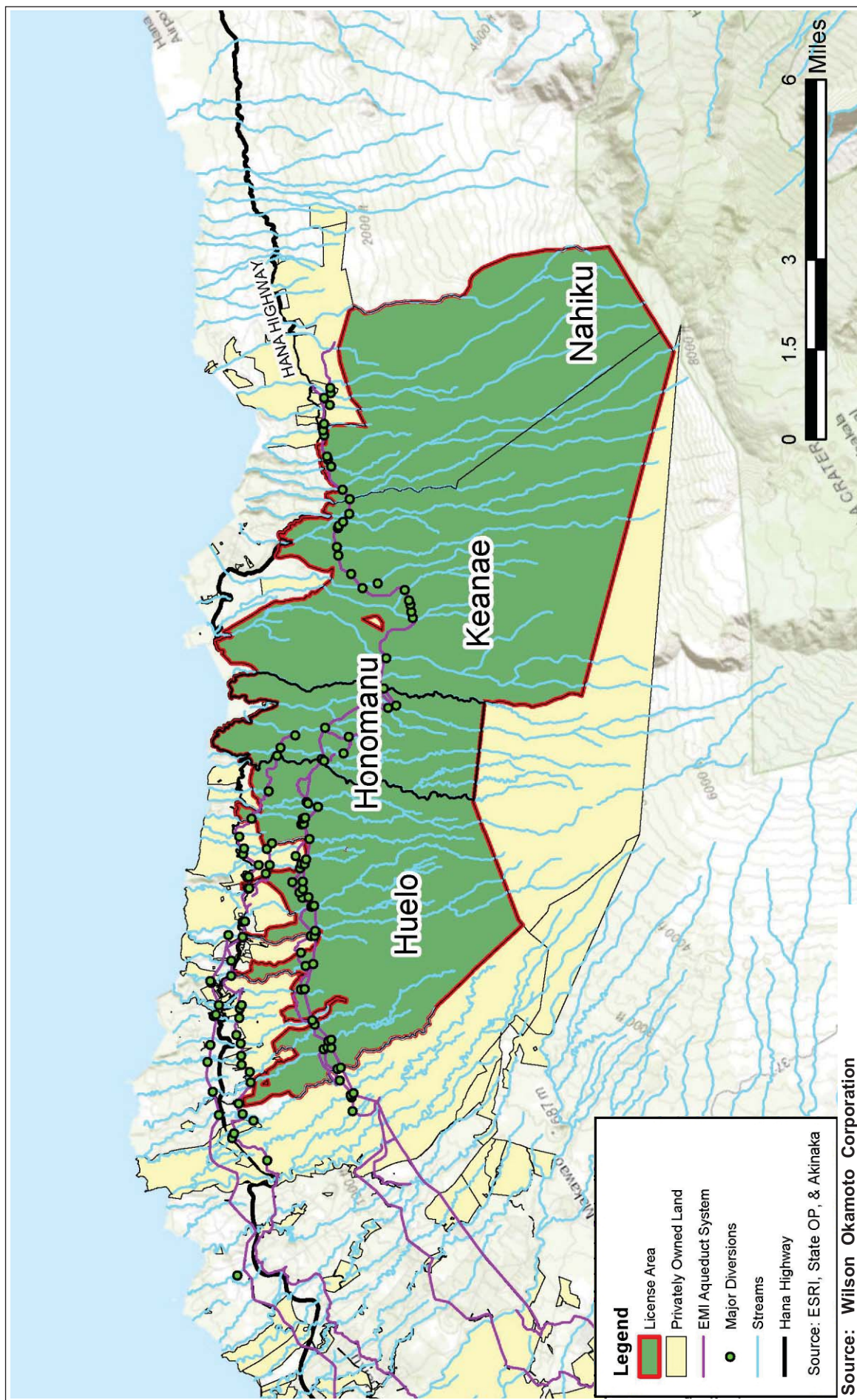


Figure 1

# Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Area Map of License Area





**Table 1. License Area**

| <b>License Area</b> | <b>Tax Map Key</b>                                   | <b>Area</b>                   |
|---------------------|--|-------------------------------|
| Nāhiku              | (2)1-2-004:005, 007 (por.)                           | 7,832 acres, more or less     |
| Ke'anae             | (2)1-1-002:002 (por.)                                | 13,007 acres, more or less    |
| Honomanū            | (2)1-1-001:044                                       | 3,381 acres, more or less     |
| Huelo               | (2)1-1-001:050<br>(2)2-9-014:001, 005, 011, 012, 017 | 8,752.690 acres, more or less |

The License Area is within the Ko'olau Forest Reserve, with mauka portions within Ke'anae and Nāhiku, being bordered by the Kipahulu and Hāna Forest Reserve. The Hanawi Natural Area Reserve also lies within the Nāhiku portion of the License Area.

The Water Lease assessed herein will allow the lessee to continue to enter the License Area *“for the purpose of developing, diverting, transporting, and using government-owned waters”* and to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. The continued operation of the EMI Aqueduct System will deliver water to agricultural lands in Central Maui, as well as to MDWS for domestic and agricultural water needs in Upcountry Maui and the Nāhiku community.

The EMI Aqueduct System diverts water from streams in East Maui, of which the vast majority, 36 streams, are diverted from within the License Area (CWRM D&O). The CWRM D&O calls for the full restoration of 10 streams within the License Area, and reduced diversions in several (12) other License Area streams, some significantly. Thus, the Proposed Action proposes to continue to divert a reduced amount of water from 26 streams within the License Area, with diversions from 12 of these 26 streams at reduced levels in accordance with the CWRM D&O. This report will assess the economic and fiscal impacts of the *“right, privilege, and authority to enter and go upon”* the License Area *“for the purpose of developing, diverting, transporting, and using government-owned waters”* for the 26 streams along with the streams located outside of the License Area but within the larger, 50,000 acre, Collection Area. See **Table 2**.

**Table 2.** Streams in the License Area

| <b>License Area</b>           | <b>Stream Number</b> | <b>Stream Name</b>                             | <b>Subject to IIFS</b> | <b>Restoration Status</b> | <b>Median Base Flow at IIFS (cfs)</b>                      | <b>IIFS Location</b>            |
|-------------------------------|----------------------|--|------------------------|---------------------------|--|---------------------------------|
| <b>Nāhiku License Area</b>    | 1                    | Makapipi                                       | Yes                    | Full                      | 1.3  | Above Hana Highway              |
|                               | 2                    | Hanawi   | Yes                    | Connectivity              | 4.6  | Below Hana Highway              |
|                               | 3                    | Kapaula  | Yes                    | Connectivity              | 2.8  | On Diversion at Koolau Ditch    |
| <b>Ke‘anae License Area</b>   | 4                    | Waiaaka  | Yes                    | None                      | 0.77   | Above Hana Highway              |
|                               | 5                    | Paakea   | Yes                    | Connectivity              | 0.9  | At Hana Highway                 |
|                               | 6                    | Waiohue  | Yes                    | Full                      | 5  | At Hana Highway                 |
|                               | 7                    | Kopiliula (Puaakaa Tributary)                  | Yes                    | Limited                   | H90 (64% of the Median Base Flow)(For Habitat Restoration) | Below Hana Highway              |
|                               | 8                    | East Wailuaiki                                 | Yes                    | Limited                   | H90 (64% of the Median Base Flow)(For Habitat Restoration) | At Hana Highway                 |
|                               | 9                    | West Wailuaiki                                 | Yes                    | Full                      | 6  | Above Hana Highway              |
|                               | 10                   | Wailuanui                                      | Yes                    | Full                      | 6.1  | At Hana Highway                 |
|                               | 11                   | Kualani ( or Hamau) (Below Ditch System)       | Yes                    | None (Never Diverted)     | N/A  | N/A                             |
|                               | 12                   | Waiokamilo                                     | Yes                    | Full                      | 3.9  | Below Diversion at Koolau Ditch |
|                               | 13                   | Ohia (or Waianu) (Below Ditch System)          | Yes                    | None (Never Diverted)     | 4.7  | N/A                             |
|                               | 14                   | Palauhulu (Hauoli Wahine and Kano Tributaries) | Yes                    | Full                      | 11   | Above Hana Highway              |
|                               | 15                   | Piinaau  | Yes                    | Full                      | 14   | Above Hana Highway              |
|                               | 16                   | Puaakaa  | Yes                    | Connectivity              | 1.1  | Above Hana Highway              |
|                               | 17                   | Puakea   | No                     | N/A                       | N/A  | N/A                             |
| <b>Honom-anū License Area</b> | 18                   | Nuaailua                                       | Yes                    | Connectivity              | 0.28   | TBD                             |
|                               | 19                   | Honomanu                                       | Yes                    | Limited                   | H90 (64% of the Median Base Flow)(For Habitat Restoration) | Above Hana Highway              |

**Table 2.** Streams in the License Area

| <b>License Area</b>  | <b>Stream Number</b> | <b>Stream Name</b>                                | <b>Subject to IIFS</b> | <b>Restoration Status</b> | <b>Median Base Flow at IIFS (cfs)</b>                      | <b>IIFS Location</b>  |
|--|----------------------|---|------------------------|---------------------------|--|---|
|  | 20                   | Punalau (Kolea and Ulunui Tributaries)            | Yes                    | Limited                   | H90 (64% of the Median Base Flow)(For Habitat Restoration) | Above Hana Highway  |
|  | 21                   | Haipuaena   | Yes                    | Connectivity              | 4.9  | Below Hana Highway  |
| <b>Huelo License Area</b>  | 22                   | Puohokamoa  | Yes                    | Connectivity              | 8.4  | Below Hana Highway  |
|  | 23                   | Wahinepee   | Yes                    | None                      | 0.9  | Above Hana Highway  |
|  | 24                   | Waikamoi (Alo Tributary)                          | Yes                    | Limited                   | H90 (64% of the Median Base Flow)(For Habitat Restoration) | Above Hana Highway  |
|  | 25                   | Kolea   | No                     | None                      | N/A  | N/A   |
|  | 26                   | Punaluu   | No                     | None                      | N/A  | N/A   |
|  | 27                   | Kaaiea  | No                     | None                      | N/A  | N/A   |
|  | 28                   | Oopuola (Makanali Tributary)                      | No                     | None                      | N/A  | N/A   |
|  | 29                   | Puehu   | No                     | None                      | N/A  | N/A   |
|  | 30                   | Naililihaele                                      | No                     | None                      | N/A  | N/A   |
|  | 31                   | Kailua  | No                     | None                      | N/A  | N/A   |
|  | 32                   | Hanahana (Ohanui Tributary)                       | No                     | None                      | N/A  | N/A   |
|  | 33                   | Hoalua  | No                     | None                      | N/A  | N/A   |
|  | 34                   | Hanehoi (Huelo (also known as Puolua) Tributary)  | Yes                    | Full                      | 2.54 (1.47 at Huelo)                                       | Upstream of Lowrie Ditch (Downstream of Haiku Ditch at Huelo) |
|  | 35                   | Waipio  | No                     | None                      | N/A  | N/A   |
|  | 36                   | Mokupapa  | No                     | None                      | N/A  | N/A   |
|  | 37                   | Hoolawa (Hoolawa ili and Hoolawa nui Tributaries) | No                     | None                      | N/A  | N/A   |
|  | 38                   | Honopou (Puniawa Tributary)                       | Yes                    | Full                      | 6.5  | Below Hana Highway  |
| <p>* Some of these streams may be identified by other names. The listed names are based on the June 20, 2018 CWRM D&amp;O identified by CWRM and the State Office of Planning's GIS data.</p> <p>* H<sub>90</sub> is 64% of the median base flow at that stream. These streams are for habitat restoration.</p> <p>* Cfs – Cubic Feet per Second, the IIFS numeric flow rate at the IIFS location.</p> |                      |   |                        |                           |  |   |

## **B. IMPACT ANALYSIS – BASELINE AND FUTURE CONDITIONS**

The Proposed Action that is being assessed in the EIS is the issuance of a long-term (30-year) Water Lease from the BLNR for the continued “*right, privilege, and authority to enter and go upon*” the License Area for the “*purpose of developing, diverting, transporting, and using government owned waters*”, through the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. It is assumed that CWRM D&O defines the maximum amount of stream water that can be diverted, subject to actual need.

This study will assess economic and fiscal impacts for baseline conditions (including certain historical use figures for context), the Proposed Action (preferred alternative), and other future conditions (alternatives), as described below:

### **1. Baseline Conditions**

#### **a. Sugar Cane Cultivation**

A&B cultivated sugar cane in Central Maui for over a century. EMI, a subsidiary of A&B, has operated the EMI Aqueduct System since 1878 to provide irrigation to the Central Maui fields. Water service to the MDWS for Upcountry Maui began in the early 1960's. Although A&B ended sugar cane operations in December 2016, the long history of sugar cane cultivation is a relevant baseline condition for the purposes of assessing economic and fiscal impacts associated with water use from the License Area.

Data from 2008 to 2013 will be used to represent the recent sugar cane cultivation period. The 2008 to 2013 time period was selected because those years are representative of the last six (6) full years of sugar cane operations and because the CWRM D&O reports water diversion and distribution data for these years. It is noted, however, that 2008 to 2013 is not representative of the long-term historic sugar operations because rainfall was below normal, water returned to East Maui streams was large enough to adversely affect sugar cane operations, and HC&S struggled to achieve profitable operations. As such, this report will also provide an analysis of 2006, for the economic and fiscal impacts specifically related to EMI operations and sugar cane cultivation in Central Maui. The 2006 year is representative of the 1987 to 2006 period of “typical” sugar cane operations: rainfall in East Maui was regarded as normal, the restoration of stream flows was not large enough to significantly affect HC&S sugar cane operations, and the plantation was economically healthy. The 2006 analysis will be limited to EMI operations and sugar cane cultivation in Central Maui and will not include economic and fiscal impacts for East

Maui, Upcountry Maui, or Nāhiku as the impacts for these areas in 2006 are not anticipated to be substantially different from the 2008 to 2013 period.

**b. Interim Diversified Agriculture Operations (2017)**

Since the cessation of sugar cane operations in 2016, some of the former cane fields have been transitioned into other agricultural uses. As will be discussed, relative to the Proposed Action below, a mix of diversified agriculture is proposed across the former sugar cane lands, approximately 30,000 acres of which are irrigated by the EMI Aqueduct System. The current “existing condition”, however, is actually an interim condition, with the majority of the fields in a fallow state, following the end of sugar cane cultivation, and diversified agriculture operations in their infancy. This interim condition is expected to change over time as additional fields are transitioned to diversified agriculture. Water use during the interim condition is not representative of the true long-term water demand under the Proposed Action due to the limited active agricultural cultivation during this early transitional period. Thus, while the interim diversified agriculture operations are the current “existing conditions”, the sugar cane cultivation analysis described above provides a more appropriate benchmark to which the Proposed Action and other future condition alternatives may be compared for the purposes of economic and fiscal impacts.

**2. Future Conditions**

The year 2030 is used for analyzing the future conditions alternatives.

**a. Proposed Action**

Under the Proposed Action, it is assumed that through the Water Lease, the State would authorize the right to collect waters emanating from government owned lands up to the maximum amount allowed under the CWRM D&O. Pursuant to the CWRM D&O and based on historic flows, it is estimated that the median amount of water that may be available from the Collection Area would be approximately 87.95 million gallons per day (mgd), measured at Honopou Stream. This estimate is based on historical ditch and stream flows as well as the implemented IIFS under the CWRM D&O. Note that this is a median, and actual ditch flows are expected to range from a low of 21.65 mgd during dry times to a high of 450 mgd (maximum capacity of the EMI Aqueduct System) during large rainfall events. Immediately west and outside of the License Area to Maliko Gulch, the EMI Aqueduct System collects approximately an additional 4.37 mgd from privately owned lands. In total, the median amount of surface water



that may be delivered through the EMI Aqueduct System in compliance with the CWRM D&O is approximately 92.32 mgd.

**b. No Action**

The No Action Alternative would result in no Water Lease being issued by the State. Under the No Action Alternative, the EMI Aqueduct System could continue to divert water from privately owned lands in the Collection Area (i.e., approximately 30 percent of the water available from the Collection Area). Therefore, the median amount of water estimated to be available from the Collection Area at the western boundary of the License Area, which is Honopou Stream, under the No Action Alternative would be approximately 26.39 mgd. Additionally, an estimated 4.37 mgd could be collected from private land from the western boundary of the License Area to Maliko Gulch, for an estimated total of approximately 30.76 mgd water delivered through the EMI Aqueduct System. This is just an estimate, but is the assumption being used in assessing the economic and fiscal impacts of the No Action Alternative.

**c. Reduced Water Lease Alternative**

For this alternative, the Water Lease would authorize less water than allowed under the CWRM D&O. The economic and fiscal impact analysis presented herein will provide a qualitative analysis of potential impacts under the Reduced Water Lease alternative.

The amount of water that would be diverted under the Proposed Action and No Action Alternatives are summarized in **Table 3** below.

**Table 3.** Amount of Water Diverted, Future Conditions

|   | Median Water Diversion (mgd)<br>Collection Area |  |
|---|---|--|
|   | Total At Honopou<br>Boundary                    | Total At Maliko<br>Boundary <sup>a</sup> |
| <b>Proposed Action</b>  | 87.95 mgd                                       | 92.32 mgd                                |
| <b>No Action</b>  | 26.39 mgd                                       | 30.76 mgd                                |
| <sup>a</sup> An additional 4.37 mgd of water is estimated to be available based on the water that is collected in the area west of the Collection Area to Maliko Gulch. |   |  |

**C. AREAS OF POTENTIAL EFFECT**

This study will assess economic and fiscal impacts associated with the baseline and future conditions described above for the following areas of potential effect:

1. **East Maui**

Due to the heavy rainfall on the windward slopes of Haleakalā and the many streams in the area, many of the makai communities in East Maui are well suited for growing taro and truck crops. Also, a number of farmers in East Maui have appurtenant and riparian rights to use water from these streams. Collectively, there are about 45 acres in East Maui that are suitable for growing taro, and about 35 acres for truck crops (Plasch Econ Pacific, LLC, 2019). This Study will summarize economic and fiscal impacts related to agricultural operations in East Maui.

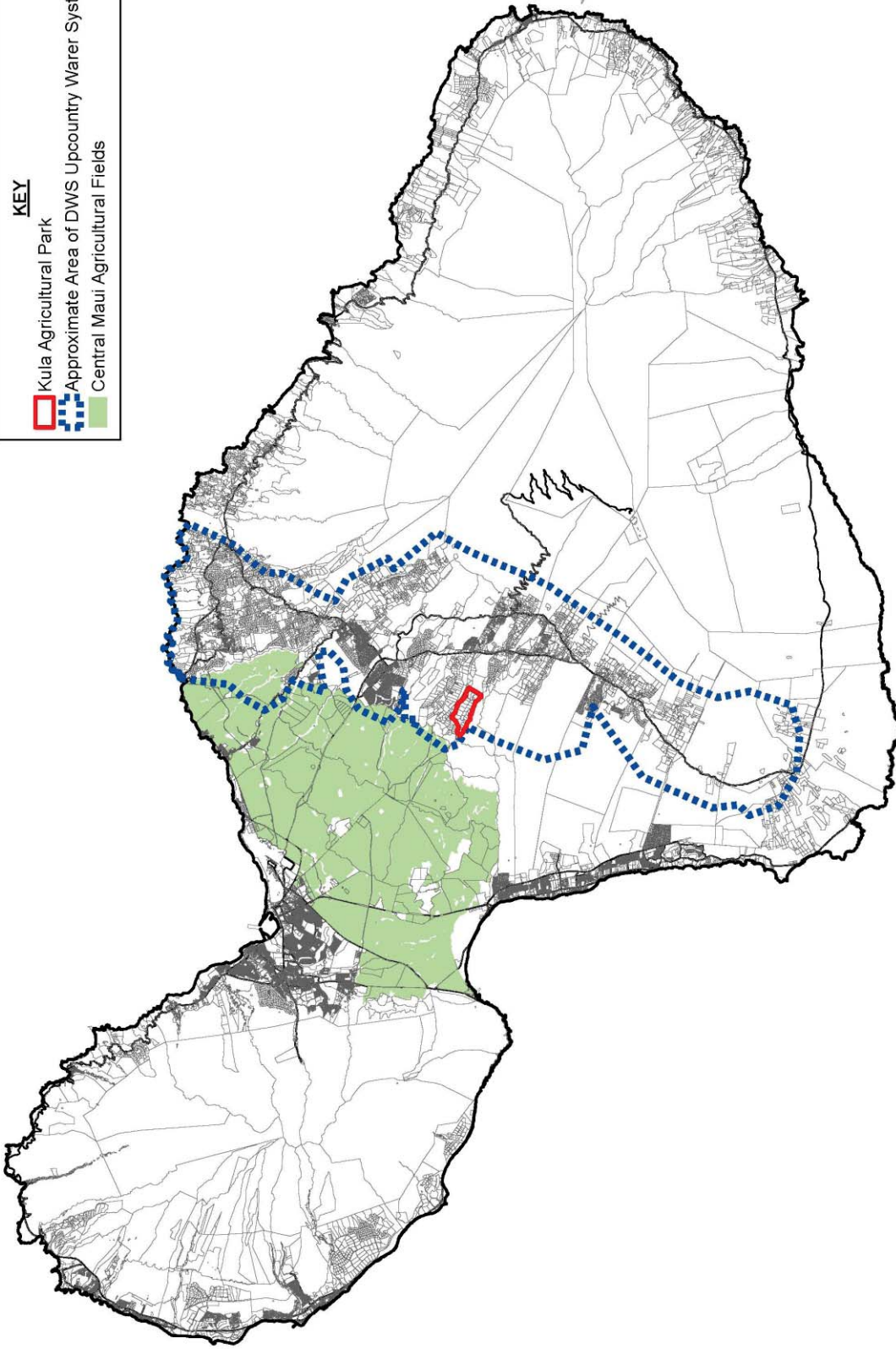
2. **MDWS Upcountry Water System Service Areas**

As previously noted, the EMI Aqueduct System supplies water to the MDWS Upcountry Maui Water System, which covers approximately 61,500 acres. See **Figure 2**. This Economic and Fiscal Impact Study will assess impacts to the following users within the Upcountry Water System.

- **Domestic users:** Domestic users include residents, businesses, and public/quasi-public users.
- **Agricultural users:** Based on analysis using data from the County of Maui's 2017 Real Property Tax Assessment information and State Department of Agriculture's Statewide Agricultural Land Use Baseline 2015, approximately 32,500 acres of land are estimated to be in agricultural cultivation within the Upcountry Maui Water System service area. This includes the KAP, which is owned by the County and consists of 31 farm lots ranging in size from 7 acres to 29 acres, for a total of approximately 447 acres. Maui County purchased an additional 262 acres in Upcountry Maui, the first phase of a new County agricultural park, in the vicinity of the KAP. The source of water for the new agricultural park will be the same as for the KAP, Reservoir 40, which is sourced by the EMI Aqueduct System.

3. **Nāhiku Community**

The Nāhiku Community, located in East Maui, receives domestic water service from MDWS which is directly sourced from the EMI Aqueduct System, with the source of that water being a development tunnel located east of Makapipi Stream, that feeds into the Ko'olau Ditch and is accessed by MDWS. MDWS services approximately 43 water meters, located along Nāhiku Road (County of Maui, Department of Water Supply, 2019).



Source: HC&S; County of Maui, Department of Water Supply

Figure 2



Proposed Water Lease for the Nāhiku,  
Ke'anae, Honomanū, and Huelo License Area  
Upcountry Water System and Central Maui Fields



Prepared for: Wilson Okamoto Corporation

WOC/E Maui Water Lease/Applications/Figures/Upcountry Water Sys and CM Fields

#### **4. Central Maui**

A&B historically cultivated sugar cane on the fields of Central Maui for over a century. Approximately 30,000 acres of the agricultural fields in Central Maui are irrigated by water diverted by the EMI Aqueduct System. Refer to **Figure 2**. A&B terminated its sugar cane activities in 2016, however, the cultivation of naturally non-arable lands in Central Maui will be maintained to continue Maui's rich agricultural heritage, and to enhance the sustainability and diversity of Maui's economy. The Central Maui agricultural lands are now owned by Mahi Pono, which acquired these lands from A&B in December 2018. Mahi Pono has prepared a Farm Plan to put as much of the former sugar cane lands into agricultural uses as economically feasible. The utilization of water from the EMI Aqueduct System is an essential component for the successful continued use of former sugar cane lands for agricultural purposes.

### **D. METHODOLOGY**

This report was prepared utilizing data from a number of public and private data sources, including the U.S. Census Bureau, State of Hawai'i, Department of Business, Economic Development, and Tourism, CWRM, County of Maui, and Gale Cengage Learning, a private demographic and market data service provider. Information pertaining to economic and fiscal impacts related to agricultural activities have been derived from the *Agricultural and Related Impacts Report* prepared by Plasch Econ Pacific, LLC for the subject EIS.

An overview of the methodology used for the economic and fiscal impact analyses is provided below.

#### **1. Economic Impact Assessment**

The economic impacts presented herein include discussion of operational costs, revenue, employment, and earnings related to the EMI Aqueduct System as well as agricultural operations in East Maui (i.e., taro cultivation), Upcountry Maui, and Central Maui. In addition, with respect to the Upcountry Maui service area, economic impact considerations relate to the resident population and businesses supported by water provided to the MDWS system.

The *Hawai'i State Input-Output Study: 2012 Benchmark Report*, which was prepared by DBEDT in 2016, was utilized to obtain multipliers for direct, indirect, and induced effects for output and employment. Direct impacts refer to immediate effects associated with a change in the economy. Indirect effects relate to inter-industry spending or the secondary impacts of a change. These impacts occur when industries buy goods and services from other local industries. For example,

indirect effects would include purchase of agricultural equipment or supplies by farmers who receive water from the EMI Aqueduct System. Induced effects capture household spending impacts generated when people who benefit from direct or indirect impacts spend their income on local goods and services. For example, an agricultural worker may spend his or her income on groceries or eating out at a restaurant. For the purposes of this report, indirect and induced effects are combined and referred to collectively as “indirect” effects.

## **2. Fiscal Impact Assessment**

Fiscal impacts were analyzed for the State of Hawai‘i and County of Maui general funds. This analysis identifies the key revenues, namely taxes, that the State and County would collect. For each major source, a dollar estimate of revenues is provided. It is noted that this study is not intended to provide a comprehensive analysis of all revenue sources that would be impacted but rather focuses on the largest revenue sources, in terms of dollars collected.

In addition to the State and County general funds, the County of Maui’s Water Supply Fund and the State’s Special Land Development Fund are also assessed.

It is also noted that the City and County of Honolulu derives tax revenues from economic activity on Maui because some of the indirect sales are final sales on O‘ahu. These sales are subject to a 0.5 percent excise-tax surcharge that went into effect in 2007.

Throughout the report, dollar amounts are expressed in terms of 2018 purchasing power and market conditions. Dollar amounts after 2018 are not increased to account for inflation, appreciation in property values, changes in labor rates, changes in building costs, or other changes in market conditions.

It is noted that this report contains quantitative analysis using numbers to estimate anticipated impacts. However, these numbers should not be interpreted as precise predictions. Rather, they represent best estimates of what is expected to occur based on available information.

## **E. REPORT ORGANIZATION**

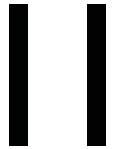
The balance of this report addresses findings of analysis for both economic and fiscal impact parameters. Each of the remaining chapters addresses alternatives associated with the Baseline Conditions as well as Future Conditions as described in Section I.B of this report. From a report organization standpoint, this report provides the findings and qualitative assessment of impacts (where applicable), as follows:

- Chapter II: Impacts related to EMI operations



- Chapter III: Impacts to East Maui
- Chapter IV: Impacts to Upcountry Maui (including impacts to domestic and agricultural water use)
- Chapter V: Impacts to Nāhiku
- Chapter VI: Impacts to Central Maui
- Chapter VII: Summary

EAST MAUI IRRIGATION  
COMPANY WATER USE  
AND OPERATIONS



## II. EAST MAUI IRRIGATION COMPANY WATER USE AND OPERATIONS

This Chapter presents an analysis of the direct economic and fiscal impacts associated with the East Maui Irrigation Company's (EMI) operations for the baseline and future conditions.

### A. BASELINE CONDITIONS

#### 1. Typical Sugar Cane Operations (2006)

The year 2006 is used in this analysis as a representative year for "typical" sugar cane operations during the 20-year period from 1987 to 2006. In 2006, EMI diverted an estimated 156.54 mgd of surface water. Average daily use by MDWS was 3.23 mgd (Plasch Econ Pacific, LLC, 2019).

##### a. Economic Impacts

In 2006, operational costs for EMI was \$2.0 million, or \$0.035 per 1,000 gallons (kgal) of surface water. Operational costs include EMI labor, fringe benefits, materials, professional services, taxes, revocable permit rent to the State, and other expenses. It is noted that this represents the cost to transport the water to Maliko Gulch. There were additional costs for water transportation and storage from Maliko Gulch to MDWS and the Central Maui agricultural fields. However, these additional costs were covered by HC&S. As such, the \$0.035 per kgal cost does not reflect the full cost to provide water to MDWS and Central Maui.

Direct spending by EMI, excluding the revocable permit payment to the State from the operational costs, was \$1.8 million. The purchase of goods and services by EMI and the families of employees generated indirect sales and in turn, these suppliers generated more indirect sales by their purchases of goods and services. The indirect sales are estimated at \$2.2 million. Total direct spending and indirect sales was \$4.0 million, of which \$3.2 million was on Maui and \$0.8 million on Oahu.

EMI employed 16 people in 2006 with a payroll of \$0.8 million. As with indirect sales, EMI operations generated indirect jobs, including those at companies providing supplies and equipment, professional services, and those involved with supplying goods and services to families of employees. EMI operations generated about 7 indirect jobs with an associated payroll of \$0.3 million. The total direct and indirect employment was 23, of which

about 20 were on Maui. The direct and indirect jobs associated with EMI operations supported an estimated 51 people. See **Table 4**, Section 4.c.

EMI revenues primarily consist of the revenue from water delivered to MDWS. EMI also received some land lease revenue, however the amount of lease income was nominal.

**b. Fiscal Impacts**

The MDWS paid EMI \$0.06 per thousand gallons of water delivered for the Upcountry Water System. Based on delivery of 3.23 mgd, MDWS payment to EMI in 2006 was \$70,700.

Associated taxes accrued to the State of Hawai'i General Fund would include General Excise Tax (GET) on direct spending and indirect sales, and payroll taxes paid by employees. GET would be approximately \$42,000, while payroll tax paid by employees is estimated at \$47,400. The total tax revenue accrued to the State in 2006 was approximately \$89,400.

EMI paid \$158,284 in 2006 to the State Special Land Development Fund for the revocable permits for the water, which is equivalent to approximately \$210,800 in 2018 dollars. The Office of Hawaiian Affairs (OHA) receives 20 percent of the revocable permit revenue, while the Department of Hawaiian Home Lands (DHHL) receives 30 percent. This translates to approximately \$42,200 for OHA and \$63,200 for DHHL. Refer to **Table 4**, Section 4.d.

**2. Recent Sugar Cane Operations (2008-2013)**

Between 2008 and 2013, EMI diverted an average of 113.71 mgd (CWRM D&O, 2018, p. 179). Long-term average daily use by the MDWS was estimated by CWRM at 7.1 mgd (CWRM D&O, 2018, p. 143). The remainder was utilized by Hawaiian Commercial & Sugar Co. ((HC&S) a division of A&B) to support A&B's agricultural operations or represents system losses. Refer to **Table 4**, Section 4.a. and Section 4.b.

**a. Economic Impacts**

Average operational costs for EMI between 2008 and 2013 was \$1.6 million, or \$0.039 per kgal. As previously noted, this represents the cost to transport the water to Maliko Gulch; it does not reflect the full cost to provide water to MDWS and Central Maui.

**Table 4. EMI Water System Economic and Fiscal Impacts**

| Item  | Multiplier or Source    | Baseline             |                          |                           | Future Conditions |              |          |
|---|-------------------------|----------------------|--------------------------|---------------------------|-------------------|--------------|----------|
|   |                         | Typical Sugar (2006) | Recent Sugar (2008-2013) | Interim Conditions (2017) | Proposed Action   | No Action    | Units    |
| 4.a. EMI SURFACE WATER SOURCE                           |                         |                      |                          |                           |                   |              |          |
| License Area  | EMI/CWRM                | N.E.                 | 105.12                   | 23.99                     | 87.95             | 26.39        | mgd      |
| EMI-owned land  | 30% of flow             | N.E.                 | 31.54                    | 7.20                      | 26.39             | 26.39        | mgd      |
| State-owned land  | 70% of flow             | N.E.                 | 73.58                    | 16.79                     | 61.57             | 0.00         | mgd      |
| Outside of License Area (West of Honopou Stream)        | EMI                     | N.E.                 | 8.59                     | 4.37                      | 4.37              | 4.37         | mgd      |
| Total Water Diverted                                    | CWRM, p. 179; EMI       | 156.54               | 113.71                   | 28.36                     | 92.32             | 30.76        | mgd      |
| 4.b. EMI SURFACE WATER ALLOCATION                       |                         |                      |                          |                           |                   |              |          |
| A&B/HC&S/Other Uses (a)                                 |                         | 153.31               | 106.61                   | 25.50                     | 79.92             | 29.17        | mgd      |
| MDWS  | CWRM, p. 143; EMI       | 3.23                 | 7.10                     | 2.86                      | 7.10              | 0.00         | mgd      |
| Total Surface Water Use                                 | CWRM, p. 179; EMI       | 156.54               | 113.71                   | 28.36                     | 87.02             | 29.17        | mgd      |
| 4.c. ECONOMIC IMPACTS                                   |                         |                      |                          |                           |                   |              |          |
| Total Operational Costs                                 | EMI                     | \$ 2,011,000         | \$ 1,632,000             | \$ 1,682,000              | \$ 2,291,000      | \$ 1,444,000 | per year |
| Operational Cost per 1,000 gallons                      |                         | \$ 0.035             | \$ 0.039                 | \$ 0.162                  | \$ 0.068          | \$ 0.129     | per kgal |
| Direct Spending (Operational Costs - R.P. or Lease Pmt) |                         | \$ 1,800,000         | \$ 1,444,000             | \$ 1,520,000              | \$ 1,440,000      | \$ 1,444,000 | per year |
| Indirect Sales  | 1.22 of Direct Spending | \$ 2,202,000         | \$ 1,766,000             | \$ 1,859,000              | \$ 1,761,000      | \$ 1,766,000 | per year |
| Maui  | 65%                     | \$ 1,431,000         | \$ 1,148,000             | \$ 1,208,000              | \$ 1,145,000      | \$ 1,148,000 | per year |
| Oahu  | 35%                     | \$ 771,000           | \$ 618,000               | \$ 651,000                | \$ 616,000        | \$ 618,000   | per year |
| Total Direct Spending and Indirect Sales                |                         | \$ 4,002,000         | \$ 3,210,000             | \$ 3,379,000              | \$ 3,201,000      | \$ 3,210,000 | per year |
| Maui  |                         | \$ 3,231,000         | \$ 2,592,000             | \$ 2,728,000              | \$ 2,585,000      | \$ 2,592,000 | per year |
| Oahu  |                         | \$ 771,000           | \$ 618,000               | \$ 651,000                | \$ 616,000        | \$ 618,000   | per year |
| Sales by Excise-Tax Category                            |                         |                      |                          |                           |                   |              |          |
| Final Sales/Consumption (taxed at 4%)                   | 55% of payroll          | \$ 636,000           | \$ 609,000               | \$ 438,000                | \$ 609,000        | \$ 609,000   | per year |
| Intermediate sales (taxed at 0.5%)                      | residual                | \$ 3,366,000         | \$ 2,601,000             | \$ 2,941,000              | \$ 2,592,000      | \$ 2,601,000 | per year |
| Employment  |                         |                      |                          |                           |                   |              |          |
| Direct jobs   | EMI                     | 16                   | 17                       | 13                        | 17                | 17           | jobs     |
| Indirect jobs   | 0.43 of direct jobs     | 7                    | 7                        | 6                         | 7                 | 7            | jobs     |
| Maui  | 65%                     | 4                    | 5                        | 4                         | 5                 | 5            | jobs     |
| Oahu  | 35%                     | 2                    | 3                        | 2                         | 3                 | 3            | jobs     |
| Total Direct and Indirect Jobs                          |                         | 23                   | 24                       | 19                        | 24                | 24           | jobs     |
| Maui  |                         | 20                   | 22                       | 17                        | 22                | 22           | jobs     |
| Oahu  |                         | 2                    | 3                        | 2                         | 3                 | 3            | jobs     |
| Payroll   |                         |                      |                          |                           |                   |              |          |
| Direct Payroll  | EMI                     | \$ 827,000           | \$ 757,000               | \$ 530,000                | \$ 757,000        | \$ 757,000   | per year |
| Indirect Payroll  |                         | \$ 329,000           | \$ 350,000               | \$ 267,000                | \$ 350,000        | \$ 350,000   | per year |
| Maui  | \$ 45,500 per job       | \$ 202,000           | \$ 215,000               | \$ 164,000                | \$ 215,000        | \$ 215,000   | per year |
| Oahu  | \$ 52,900 per job       | \$ 127,000           | \$ 135,000               | \$ 103,000                | \$ 135,000        | \$ 135,000   | per year |
| Total Direct and Indirect Payroll                       |                         | \$ 1,156,000         | \$ 1,107,000             | \$ 797,000                | \$ 1,107,000      | \$ 1,107,000 | per year |
| Maui  |                         | \$ 1,029,000         | \$ 972,000               | \$ 694,000                | \$ 972,000        | \$ 972,000   | per year |
| Oahu  |                         | \$ 127,000           | \$ 135,000               | \$ 103,000                | \$ 135,000        | \$ 135,000   | per year |
| Residents Supported                                     |                         |                      |                          |                           |                   |              |          |
| Maui  | 2.25 per job            | 46                   | 49                       | 37                        | 49                | 49           | people   |
| Oahu  | 2.13 per job            | 5                    | 5                        | 4                         | 5                 | 5            | people   |
| Total   |                         | 51                   | 54                       | 42                        | 54                | 54           | people   |



**Table 4. EMI Water System Economic and Fiscal Impacts**  
(continued)

| Item  | Multiplier or Source      | Baseline             |                          |                           | Future Conditions |           |          |
|---|---------------------------|----------------------|--------------------------|---------------------------|-------------------|-----------|----------|
|   |                           | Typical Sugar (2006) | Recent Sugar (2008-2013) | Interim Conditions (2017) | Proposed Action   | No Action | Units    |
| 4.d. FISCAL IMPACTS   |                           |                      |                          |                           |                   |           |          |
| County of Maui Water Supply Fund  |                           |                      |                          |                           |                   |           |          |
| Water Service Fee Rate from MDWS (b)  |                           | \$ 0.06              | \$ 0.06                  | \$ 0.06                   | \$ 0.10           | \$ -      | per kgal |
| Water Service Fee from MDWS   |                           | \$ 70,700            | \$ 155,500               | \$ 62,600                 | \$ 268,900        | \$ -      | per year |
| State of Hawaii General Fund  |                           |                      |                          |                           |                   |           |          |
| Payroll Tax   | 4.10% of payroll          | \$ 47,400            | \$ 45,400                | \$ 32,700                 | \$ 45,400         | \$ 45,400 | per year |
| General Excise Tax  |                           | \$ 42,000            | \$ 37,000                | \$ 33,000                 | \$ 37,000         | \$ 37,000 | per year |
| Final sales/consumption (taxed at 4%)   | 4%                        | \$ 25,000            | \$ 24,000                | \$ 18,000                 | \$ 24,000         | \$ 24,000 | per year |
| Intermediate Sales (taxed at 0.5%)  | 0.50%                     | \$ 17,000            | \$ 13,000                | \$ 15,000                 | \$ 13,000         | \$ 13,000 | per year |
| Total Tax Revenues  |                           | \$ 89,400            | \$ 82,400                | \$ 65,700                 | \$ 82,400         | \$ 82,400 | per year |
| State of Hawaii (Special Land Development Fund)   |                           |                      |                          |                           |                   |           |          |
| Revocable Permit (c)  |                           | \$ 210,800           | \$ 187,900               | \$ 162,200                | N/A               | N/A       | per year |
| Long-Term Lease Payment (d)   | \$0.038 per 1,000 gallons | N/A                  | N/A                      | N/A                       | \$ 846,700        | \$ -      | per year |
| Disbursement to OHA   | 20% of RP or Lease        | \$ 42,200            | \$ 37,600                | \$ 32,400                 | \$ 169,300        | \$ -      | per year |
| Disbursement to DHHL  | 30% of RP or Lease        | \$ 63,200            | \$ 56,400                | \$ 48,700                 | \$ 254,000        | \$ -      | per year |
| Notes:  |                           |                      |                          |                           |                   |           |          |
| (a) Other Uses includes system losses.  |                           |                      |                          |                           |                   |           |          |
| (b) MDWS pays \$0.06 per kgal to EMI under the existing agreement between the two entities. In 2030, EMI's operational cost per kgal will exceed the current \$0.06 per kgal rate. The 2030 water service fee rate is calculated based on the ratio of operational cost to MDWS service fee for 2008-2013.                                      |                           |                      |                          |                           |                   |           |          |
| (c) Between 2006 and 2017, the revocable permit rent was \$158,283.84. The values have been adjusted to be reported in 2018 dollars.  |                           |                      |                          |                           |                   |           |          |
| (d) The lease payment would be based on an appraisal conducted prior to issuance of the lease. For the purpose of this analysis, the payment is based on the equivalent per unit rate under the Revocable Permit established by the BLNR in November 2018. The Revocable Permit rent was set at \$19,247.02 per month or \$230,964.02 per year. |                           |                      |                          |                           |                   |           |          |
| Assuming 16.8 mmd is diverted under the Revocable Permit, the rate would translate to \$230,964.02 / (16.8 mmd x 1,000,000 x 365 days) / 1,000 = \$0.038 / \$1,000 gallons  |                           |                      |                          |                           |                   |           |          |

Notes:

- (a) Other Uses includes system losses.
- (b) MDWS pays \$0.06 per kgal to EMI under the existing agreement between the two entities. In 2030, EMI's operational cost per kgal will exceed the current \$0.06 per kgal rate. The 2030 water service fee rate is calculated based on the ratio of operational cost to MDWS service fee for 2008-2013.
- (c) Between 2006 and 2017, the revocable permit rent was \$158,283.84. The values have been adjusted to be reported in 2018 dollars.
- (d) The lease payment would be based on an appraisal conducted prior to issuance of the lease. For the purpose of this analysis, the payment is based on the equivalent per unit rate under the Revocable Permit established by the BLNR in November 2018. The Revocable Permit rent was set at \$19,247.02 per month or \$230,964.02 per year.
- Assuming 16.8 mgd is diverted under the Revocable Permit, the rate would translate to \$230,964 / (16.8 mgd x 365 days) / 1,000 = \$0.038 / \$1,000 gallons.

Direct spending by EMI, excluding the revocable permit payment to the State from the operational costs, was \$1.4 million. Total direct spending and indirect sales was \$3.2 million, of which \$2.6 million was on Maui.

EMI employed an average of 17 people between 2008 and 2013, with a payroll of \$0.8 million. Total direct and indirect jobs was 24, with an associated payroll of \$1.1 million. Refer to **Table 4**, Section 4.c.

As was the case in 2006, EMI revenues primarily consisted of the revenue from water delivered to MDWS.

**b. Fiscal Impacts**

Based on an average usage of 7.1 mgd, MDWS payments to EMI totaled approximately \$155,500 per year.

GET would average approximately \$37,000 per year while payroll tax paid by employees is estimated at \$45,400 annually. The total tax revenue accrued to the State was approximately \$82,400 per year.

EMI paid \$187,900 to the State Special Land Development Fund for the revocable permits for the water, including approximately \$37,600 for OHA and \$56,400 for DHHL. Refer to **Table 4**, Section 4.d.

**3. Interim Diversified Agriculture Operations (2017)**

In 2017, 28.36 mgd of surface water was diverted from East Maui, of which, 23.99 mgd is estimated to come from the Collection Area. MDWS used 2.86 mgd in 2017, which is significantly less than the 7.1 mgd EMI provided to MDWS historically. MDWS use of surface water from EMI was low in 2017 because heavy rainfall increased supplies from other County Sources that depend on rainfall (Plasch Econ Pacific, LLC, 2019). Refer to **Table 4**, Section 4.a. and Section 4.b.

**a. Economic Impacts**

In 2017, EMI operational costs were \$1.7 million. Due to the reduced water volume in 2017, the per unit operating cost for EMI was higher at \$0.162 per kgal, compared to \$0.039 per kgal in 2008 to 2013. Direct spending by EMI, excluding the revocable permit payment to the State, was \$1.5 million. Total direct spending and indirect sales was \$3.4 million, of which \$2.7 million was on Maui.

EMI employed 13 people in 2017, with a payroll of \$0.5 million. Total direct and indirect jobs was 19, with an associated payroll of \$0.8 million. Refer to **Table 4**, Section 4.c.

**b. Fiscal Impacts**

Based on MDWS' water use of 2.86 mgd, MDWS paid \$62,600 to EMI for the delivery of surface water. Total State GET and payroll tax revenues would be \$65,700.

EMI paid \$162,200 to the State Special Land Development Fund for the revocable permits for the water with the same proportional disbursements to OHA and DHHL. Refer to **Table 4**, Section 4.d.

**B. FUTURE CONDITIONS**

Due to the nature of the EMI Aqueduct System, the operational costs are largely fixed, with minimal variable costs. Future operational costs for the EMI Aqueduct System are anticipated to be similar to the average cost experienced during the recent sugar operations period (2008-2013). As will be discussed below, the operational costs (i.e., maintenance, repair, and personnel) are assumed to be the similar across all future conditions alternatives, with the only variation being the amount of the Water Lease payments owed to the State. Beyond that, costs are not anticipated to fluctuate based on the amount of water diverted. Therefore, while costs remain constant, the per unit cost for delivery of water increases as the amount of water diverted decreases.

**1. Proposed Action**

Under the Proposed Action, for purposes of this report, it is assumed that the State would lease water to EMI up to the maximum amount allowed by the CWRM D&O. This would translate to an estimated 87.95 mgd from the License Area. An additional 4.37 mgd is estimated to be available to be collected between Honopou and Maliko Streams, outside of the License Area, for an estimated total diversion of 92.32 mgd. Refer to **Table 4**, Section 4.a.

**a. Economic Impact Assessment**

Total operational costs for EMI labor, fringe benefits, materials, professional services, taxes, water lease, and other expenses are projected to be \$2.3 million per year. This would translate to \$0.068 per kgal. Refer to **Table 4**, Section 4.c.

It is noted that an unknown factor in EMI's operating cost is the annual lease payment to DLNR. For the purposes of this analysis, the Lease payment has been calculated based on the equivalent per unit cost under the existing 2019 revocable permit. The revocable permit rent payment sent in November 2018 was \$230,964.24, which represents an increase from the rent that was historically paid. Assuming 16.8 mgd is diverted

from the License Area under the revocable permit, the rent rate would translate to \$0.038 per thousand gallons. This rate of \$0.038 is assumed as the basis for the annual lease payment to DLNR. However, the actual Water Lease rental amount will be based on an appraisal conducted prior to issuance of the Water Lease. Should the Water Lease amount be higher or lower, the operational costs of the EMI Aqueduct System would be adjusted accordingly.

Direct spending by EMI, excluding the long-term lease payment to the State from the operational costs, is forecasted to be \$1.4 million. Total direct spending and indirect sales is estimated at \$3.2 million, of which \$2.6 million would be on Maui.

EMI is expected to employ a staff of 17 people with a payroll of \$0.8 million. Total direct and indirect jobs was 24, with an associated payroll of \$1.1 million. The direct and indirect jobs associated with EMI operations would support an estimated 54 residents. Refer to **Table 4**, Section 4.c.

**b. Fiscal Impact Assessment**

Under the Proposed Action, it is assumed that the rate MDWS pays to EMI will increase because EMI's per unit operating cost will increase because fixed costs will be spread out over a lower volume of water diverted and possible higher lease payments to the State compared to historic payments. As previously mentioned, it is estimated that EMI's operating cost under the Proposed Action would be \$0.068 per kgal, which is higher than the current MDWS payment to EMI of \$0.06 per kgal. The actual rate MDWS will pay to EMI in 2030 will be subject to a future agreement between the two (2) entities. However, for the purposes of this analysis, the 2030 water service fee rate is estimated to be \$0.10, which has been calculated based on the ratio of operational cost to MDWS service fee for 2008 to 2013. Under this assumption, EMI would receive an estimated \$268,900 in 2030 from MDWS.

As previously noted, the amount paid to the State Special Land Development Fund for the Water Lease would be based on an appraisal conducted prior to lease issuance. Assuming the amount of the Water Lease is based on the equivalent per unit cost under the existing revocable permits, the annual payment to the Special Land Development Fund would be \$846,700. Of this, \$169,300 would be disbursed to OHA and \$254,000 would be set aside for the DHHL.

GET revenue would be estimated at \$37,000 while payroll tax would be \$45,400 per year. Refer to **Table 4**, Section 4.d.

## 2. **No Action Alternative**

The No Action Alternative would result in no Water Lease issued from the State. EMI could continue to divert non-government-owned water from the Collection Area (i.e., approximately 30 percent of the water available from the Collection Area) plus the 4.37 mgd from that portion of the Collection Area that is derived from privately owned lands between Honopou Stream and Maliko Gulch. Under this Alternative, it is assumed that an estimated total of 26.39 mgd is available to be diverted from the Collection Area (30 percent of total flow within the Collection Area) and 4.37 mgd is collected between Honopou and Maliko Gulch, west of the License Area, for a total estimated diversion of 30.76 mgd. Refer to **Table 4**, Section 4.a.

### a. **Economic Impact Assessment**

Under the No Action Alternative, the cost to operate and maintain the EMI Aqueduct System is assumed to be similar due to the fixed nature of operating costs. The EMI Aqueduct System needs to be maintained regardless of the amount diverted. The No Action Alternative results in an approximately 70 percent reduction in the amount of water from the bulk of the Collection Area compared to the Proposed Action, while the amount of water collected between Honopou and Maliko Gulch, west of the License Area remains unchanged. The only change in the operating cost would be that no Water Lease payment would be made to the State. This would reduce operating costs to approximately \$1.4 million. This translates to \$0.129 per kgal, which is nearly 90 percent higher than the Proposed Action (\$0.068). Direct spending of EMI, excluding the Water Lease payment, and associated indirect sales would be similar to those described for the Proposed Action. A staff of 17 employees is expected, with an associated payroll of \$0.8 million. Refer to **Table 4**, Section 4.c.

For the purposes of the analysis, it is assumed that the entire EMI Aqueduct System continues to be maintained under the No Action Alternative. However, assessment of flow data could result in decisions to reduce the size of the EMI Aqueduct System to reduce operation and maintenance costs. For example, due to the reduced water flow, EMI may decide to abandon lower elevation ditches and limit diversions to the higher elevation ditches only. This would reduce the operation and maintenance cost of the EMI Aqueduct System and reduce the cost per kgal of water. However, potential system reductions are not known at this time and cannot be



determined until there is actual flow data to analyze and determine how best to optimize the EMI Aqueduct System.

It is also noted that EMI may determine that it is not economically feasible to operate and maintain the system at all under the No Action Alternative.

**b. Fiscal Impact Assessment**

Due to the reduced amount of water under the No Action Alternative, there may not be water available to provide to MDWS' Upcountry Water System. The water delivery agreements between the County and A&B are contingent upon the Lease being issued, therefore, if no Lease is issued, it is assumed that the delivery of water to MDWS would terminate. If this were to be the case, there would be no payment from MDWS to EMI. Payroll and GET revenue would be similar to the Proposed Action. However, if the State does not issue the Water Lease, there would be no payment from EMI to the State's Special Land Development Fund under the No Action Alternative and no funds would be disbursed to OHA and DHHL. Refer to **Table 4**, Section 4.d.

**3. Reduced Water Lease Alternative**

The Reduced Water Lease Alternative would result in water diversion from the License Area of an amount estimated between 26.39 mgd (No Action) and 87.95 mgd (Proposed Action). An additional 4.37 mgd is estimated to be available between Honopou and Maliko Gulch, outside of the License Area.

**a. Economic Impact Assessment**

Inasmuch as the costs to operate the EMI Aqueduct System are fixed, it is assumed that EMI's total operational cost would be similar to the other alternatives, with the exception of the amount of lease payment to the State. The operating cost per kgal would range from \$0.068 per kgal to \$0.129 per kgal, depending on the amount of water that would be available. Direct spending of EMI, excluding the Water Lease payment, and associated indirect sales would be similar to those described for the Proposed Action. Similar to the other alternatives, a staff of 17 employees would be expected, with an associated payroll of \$0.8 million.

**b. Fiscal Impact Assessment**

Depending on how much water is available under a Reduced Water Lease Alternative, there may or may not be water available to provide to MDWS' Upcountry Water System. Payment from MDWS would be dependent on

the availability of water under this alternative and could range from no payment to up to \$268,900. Assuming rates equivalent to the existing revocable permits, the amount of the Water Lease to the State Special Land Development Fund would also depend on the amount of water leased and is estimated to range from nothing to \$846,700 annually.

EAST MAUI



### III. EAST MAUI

Due to the heavy rainfall on the windward slopes of Haleakalā and the many streams in the area, many of the makai communities in East Maui are well suited for growing taro and truck crops. Also, a number of farmers in East Maui have appurtenant and riparian rights to use water from these streams. There are about 45 acres in East Maui that are suitable for growing taro and about 35 acres for truck crops. The economic and fiscal impacts related to East Maui are based on *the Agricultural and Related Impacts Report* prepared by Plasch Econ Pacific, LLC.

#### A. **BASELINE CONDITIONS**

A number of East Maui farmers divert stream water to irrigate taro lo'i and small farms. Taro farming is difficult and labor-intensive, and the net returns are modest. Nevertheless, many farmers are attracted to the lifestyle and to growing this culturally significant crop. Farmers in East Maui have reported that past surface-water diversions to supply water to Central Maui left insufficient water in the streams for them to take full advantage of the agricultural potential in East Maui.

#### B. **FUTURE CONDITIONS**

As previously mentioned, on June 30, 2018, the Commission on Water Resource Management (CWRM) adopted Findings of Fact, Conclusions of Law, and Decision and Order (D&O), setting the Interim Instream Flow Standards (IIFS) for 24 East Maui Streams located within the License Area. The CWRM D&O returns free flowing water, with no upstream diversions, to all streams which have historically supported significant taro cultivation. As a result, ample stream water should now be available to irrigate taro lo'i and the small farms relying on East Maui streams. As previously noted, there are about 45 acres in East Maui that are suitable for growing taro and about 35 acres for truck crops. See **Table 5**, Section 5.a. This accounting includes only the existing and potential farms in East Maui affected by the CWRM D&O, and excludes all other East Maui farms.

It is assumed that above mentioned lands suitable for taro and truck crops would be fully cultivated under the future conditions. For all three (3) alternatives (Proposed Action, No Action Alternative, and Reduced Water Lease Alternative), the economic and fiscal impacts of agricultural cultivation in East Maui will be the same.

##### 1. **Economic Impact Assessment**

The taro farms and other farms in East Maui that depend on stream flows would produce at full development about 1.0 million pounds per year of taro, and about 400,000 pounds per year of other crops (refer to **Table 5**, Section 5.b.). The resulting direct sales would be about \$1.4 million per year. Indirect sales generated

**Table 5. East Maui Economic and Fiscal Impacts**

| Item                               | Baseline Conditions         |                                 | Future Conditions (2030) |           | Units      |
|------------------------------------|-----------------------------|---------------------------------|--------------------------|-----------|------------|
|                                    | Recent Sugar<br>(2008-2013) | Interim<br>Conditions<br>(2017) | Proposed<br>Action       | No Action |            |
| <b>5.a. Agricultural Land Use</b>  |                             |                                 |                          |           |            |
| Taro farms                         | N.E.                        | N.E.                            | 44.8                     | 44.8      | acres      |
| Other farms                        | N.E.                        | N.E.                            | 35.1                     | 35.1      | acres      |
| Total                              |                             |                                 | 79.9                     | 79.9      |            |
| <b>5.b. Economic Impacts</b>       |                             |                                 |                          |           |            |
| Production                         |                             |                                 |                          |           |            |
| Taro Farms                         | N.E.                        | N.E.                            | \$ 1.0                   | \$ 1.0    | m lbs/yr   |
| Other Farms                        | N.E.                        | N.E.                            | \$ 0.4                   | \$ 0.4    | m lbs/yr   |
| Sales                              |                             |                                 |                          |           |            |
| Direct Sales                       |                             |                                 |                          |           |            |
| Taro Farms                         | N.E.                        | N.E.                            | \$ 1.0                   | \$ 1.0    | million/yr |
| Other Farms                        | N.E.                        | N.E.                            | \$ 0.4                   | \$ 0.4    | million/yr |
| Total                              | N.E.                        | N.E.                            | \$ 1.4                   | \$ 1.4    | million/yr |
| Indirect Sales                     | N.E.                        | N.E.                            | \$ 1.5                   | \$ 1.5    | million/yr |
| Maui                               | N.E.                        | N.E.                            | \$ 1.0                   | \$ 1.0    | million/yr |
| Oahu                               | N.E.                        | N.E.                            | \$ 0.5                   | \$ 0.5    | million/yr |
| Total Direct and Indirect Sales    | N.E.                        | N.E.                            | \$ 2.9                   | \$ 2.9    | million/yr |
| Maui                               | N.E.                        | N.E.                            | \$ 2.3                   | \$ 2.3    | million/yr |
| Oahu                               | N.E.                        | N.E.                            | \$ 0.5                   | \$ 0.5    | million/yr |
| Profits                            | N.E.                        | N.E.                            | \$ 0.3                   | \$ 0.3    | million/yr |
| Employment                         |                             |                                 |                          |           |            |
| Direct/On-Site Jobs                |                             |                                 |                          |           |            |
| Taro                               | N.E.                        | N.E.                            | 11                       | 11        | jobs       |
| Other Crops                        | N.E.                        | N.E.                            | 3                        | 3         | jobs       |
| Total                              | N.E.                        | N.E.                            | 14                       | 14        | jobs       |
| Indirect Jobs, Offsite             | N.E.                        | N.E.                            | 7                        | 7         | jobs       |
| Maui                               | N.E.                        | N.E.                            | 4                        | 4         | jobs       |
| Oahu                               | N.E.                        | N.E.                            | 2                        | 2         | jobs       |
| Total Jobs                         | N.E.                        | N.E.                            | 21                       | 21        | jobs       |
| Maui                               | N.E.                        | N.E.                            | 19                       | 19        | jobs       |
| Payroll                            |                             |                                 |                          |           |            |
| Direct Payroll                     |                             |                                 |                          |           |            |
| Taro                               | N.E.                        | N.E.                            | \$ 0.4                   | \$ 0.4    | million/yr |
| Other Crops                        | N.E.                        | N.E.                            | \$ 0.1                   | \$ 0.1    | million/yr |
| Total                              | N.E.                        | N.E.                            | \$ 0.5                   | \$ 0.5    | million/yr |
| Indirect Payroll                   | N.E.                        | N.E.                            | \$ 0.3                   | \$ 0.3    | million/yr |
| Maui                               | N.E.                        | N.E.                            | \$ 0.2                   | \$ 0.2    | million/yr |
| Oahu                               | N.E.                        | N.E.                            | \$ 0.1                   | \$ 0.1    | million/yr |
| Total Payroll                      | N.E.                        | N.E.                            | \$ 0.8                   | \$ 0.8    | million/yr |
| Maui                               | N.E.                        | N.E.                            | \$ 0.7                   | \$ 0.7    | million/yr |
| Residents Supported                |                             |                                 |                          |           |            |
| Maui                               | N.E.                        | N.E.                            | 42                       | 42        | people     |
| Oahu                               | N.E.                        | N.E.                            | 5                        | 5         | people     |
| Total                              | N.E.                        | N.E.                            | 47                       | 47        | people     |
| <b>5.c. Fiscal Impacts</b>         |                             |                                 |                          |           |            |
| State Revenues                     | N.E.                        | N.E.                            | \$0.067                  | \$0.067   | million/yr |
| Maui County Property Taxes         | N.E.                        | N.E.                            | \$0.0001                 | \$0.0001  | million/yr |
| C&C Honolulu, Excise Tax Surcharge | N.E.                        | N.E.                            | \$0.0003                 | \$0.0003  | million/yr |

Source: Plasch Econ Pacific, LLC



by the purchase of goods and services would be about \$1.5 million per year. Thus, total direct and indirect sales would be about \$2.9 million per year (with rounding), of which about \$2.3 million would be on Maui and \$500,000 on O‘ahu. Profits from farm operations and indirect sales would be about \$300,000.

Full development of the taro farms and other farms in East Maui that depend on stream flows would result in about 14 jobs and generate about 7 indirect jobs, for a total of about 21 jobs. The payroll is expected to reach about \$500,000 for the direct jobs and \$800,000 for all direct and indirect jobs. The direct and indirect jobs provided will support an estimated 47 residents, most of which would be on Maui. Refer to **Table 5**, Section 5.b.

## **2. Fiscal Impact Assessment**

The taro farms and other farms in East Maui that depend on stream flows would generate approximately \$67,000 per year in State taxes at full development. For the County of Maui, property taxes will total about \$100 per year. The City and County of Honolulu will derive about \$300 per year from the excise tax surcharge. Refer to **Table 5**, Section 5.c.

UPCOUNTRY MAUI

IV

## IV. UPCOUNTRY MAUI

The Maui County Department of Water Supply (MDWS) is responsible for the development, operation, and maintenance of the municipal water system and supply and serves approximately 90 percent of the population on the island of Maui. On Maui, MDWS manages nine (9) public water systems as defined by the State of Hawai'i, Department of Health (DOH) under the State Drinking Water Act: Central Maui (Wailuku), West Maui (Lahaina), Upcountry (Makawao), and East Maui (Hāna); each encompasses a number of sub-districts.

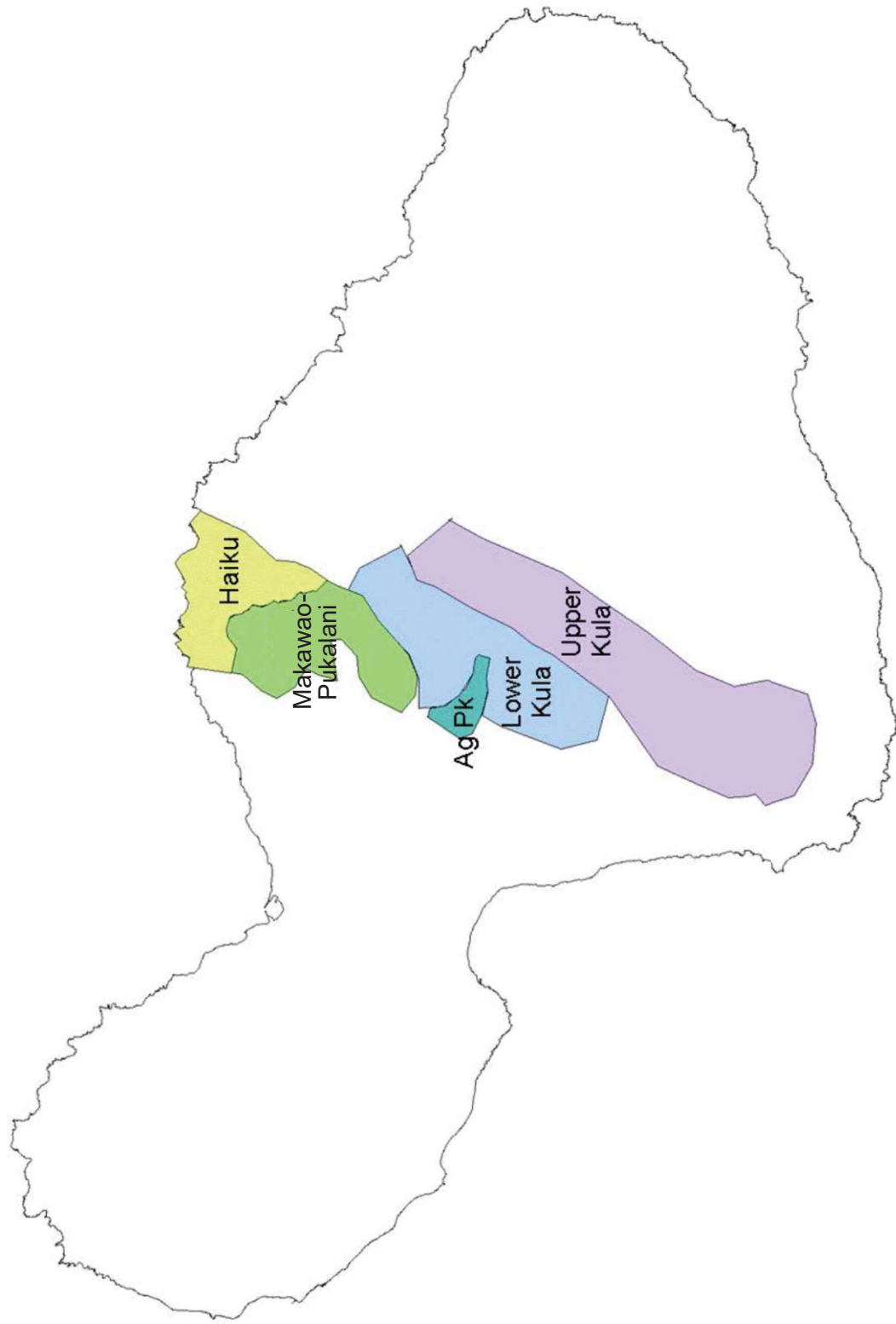
The MDWS Upcountry Water System relies on three (3) surface water sources for potable water, one of which is delivered by the EMI Aqueduct System through the Wailoa Ditch to the Kamole Water Treatment Plant (WTP), and the other two (2) Olinda, and Piihola Water Treatment Plants, are sourced from lands owned previously by A&B and not by Mahi Pono and waters delivered to the plans through MDWS higher elevation aqueducts (the Upper and Lower Waikamoi flumes) maintained by EMI. All three (3) sources are addressed through a contractual agreement. Because the agreements between the County and A&B/EMI are contingent upon the Lease being issued, the supply of water to MDWS could terminate if no Lease is issued.

Over the years, MDWS has received surface water from EMI through a series of contracts. The original contract, referred to as the “Master Water Agreement”, was entered into in 1961 and was later replaced by a 1973 “Memorandum of Understanding”, which had an initial term of 20 years, and was amended some 11 times. In 2018, a new water delivery agreement was entered into which provides for continued delivery of water to MDWS and confirms that water delivery to the County is subject to EMI securing rights related to water permits and the Water Lease from the State. As reported in the CWRM D&O, the long-term average for deliveries to MDWS from the EMI Aqueduct System is 7.1 mgd. The water delivery agreement provides for potentially even greater deliveries to MDWS under certain circumstances and at certain locations.

**Figure 3** shows the approximate location of MDWS Upcountry Water System service areas and **Table 6** shows three (3) potable sub-systems within MDWS Upcountry Water System.

**Table 6.** MDWS Upcountry Water System

| Sub-System | Communities Served                        | Primary Water Facility                   |
|------------|---|--|
| Upper Kula | Kula, Waiakoa, Keokea, Ulupalakua, Kanaio | Olinda WTP                               |
| Lower Kula | Olinda, Kula Kai, Omaopio, Pulehu         | Piihola WTP                              |
| Makawao    | Haiku, Haliimaile, Makawao, Pukalani      | Kamole WTP<br>Haiku and Kaupakalua Wells |



Source: County of Maui, Department of Water Supply

Figure 3



Proposed Water Lease for the Nāhiku,  
Ke'anae, Honomanū, and Huelo License Area  
Upcountry Maui Water System Service Area

NOT TO SCALE



Prepared for: Wilson Okamoto Corporation

Approximately 80 to 90 percent of water delivered within the MDWS Upcountry Maui Water System is supplied by surface water and the remainder is by groundwater (wells) (CWRM, 2018, p. 211). As noted above, one (1) of the water sources that MDWS Upcountry District relies on for potable water is delivered by the EMI Aqueduct System through the Wailoa Ditch. The two (2) other surface water sources arise on land previously owned by A&B and now owned by Mahi Pono. The surface water delivered by Wailoa Ditch is treated at the Kamole WTP, which has the largest production capacity of the three (3) WTPs within the MDWS Upcountry District. Refer to **Table 6**.

Under normal conditions, the three (3) potable water systems operate independently and treated surface water constitutes the majority of water delivered to Upcountry Maui customers. However, during drought conditions, MDWS implements the following strategies as needed:

- Water is pumped from the Makawao System to the Lower Kula System to supplement water supply from the Piihola WTP.
- The Pookela Well is operated to supplement water supply from the Kamole WTP.
- Water is pumped from the Lower Kula System up to the Upper Kula System (Brown and Caldwell, 2014).

Based on the foregoing, water from EMI's Aqueduct System's Wailoa Ditch services the Makawao Sub-system under normal conditions. However, during drought conditions, water delivered through the EMI Aqueduct System could be pumped to the Lower Kula and Upper Kula Systems if needed.

It is noted that in 1993, MDWS determined that the Upcountry Water System had insufficient supply for fire protection, domestic, and irrigation purposes to take on new or additional services without detriment to existing customers. A water meter priority list for landowners who had applied for water service in the area was established in 1994. As of January 3, 2019, there were 1,650 applicants on the water meter list (MDWS, 2019).

## **A. IMPACTS ON DOMESTIC WATER USE**

Economic and fiscal impacts related to domestic water use in Upcountry Maui are presented in **Table 7** and summarized below.



Table 7. Upcountry Maui - Domestic Economic and Fiscal Impacts

| Item   | Multiplier or Source                | Baseline Conditions         |                                 | Future Conditions (2030) |                  |                 |
|--|-------------------------------------|-----------------------------|---------------------------------|--------------------------|------------------|-----------------|
|  |                                     | Recent Sugar<br>(2008-2013) | Interim<br>Conditions<br>(2017) | Proposed Action          | No Action        | Units           |
| 7.a. MDWS Usage  |                                     |                             |                                 |                          |                  |                 |
| Water Usage  |                                     |                             |                                 |                          |                  |                 |
| Total Use, Baseline  | CWRM, p. 213; MDWS Annual Report    | 7.90                        | 7.93                            | 7.90                     |                  | 7.90 mgd        |
| Residential, Commercial, Institutional Use   | 60% CWRM p. 210                     | 4.74                        | 4.76                            | 4.74                     |                  | 4.74 mgd        |
| Agriculture  | 40% CWRM p. 210                     | 3.16                        | 3.17                            | 3.16                     |                  | 3.16 mgd        |
| Increased Water Demand, 2030   | CWRM, p. 213                        | N/A                         | N/A                             | 7.95                     |                  | 7.95 mgd        |
| Total Use, Future  |                                     | N/A                         | N/A                             | 15.85                    |                  | 15.85 mgd       |
| Water Source   |                                     |                             |                                 |                          |                  |                 |
| EMI  | CWRM, p. 143; EMI                   | 7.10                        | 2.86                            | 7.10                     |                  | 0 mgd           |
| Other Existing DWS Water Sources   |                                     | N.E.                        | N.E.                            | N.E.                     |                  | N.E.            |
| New DWS Water Source   | CWRM, p. 214                        | N/A                         | N/A                             | 7.95                     |                  | 15.05 mgd       |
| 7.b. Economic Impacts  |                                     |                             |                                 |                          |                  |                 |
| Residents Served by Upcountry Water System   |                                     |                             |                                 |                          |                  |                 |
| Number of Residents  | CWRM, p. 210, Gale Cengage Learning | 35,251                      | 37,128                          | 43,675                   |                  | N.E. residents  |
| Households   | 2.62 people per household           | 13,461                      | 14,178                          | 16,678                   |                  | N.E. households |
| Total Household Income   | \$77,400 per household              | \$ 1,041,882,000            | \$ 1,097,358,000                | \$ 1,290,862,000         |                  | N.E.            |
| Consumption Expenditures   | 55% of HH income                    | \$ 573,035,100              | \$ 603,546,900                  | \$709,974,100            |                  | N.E.            |
| Residential Property Value   | COM Real Prop. Tax                  | N.E.                        | \$ 2,313,684,000                | \$2,721,670,000          |                  | N.E.            |
| Businesses Served by Upcountry Water System  |                                     |                             |                                 |                          |                  |                 |
| Number of Businesses   | Gale Cengage Learning, 2018         | 830                         | 880                             | 1,100                    |                  | N.E. businesses |
| Employees  | Gale Cengage Learning, 2018         | 5,100                       | 5,400                           | 6,700                    |                  | N.E. people     |
| Payroll  | \$ 45,500 per job                   | \$ 232,050,000              | \$ 245,700,000                  | \$ 304,850,000           |                  | N.E.            |
| Direct Sales   | \$164,000 per employee              | \$ 836,400,000              | \$ 885,600,000                  | \$ 1,098,800,000         |                  | N.E.            |
| Less Resident Consumption Exp. in area   | 30% of resident spending            | \$ 171,911,000              | \$ 181,064,000                  | \$ 181,064,000           |                  | N.E.            |
| Net Direct Sales   |                                     | \$ 664,489,000              | \$ 704,536,000                  | \$ 917,736,000           |                  | N.E.            |
| Profit   | 10% of Direct Sales                 | \$ 83,640,000               | \$ 88,560,000                   | \$ 109,880,000           |                  | N.E.            |
| Commercial Business Property Value   | COM Real Prop. Tax                  | N.E.                        | \$ 145,811,683                  | \$ 180,914,000           |                  | N.E.            |
| Total Economic Impacts   |                                     |                             |                                 |                          |                  |                 |
| Total Direct Sales   |                                     | \$ 1,237,524,100            | \$ 1,308,082,900                | \$ 1,627,710,100         |                  | N.E.            |
| Total Residential and Commercial Property Value  |                                     | N.E.                        | \$ 2,459,496,000                | \$ 2,902,584,000         |                  | N.E.            |
| 7.c. Fiscal Impacts  |                                     |                             |                                 |                          |                  |                 |
| County of Maui   |                                     |                             |                                 |                          |                  |                 |
| Water Supply Fund  |                                     |                             |                                 |                          |                  |                 |
| Water Service Fee Rate to EMI (a)  |                                     | \$ 0.06                     | \$ 0.06                         | \$ 0.10                  |                  |                 |
| Water Purchase from EMI  |                                     | \$ 155,500                  | \$ 62,600                       | \$ 268,900               |                  | --              |
| Unit Cost of Water Development   | Brown and Caldwell                  |                             |                                 |                          |                  |                 |
| Basal Well Development   |                                     | N/A                         | N/A                             | \$ 34                    |                  | -- per kgal     |
| Basal Well and Reservoir Development   |                                     | N/A                         | N/A                             | --                       | \$ 38            | -- per kgal     |
| Life-Cycle Cost of Water Development   |                                     |                             |                                 |                          |                  |                 |
| Basal Well Development   |                                     | N/A                         | N/A                             | \$ 1,217,081,000         |                  | --              |
| Basal Well and Reservoir Development   |                                     | N/A                         | N/A                             | --                       | \$ 2,601,329,000 |                 |
| Water Service Fee Revenue from Upcountry   | \$4.00 per 1,000 gal. (avg.)        | \$ 11,534,000               | \$ 11,578,000                   | \$ 23,141,000            | \$ 23,141,000    | per year        |
| N.E. - Not Estimated   |                                     |                             |                                 |                          |                  |                 |
| Notes:   |                                     |                             |                                 |                          |                  |                 |
| (a) MDWS pays \$0.06 per kgal to EMI under the existing agreement between the two entities. In 2030, EMI's operational cost per kgal will exceed the current \$0.06 per kgal rate. The 2030 water service fee rate is calculated based on the ratio of operational cost to MDWS service fee for 2008-2012. |                                     |                             |                                 |                          |                  |                 |

N.E. - Not Estimated

Notes:

(a) MDWS pays \$0.06 per kgal to EMI under the existing agreement between the two entities. In 2030, EMI's operational cost per kgal will exceed the current \$0.06 per kgal rate. The 2030 water service fee rate is calculated based on the ratio of operational cost to MDWS service fee for 2008-2013.

1. **Baseline Conditions**

a. **Recent Sugar Cane Operations (2008-2013)**

Between 2008 and 2013, the Upcountry Water System used an average of 7.9 mgd. Approximately 60 percent of MDWS' water use in the Upcountry System is for residential, commercial, or institutional use while 40 percent is for agricultural users. An average of 7.1 mgd was provided by the EMI Aqueduct System (CWRM, 2018, p. 143 and 213). Refer to **Table 7**, Section 7.a.

i. **Economic Impacts**

In 2010, there were approximately 35,300 people and 13,500 households within the Upcountry Water System service area (CWRM, 2018, p. 210). Based on a median household income of \$77,400, households in the Upcountry Water System area had a collective income of \$1.0 million.

It is estimated that there were approximately 830 businesses in Upcountry Maui in 2010, employing 5,100 individuals. Total payroll is estimated at \$232.1 million and direct sales revenue associated with these businesses is estimated to be \$836.4 million. Refer to **Table 7**, Section 7.b.

ii. **Fiscal Impacts**

Revenues and expenditures related to MDWS activities go to the County's Water Supply Fund. Based on the average amount of water delivered by the EMI Aqueduct System between 2008 and 2013, it is estimated that MDWS paid \$155,500 to EMI.

The County of Maui assesses water service fees based on 18 different use classifications (i.e., single-family, multi-family, industrial, etc.). The same water rates are charged across the nine (9) water systems in Maui County. The average water service fee rate Countywide is \$4.00 per kgal. Based on this rate and water usage between 2008 and 2013, water service fees averaged \$11.5 million annually from Upcountry Maui. Refer to **Table 7**, Section 7.c.

**b. Interim Diversified Agriculture Operations (2017)**

According to the MDWS Annual Report, the Upcountry Water System used 7.9 mgd in 2017, which is consistent with historic trends (County of Maui, Department of Water Supply, 2017 and 2018). In 2017, 2.86 mgd was provided by EMI. MDWS use of surface water from the EMI Aqueduct System was low in 2017 because heavy rainfall increased supplies from other County sources that depend on rainfall (Plasch Econ Pacific, LLC, 2019). Refer to **Table 7**, Section 7.a.

**i. Economic Impacts**

In 2017, there were estimated 37,100 residents and 14,200 households within the Upcountry Maui Water System service area. Based on a median household income of \$77,400, households in Upcountry Maui had a collective income of \$1.1 billion and consumption expenditures of \$603.5 million. Residential property values within the Upcountry Maui Water System service area was approximately \$2.3 billion in 2017.

There were approximately 880 businesses in Upcountry Maui in 2017, employing 5,400 individuals. Total payroll is estimated at \$245.7 million. Direct sales associated with these businesses were approximately \$885.6 million. Commercial property values within the Upcountry Maui Water System service area were approximately \$145.8 million in 2017.

In total, direct sales from residents' consumption expenditures and Upcountry Maui businesses are estimated at \$1.3 billion and residential and commercial property value is approximately \$2.5 billion. Refer to **Table 7**, Section 7.c.

In addition to residents and businesses serviced by MDWS in Upcountry Maui, there are also numerous public uses that benefit from water from the EMI Aqueduct System and MDWS. These public uses include but are not limited to, public and private schools, fire stations, community centers, and parks. As previously mentioned, the MDWS system also services agricultural users including the Kula Agricultural Park. Impacts related to agricultural water use in Upcountry Maui will be discussed separately in Section B of this Chapter.

ii. **Fiscal Impacts**

Based on an assumed delivery of approximately 2.86 mgd from the EMI Aqueduct System in 2017, MDWS would have paid \$62,600. Based on the average water service fee rate Countywide of \$4.00 per kgal and the assumed water usage in 2017, water service fees of \$11.6 million were collected from Upcountry Maui and deposited into the Water Supply fund. Refer to **Table 7**, Section 7.c.

2. **Future Conditions**

For the period between 2004 and 2013, the average customer water use for the Upcountry Maui Water System varies between 6 mgd and 10 mgd, with an average of 7.9 mgd (CWRM, 2018, p. 213). An assumed 7.1 mgd was supplied by the EMI Aqueduct System through the Wailoa Ditch (CWRM, 2018, p. 143). MDWS projects that by 2030, the population of the area served by the Upcountry Maui Water System will grow to 43,675 residents, with a predicted additional water need of 1.65 mgd (CWRM, 2018, p. 214). In addition to water demand resulting from population growth, additional water is needed to meet the demands of the applicants on the water meter waiting list. As such, MDWS anticipates that it will need to develop between 4.2 mgd and 7.95 mgd, in addition to the approximately 7.1 mgd long term average provided through the EMI Aqueduct System, to meet demands through 2030, including present use, expected increased demand due to population growth, and a percentage of new connections from the current priority list for water meters (CWRM, 2018, p. 214). For the purposes of this analysis, it is assumed that the full 7.95 mgd will be needed to meet future demands through 2030.

The MDWS has evaluated a variety of strategies to meet the long-term future demands in the Upcountry Maui System and/or respond to reductions in the surface water supply. The strategies that have been determined to be most cost effective consist of combinations of additional basal well capacity and/or construction of raw water storage reservoirs. New basal well development would involve construction of new wells at the 1,300 foot elevation and/or wells at the 1,800 foot elevation, along with transmission pipelines, storage tanks, and booster pump stations. It is noted that MDWS entered into a Consent Decree in 2003 that requires that the MDWS conduct rigorous cost/benefit analyses of other water source options before developing groundwater in the East Maui Region. According to an assessment by Brown and Caldwell, development of additional basal wells may be a *“viable strategy to meet future needs from a technical perspective; however, there are legal issues that must be resolved before MDWS can proceed”* (Brown and Caldwell, 2014). In addition, the hydrogeological viability of the wells would need to be assessed.

Constructing additional raw water storage reservoirs to store water from wet periods for use during dry periods presents another strategy to meet future water demand. MDWS evaluated reservoirs ranging in size from 100 million gallons (mgal) to 300 mgal to serve the Olinda, Piiholo, and/or Kamole WTPs. The analysis determined that the most cost-effective reservoirs would be reservoirs designed to feed the Piiholo WTP or the Kamole WTP (Brown and Caldwell, 2014).

New reservoirs have high capital costs but lower operational and maintenance costs compared to groundwater wells. There must be sufficient source water available to fill the reservoir. In comparison, new wells carry relatively lower capital costs but require transmission and storage improvements and have higher operational costs due to the cost of pumping groundwater. It is also noted that there is risk associated with drilling new wells because of the uncertainty of the quantity and quality of water that would be found. The assessment prepared by Brown and Caldwell opined that it would be easier to develop new basal wells than to construct new storage reservoirs due to the need for capital financing mechanisms to construct expensive reservoirs, and potential environmental issues associated with constructing a new reservoir in the Lower Kula area (Brown and Caldwell, 2014).

As will be discussed below, depending on the amount of water available to MDWS from the EMI Aqueduct System, one or more of the aforementioned strategies will be required to meet water needs for the Upcountry Maui Water System.

**a. Proposed Action**

Under the Proposed Action scenario, it is assumed that there will be sufficient water available through the State Water Lease to allow MDWS to receive 7.1 mgd through the Wailoa Ditch. MDWS would need to develop the additional 7.95 mgd to meet future demands through 2030. Refer to **Table 7**, Section 7.a.

**i. Economic Impact Assessment**

The County of Maui projects that the population in the Upcountry Maui service area will grow to approximately 43,700 in 2030 (CWRM, p. 210). This would translate to an estimated 16,700 households. Assuming a median household income of \$77,400, households in the Upcountry Maui service area are anticipated to have a collective income of \$1.3 billion and consumption expenditures of \$710.0 million. Residential property values within Upcountry Maui are estimated to grow to \$2.7 billion.



Assuming proportional growth in line with population, there will be an estimated 1,100 businesses in Upcountry Maui in 2030, employing 6,700 individuals. Total payroll would be estimated at \$304.9 million, while direct sales associated with these businesses would be \$1.1 billion. Commercial property values within Upcountry Maui are estimated to grow to \$180.9 million.

In total, direct sales from residents' consumption expenditures and Upcountry businesses are estimated at \$1.6 billion and residential and commercial property value is approximately \$2.9 billion. Refer to **Table 7**, Section 7.b.

As previously noted, the Upcountry Maui Water System also services numerous public uses, including public and private schools, fire stations, community centers, and parks.

## ii. **Fiscal Impact Assessment**

With 7.1 mgd of water from the EMI Aqueduct System under the Proposed Action, for the purposes of this report, it is assumed that MDWS will need to develop 7.95 mgd of new water sources to meet future demands through 2030. The Brown and Caldwell analysis indicates that incremental basal wells would be a strategy to meet future demands assuming no reduction in surface water flows. Under the Brown and Caldwell analysis, the life-cycle unit cost of developing and operating wells is \$34 per (kgal).<sup>3</sup> It is noted that the life-cycle unit cost to develop new water for Upcountry customers is high. In comparison, a similar analysis conducted for the Central Maui Water System showed a unit cost of less than \$10 per kgal, or less than one third the cost of Upcountry Maui water development (Brown and Caldwell, 2014). The total life-cycle cost for 7.95 mgd of new wells is \$1.2 billion. The life-cycle cost is expressed as the net present value of all the costs incurred over 25 years, including capital, operating, and maintenance costs.

As previously mentioned, that the rate that MDWS pays to EMI will increase by 2030 because EMI's per unit operating cost will increase. The actual rate MDWS will pay to EMI will be subject to a future agreement between the two (2) entities. However, for the

---

<sup>3</sup> Cost as reported in 2014 Brown and Caldwell analysis has been inflation-adjusted to be reflected in 2018 dollars.

purposes of this analysis, the 2030 water service fee rate is estimated to be \$0.10, which has been calculated based on the ratio of operational cost to MDWS service fee for 2008 to 2013. Under this assumption, MDWS would pay an estimated \$268,900 per year to EMI.

Water service rates vary by class of users (i.e., residential, commercial, agricultural, etc.). The average MDWS water service rate Countywide is \$4 per kgal. Inasmuch as the same water rates are charged across the nine (9) water systems in Maui County, there are many factors that determine the water service rate. Therefore, it is difficult to predict what the water service rate would be in 2030. However, it is noted that the life-cycle unit cost to develop new water for Upcountry customers of \$34 per kgal far exceeds the current average water service rate of \$4 per kgal. It is assumed that MDWS would seek a variety of funding sources to cover the cost to develop new wells. This may include County capital improvement program funds as well as State and/or Federal funds. Nevertheless, due to the significant cost of new water source development, it would be reasonable to expect that water service rates would increase in the future to offset the costs of new water sources. As noted above, the County's water rate structure is uniform for all customers; water rates are not dependent on the service area a customer is located in (Brown and Caldwell, 2014). Therefore, under MDWS' current rate structure, the increases would apply Countywide because rates do not vary by service area. Refer to **Table 7**, Section 7.c.

**b. No Action Alternative**

The No Action Alternative would result in no Water Lease from the State. Under the No Action Alternative, EMI could continue to divert some portion of the water within the Collection Area, including west of Honopou Stream. However, this would be limited to an estimated median amount of 26.39 mgd, plus 4.37 mgd, for a total of 30.76 mgd on average. As discussed in Chapter II, it is unclear whether it will be financially feasible to continue to run the EMI Aqueduct System under the No Action Alternative. The operational costs of the EMI Aqueduct System are largely fixed; as such, reducing the amount of water diverted from the Collection Area by 70 percent under the No Action Alternative would significantly increase the cost of transporting the water, on a per unit basis. As previously mentioned, the water delivery agreements between the County and A&B are contingent upon the Lease being issued; if no Lease is issued, it is assumed that the

delivery of water to MDWS would terminate. Therefore, under the No Action Alternative, it is assumed that MDWS would need to find a replacement water source for the 7.1 mgd that is currently supplied by the EMI Aqueduct System through the Wailoa Ditch. In addition, new water source would be required to meet the future water demand of 7.95 mgd by 2030. In total, MDWS would need to develop 15.05 mgd of new water source under the No Action Alternative. Refer to **Table 7**, Section 7.a.

i. **Economic Impact Assessment**

Under the No Action Alternative, population and business growth may be constrained if development of replacement and new water sources cannot keep pace with demand. As such, the number of residents, households, and businesses in the Upcountry Maui Water System service area may very well be less than what is projected for the Proposed Action. The extent to which population and business growth is constrained would be dependent on MDWS' implementation of strategies to replace and develop new water source. As such, it is difficult to quantify potential population, household impacts under this Alternative. However, it is anticipated that economic and household growth factors would be negatively impacted.

ii. **Fiscal Impact Assessment**

Potential strategies for replacement and new water sources for Upcountry Maui include a combination of incremental basal wells and/or new raw water storage reservoirs. According to Brown and Caldwell, the life-cycle unit cost to develop wells and reservoirs for Upcountry Maui if surface water is reduced is estimated to be \$38 per kgal (Brown and Caldwell, 2014)<sup>4</sup>. With the higher water source demand of 15.05 mgd, this would translate to a total life-cycle cost of \$2.6 billion, compared to \$1.2 billion under the Proposed Action. The significantly higher costs associated with the No Action Alternative would impact the County's Water Supply Fund and would be expected to have a corresponding impact to MDWS finances and on ratepayers Countywide, not just in the Upcountry Maui Water System service area. Refer to **Table 7**, Section 7.c.

---

<sup>4</sup> Cost has been inflation-adjusted to be reflected in 2018 dollars.

c. **Reduced Water Lease Alternative**

The Reduced Water Lease Alternative would involve the issuance of the Water Lease authorizing amounts less than the maximum amount allowed under the IIFS. Depending on the amount of water authorized under the Water Lease, MDWS may receive no water from the Wailoa Ditch or some amount up to 7.1 mgd. The greater the reduction in the amount authorized under the Water Lease, proportionally less water will be available to MDWS.

i. **Economic Impact Assessment**

Depending on how much water is available under a Reduced Water Lease Alternative, there may or may not be water available to provide to MDWS' Upcountry Maui Water System. If water is provided to the County, it may be less than the current 7.1 mgd provided from the EMI Aqueduct System. As noted in the No Action Alternative above, population and business growth may be constrained if water supply for Upcountry Maui is not able to keep pace with demand. The degree to which economic growth would be constrained would be dependent on the amount of water available under a Reduced Water Lease Alternative and how much of that water, if any, would be available for MDWS.

ii. **Fiscal Impact Assessment**

Similar to the economic impacts described above, the fiscal impacts of a Reduced Water Lease Alternative would be dependent on the amount of water available, if any, to MDWS. If a Water Lease is issued that authorizes an amount that is not sufficient to supply MDWS and the Central Maui farmlands, the impacts would be similar to the No Action Alternative where the County would face higher costs for developing replacement and new water sources. If, on the other hand, a Water Lease is granted with a sufficient allocation to allow for 7.1 mgd currently provided to MDWS to continue, the fiscal impacts to the County would be similar to the impacts described for the Proposed Action.

**B. IMPACTS ON AGRICULTURAL WATER USE**

Approximately 40 percent of MDWS' usage in the Upcountry Maui Water System is agricultural use. This includes non-potable water provided to the Kula Agricultural Park (KAP) through diversions from the same streams that serve the Kamole WTP through the Wailoa Ditch. Water for the KAP is stored in two (2) reservoirs with a total capacity of 5.4

million gallons. The KAP consists of 31 farm lots ranging in size from 7 to 29 acres, and which are owned by the County of Maui. Maui County has recently purchased an additional 262 acres in Upcountry Maui, the first phase of a new County agricultural park, in the vicinity of the KAP. The source of water for the new agricultural park will be the same as for KAP, Reservoir 40, which is sourced by the EMI Aqueduct System.

Economic and fiscal impacts related to agricultural water use in Upcountry Maui are based on the *Agricultural and Related Economic Impacts Report* prepared by Plasch Econ Pacific, LLC.

## 1. **Baseline Conditions**

### a. **Economic Impact Assessment**

The *Agricultural and Related Economic Impacts Report* provided an analysis of Upcountry Maui agricultural activities in 2017 as the baseline scenario. In 2017, farmers at the Kula Ag Park and other farms in Upcountry Maui who relied on water from the EMI Aqueduct System produced an estimated 12.5 million pounds of crops per year. Annual farm sales were about \$12.5 million and indirect sales were about \$13.8 million. Total direct and indirect sales were about \$26.3 million per year, of which about \$21.5 million was on Maui and about \$4.8 million on O‘ahu. Profits from farm operations and indirect sales were an estimated \$2.6 million per year. See **Table 8**, Section 8.a. and 8.b.

### b. **Fiscal Impact Assessment**

In 2017, the farms at the Kula Ag Park and other farms in Upcountry Maui that rely on water from the EMI Aqueduct System would have generated about \$45,000 per year in State taxes. For the County of Maui, property taxes and rents paid to the County by farmers at the Kula Ag Park totaled less than \$54,000 per year. The City and County of Honolulu will derive about \$2,000 per year from the excise tax surcharge. Refer to **Table 8**, Section 8.c.

## 2. **Future Conditions**

### a. **Proposed Action**

Under the Proposed Action, EMI will continue to supply water to the MDWS for Upcountry Maui, including for agricultural water use. It is also noted that as part of the County’s purchase of the 262-acre expansion of the KAP, EMI has agreed to supply the water for the expansion. The additional water will come from water savings due to infrastructure improvements to the



reservoir and pumps that serve the KAP that will reduce system losses (Plasch Econ Pacific, LLC, 2019). The actual amount of water delivered from the EMI Aqueduct System is not anticipated to increase in order to serve the 262-acre expansion.

i. **Economic Impact Assessment**

Under the Proposed Action, 262 acres of fallow sugar cane lands would be converted to expand the KAP. The cost of this conversion is estimated at \$1.3 million over a five-year development period, or \$0.26 million per year. Indirect sales of \$0.32 million would be expected, for total direct and indirect expenditures of \$0.6 per year for five (5) years.

By 2030, farm activity in Upcountry Maui is expected to increase due to the 262-acre expansion of the Kula Ag Park. The farmers at the KAP and other farms in Upcountry Maui who will rely on water from the EMI Aqueduct System are projected to produce an estimated 15.1 million pounds of crops per year. Annual farm sales are expected to reach about \$15.1 million, and indirect sales about \$16.7 million. Total direct and indirect sales will be about \$31.8 million per year, of which about \$26.0 million will be on Maui and about \$5.9 million on O'ahu. Profits from farm operations and indirect sales are expected to reach about \$3.2 million per year. Refer to **Table 8**, Section 8.b.

ii. **Fiscal Impact Assessment**

The development activity associated with the expansion of the KAP would generate cumulative State tax revenues of about \$180,000.

The County of Maui would derive negligible tax revenues from development activity.

From an operational standpoint, farmers at the KAP and other farms in Upcountry Maui that rely on water from the EMI Aqueduct System would generate about \$54,000 per year in State taxes. For the County of Maui, property taxes and rents paid to the County by farmers at the KAP would total about \$85,000 per year. The increase from 2017 is largely due to the increase in rental income from the 262-acre expansion of the KAP. The City and County of Honolulu would derive about \$2,000 per year from the excise tax surcharge. Refer to **Table 8**, Section 8.c.

**Table 8. Upcountry Maui – Agricultural Economic and Fiscal Impacts**

| Item                                    | Baseline Conditions         |                                 | Future Conditions (2030) |           | Units      |
|---|-----------------------------|---------------------------------|--------------------------|-----------|------------|
|   | Recent Sugar<br>(2008-2013) | Interim<br>Conditions<br>(2017) | Proposed<br>Action       | No Action |            |
| <b>8.a. Agricultural Land Use</b>       |                             |                                 |                          |           |            |
| Kula Ag Park                            | N.E.                        | 447                             | 709                      | -         | acres      |
| Other farms                             | N.E.                        | 800                             | 800                      | -         | acres      |
| Total                                   | N.E.                        | 1,247                           | 1,509                    | -         | acres      |
| <b>8.b. Economic Impacts</b>            |                             |                                 |                          |           |            |
| <b>Development Activity</b>             |                             |                                 |                          |           |            |
| Increase in crop acreage                | N.E.                        | N/A                             | 262                      | -         | acres      |
| Development Period                      | N.E.                        | N/A                             | 5                        | -         | years      |
| Expenditures on field preparations      | N.E.                        | N/A                             | \$ 1.3                   | -         | million/yr |
| Annual average expenditures and sales   |                             |                                 |                          |           |            |
| Expenditures on field preparations      | N.E.                        | N/A                             | \$ 0.26                  | -         | million/yr |
| Indirect Sales                          | N.E.                        | N/A                             | \$ 0.32                  | -         | million/yr |
| Total Expenditures and Indirect Sales   | N.E.                        | N/A                             | \$ 0.6                   | -         | million/yr |
| Employment                              |                             |                                 |                          |           |            |
| Direct/on-site jobs, field preparations | N.E.                        | N/A                             | 5.2                      | -         | jobs       |
| Indirect jobs, offsite                  | N.E.                        | N/A                             | 2.3                      | -         | jobs       |
| Total job                               | N.E.                        | N/A                             | 7.5                      | -         | jobs       |
| Payroll                                 |                             |                                 |                          |           |            |
| Direct Payroll                          | N.E.                        | N/A                             | \$ 0.21                  | -         | million/yr |
| Indirect Payroll                        | N.E.                        | N/A                             | \$ 0.10                  | -         | million/yr |
| Total                                   | N.E.                        | N/A                             | \$ 0.31                  | -         | million/yr |
| <b>Operations</b>                       |                             |                                 |                          |           |            |
| <b>Production</b>                       |                             |                                 |                          |           |            |
| Kula Ag Park                            | N.E.                        | 4.5                             | 7.1                      | -         | m lbs/yr   |
| Other                                   | N.E.                        | 8.0                             | 8.0                      | -         | m lbs/yr   |
| Total                                   | N.E.                        | 12.5                            | 15.1                     | -         | m lbs/yr   |
| <b>Sales</b>                            |                             |                                 |                          |           |            |
| <b>Direct Sales</b>                     |                             |                                 |                          |           |            |
| Kula Ag Park                            | N.E.                        | \$ 4.5                          | \$ 7.1                   | -         | million/yr |
| Other                                   | N.E.                        | \$ 8.0                          | \$ 8.0                   | -         | million/yr |
| Total                                   | N.E.                        | \$ 12.5                         | \$ 15.1                  | -         | million/yr |
| Indirect Sales                          | N.E.                        | \$ 13.8                         | \$ 16.7                  | -         | million/yr |
| Maui                                    | N.E.                        | \$ 9.0                          | \$ 10.9                  | -         | million/yr |
| Oahu                                    | N.E.                        | \$ 4.8                          | \$ 5.9                   | -         | million/yr |
| Total Direct and Indirect Sales         | N.E.                        | \$ 26.3                         | \$ 31.8                  | -         | million/yr |
| Maui                                    | N.E.                        | \$ 21.5                         | \$ 26.0                  | -         | million/yr |
| Oahu                                    | N.E.                        | \$ 4.8                          | \$ 5.9                   | -         | million/yr |
| Profits                                 | N.E.                        | \$ 2.6                          | \$ 3.2                   | -         | million/yr |
| <b>Employment</b>                       |                             |                                 |                          |           |            |
| <b>Direct/on-site jobs</b>              |                             |                                 |                          |           |            |
| Kula Ag Park                            | N.E.                        | 30                              | 47                       | -         | jobs       |
| Other                                   | N.E.                        | 53                              | 53                       | -         | jobs       |
| Total                                   | N.E.                        | 83                              | 101                      | -         | jobs       |
| Indirect jobs, offsite                  | N.E.                        | 40                              | 48                       | -         | jobs       |
| Maui                                    | N.E.                        | 26                              | 31                       | -         | jobs       |
| Oahu                                    | N.E.                        | 14                              | 17                       | -         | jobs       |
| Total jobs                              | N.E.                        | 123                             | 149                      | -         | jobs       |
| <b>Payroll</b>                          |                             |                                 |                          |           |            |
| <b>Direct Payroll</b>                   |                             |                                 |                          |           |            |
| Kula Ag Park                            | N.E.                        | \$ 1.0                          | \$ 1.7                   | -         | million/yr |
| Other                                   | N.E.                        | \$ 1.9                          | \$ 1.9                   | -         | million/yr |
| Total                                   | N.E.                        | \$ 2.9                          | \$ 3.5                   | -         | million/yr |
| Indirect Payroll                        | N.E.                        | \$ 1.9                          | \$ 2.3                   | -         | million/yr |
| Maui                                    | N.E.                        | \$ 1.2                          | \$ 1.4                   | -         | million/yr |
| Oahu                                    | N.E.                        | \$ 0.7                          | \$ 0.9                   | -         | million/yr |
| Total                                   | N.E.                        | \$ 4.8                          | \$ 5.8                   | -         | million/yr |
| <b>Residents supported</b>              |                             |                                 |                          |           |            |
| Maui                                    | N.E.                        | 245                             | 297                      | -         | people     |
| Oahu                                    | N.E.                        | 30                              | 36                       | -         | people     |
| Total                                   | N.E.                        | 275                             | 333                      | -         | people     |

**Table 8. Upcountry Maui – Agricultural Economic and Fiscal Impacts  
(continued)**

| Item                               | Baseline Conditions         |                                 | Future Conditions  |           | Units      |
|------------------------------------|-----------------------------|---------------------------------|--------------------|-----------|------------|
|                                    | Recent Sugar<br>(2008-2013) | Interim<br>Conditions<br>(2017) | Proposed<br>Action | No Action |            |
| <b>8.c. Fiscal Impacts</b>         |                             |                                 |                    |           |            |
| Development Activity, Cumulative   |                             |                                 |                    |           |            |
| State Revenues                     | N.E.                        | -                               | \$ 0.18            | -         | million/yr |
| Maui County Property Taxes         | N.E.                        | -                               | N.E.               | -         | million/yr |
| C&C Honolulu, Excise Tax Surcharge | N.E.                        | -                               | N.E.               | -         | million/yr |
| Operations                         |                             |                                 |                    |           |            |
| State Revenues                     |                             | \$ 0.45                         | \$ 0.54            | -         | million/yr |
| Maui County Revenues               |                             | \$ 0.54                         | \$ 0.85            | -         | million/yr |
| C&C Honolulu, Excise Tax Surcharge |                             | \$ 0.0020                       | \$ 0.0020          | -         | million/yr |
| Source: Plasch Econ Pacific, LLC   |                             |                                 |                    |           |            |

**b. No Action Alternative**

As previously discussed, a limited amount of water could be diverted under the No Action Alternative. Under the No Action Alternative, the supply of water delivered by the EMI Aqueduct System to the MDWS is presumed to drop to zero because the agreements with the County provide that the delivery of water is contingent upon the Lease being issued. Therefore, it is assumed that MDWS would need to find a replacement water source. Several years would be required to develop new sources. Assuming domestic customers would have priority over agricultural customers, farmers in Upcountry Maui would lack water to irrigate their crops until the new water sources are operational. As a result, farms would be required to close or relocate to Central Maui. Even after the new water source is operational, little commercial farming is expected to return to Upcountry Maui because of the better agronomic conditions in Central Maui.

**i. Economic Impact Assessment**

Under the No Action Alternative, farming activity and economic impacts are expected to be near zero for the farms that depend on water from the EMI Aqueduct System.

**ii. Fiscal Impact Assessment**

Taxes generated under the No Action Alternative are expected to be near zero.

c. **Reduced Water Lease Alternative**

For the Reduced Water Lease Alternative, the impacts would be proportional to the amount of water delivered to MDWS that would be available for agricultural use.

**NĀHIKU**





## V. NĀHIKU

Nāhiku is a small rural community in east Maui located makai of Hana Highway in the vicinity of mile marker 25. The Nāhiku community is characterized by rural residential uses. There is no significant commercial development in Nāhiku. MDWS receives water directly from the EMI Aqueduct System for the Nāhiku community, with the source of that water being a development tunnel located east of Makapipi Stream, that feeds into the Ko'olau Ditch and is accessed by MDWS in the Ko'olau Ditch near Makapipi Stream. There are approximately 43 water meters, all located along Nāhiku Road (County of Maui, Department of Water Supply, 2019).

### A. **BASELINE CONDITIONS**

#### 1. **Recent Sugar Cane Operations (2008-2013)**

In 2013, there were 43 connections to MDWS' Nāhiku system, serving a population of 107 people. The average daily flow to the Nāhiku community was 41,000 gallons per day in 2013 (County of Maui, Department of Water Supply, 2019). Given the small population of Nāhiku and the lack of commercial land uses, the economic and related fiscal impacts for the Nāhiku community are considered negligible.

#### 2. **Interim Diversified Agriculture Operations (2017)**

The Nāhiku area is designated "Agricultural" by the State Land Use Commission and has not experienced significant population growth. As noted under the Historic Sugar Cane Operations period, economic and related fiscal impacts for the Nāhiku community are considered negligible.

### B. **FUTURE CONDITIONS**

Due to its "Agricultural" land designation, the Nāhiku community is not anticipated to experience significant population growth through 2030. The 41,000 gallons per day provided to the Nāhiku community is expected to continue under the Proposed Action. As previously noted, it is unclear whether it will be financially feasible to continue to operate and maintain the EMI Aqueduct System under the No Action Alternative or the Reduced Water Lease Alternative. If operation of the EMI Aqueduct System is discontinued under the No Action Alternative or the Reduced Water Lease Alternative, the Nāhiku community would be adversely impacted as it would lose its source of potable water. If, however, the EMI Aqueduct System does continue to operate, the amount of water required for Nāhiku is negligible and it is assumed that water could continue to be delivered to the community.

# CENTRAL MAUI | VI

## VI. CENTRAL MAUI

A&B historically cultivated sugar cane on the fields of Central Maui for over a century. These Central Maui fields were irrigated by water from the EMI Aqueduct System, brackish groundwater, and surface water from Wailuku Water Co. The economic and fiscal impacts related to Central Maui are derived from the *Agricultural and Related Impacts Report* prepared by Plasch Econ Pacific, LLC. It is noted that the impact analysis is based on approximately 30,000 acres of Central Maui fields that were historically serviced by EMI and supplemental brackish groundwater. Excluded from the analysis were fields west of Maui Veterans Highway that were irrigated with surface water from the West Maui Ditch System and supplemental brackish water.

### A. BASELINE CONDITIONS

#### 1. Typical Sugar Cane Operations (2006)

As previously mentioned, the year 2006 is used in this analysis as a representative year for “typical” sugar cane operations for the 20-year period from 1987 to 2006. Rainfall in East Maui was regarded as normal, the restoration of stream flows was not large enough to significantly affect HC&S operations, and the plantation was economically healthy.

For the 2006 crop year, HC&S grew sugar cane on about 35,180 acres, including 29,430 acres in the EMI service area (approximately 84 percent). See **Table 9**, Section 9.a.

#### a. Economic Impact Assessment

For the 2006 crop, HC&S produced about 145,200 tons of raw sugar, and sold sugar and energy to generate about \$101 million in direct sales. The purchase of goods and services by HC&S and the families of employees generated indirect sales and, in turn, these suppliers generated more indirect sales by their purchases of goods and services. The indirect sales are estimated at \$91 million. Total direct and indirect sales were \$191 million, of which about \$160 million was on Maui and about \$32 million on Oahu. Profits from sugar operations and indirect economic sales were estimated at \$19 million.

HC&S employed about 630 workers, including planters, irrigation workers, harvesters, truck drivers, mill workers, office workers, supervisors, etc. As with indirect sales, sugar operations generated indirect jobs, including those at companies providing agricultural supplies and equipment, office supplies and equipment, repair services, etc. Other indirect jobs included

**Table 9. Central Maui Agricultural Economic and Fiscal Impacts**

| Item  | Baseline Conditions  |                          |                           | Future Conditions |           | Units      |
|---|----------------------|--------------------------|---------------------------|-------------------|-----------|------------|
|   | Typical Sugar (2006) | Recent Sugar (2008-2013) | Interim Conditions (2017) | Proposed Action   | No Action |            |
| <b>9.a. Agricultural Land Use</b>                   |                      |                          |                           |                   |           |            |
| Sugar Cane Operations                               |                      |                          |                           |                   |           |            |
| Fields Serviced by EMI and groundwater              | 29,427               | 30,320                   |                           |                   |           | acres      |
| Total Plantation                                    | 35,177               | 36,176                   |                           |                   |           | acres      |
| Diversified Agriculture                             |                      |                          |                           |                   |           |            |
| Crops   |                      |                          |                           |                   |           |            |
| Community Farm                                      |                      |                          |                           | 800               | 300       | acres      |
| Orchards  |                      |                          |                           | 12,850            | 4,180     | acres      |
| Tropical fruits                                     |                      |                          |                           | 600               | 200       | acres      |
| Row and annual crops                                |                      |                          |                           | 1,200             | 400       | acres      |
| Energy crops  |                      |                          | 200                       | 500               | 200       | acres      |
| Total crops   |                      |                          | 200                       | 15,950            | 5,280     | acres      |
| Pasture   |                      |                          |                           |                   |           |            |
| Irrigated   |                      |                          |                           | 4,700             | 3,800     | acres      |
| Unirrigated   |                      |                          | 500                       | 9,100             | 20,670    | acres      |
| Total Pasture                                       |                      |                          | 500                       | 13,800            | 24,470    | acres      |
| Green energy (solar)                                |                      |                          |                           | 250               | 250       | acres      |
| Total   |                      |                          |                           | 30,000            | 30,000    | acres      |
| <b>9.b. Economic Impacts</b>                        |                      |                          |                           |                   |           |            |
| <b>Sugar Cane Operations</b>                        |                      |                          |                           |                   |           |            |
| Production (raw sugar)                              | 145,182              | 136,324                  |                           |                   |           | tons/yr    |
| Direct Sales, sugar and related sales               | \$ 100.7             | \$ 115.6                 |                           |                   |           | million/yr |
| Indirect Sales                                      | \$ 90.7              | \$ 104.1                 |                           |                   |           | million/yr |
| Maui  | \$ 58.9              | \$ 67.6                  |                           |                   |           | million/yr |
| Oahu  | \$ 31.7              | \$ 36.4                  |                           |                   |           | million/yr |
| Total Direct and Indirect Sales                     | \$ 191.4             | \$ 219.7                 |                           |                   |           | million/yr |
| Maui  | \$ 159.7             | \$ 183.3                 |                           |                   |           | million/yr |
| Oahu  | \$ 31.7              | \$ 36.4                  |                           |                   |           | million/yr |
| Profits   | \$ 19.1              | \$ 22.0                  |                           |                   |           | million/yr |
| Employment  |                      |                          |                           |                   |           |            |
| Direct/On-site Jobs                                 | 630                  | 620                      |                           |                   |           | jobs       |
| Indirect Jobs                                       | 712                  | 701                      |                           |                   |           | jobs       |
| Maui  | 463                  | 455                      |                           |                   |           | jobs       |
| Oahu  | 249                  | 245                      |                           |                   |           | jobs       |
| Total Jobs  | 1,342                | 1,321                    |                           |                   |           | jobs       |
| Maui  | 1,093                | 1,075                    |                           |                   |           | jobs       |
| Oahu  | 249                  | 245                      |                           |                   |           | jobs       |
| Payroll   |                      |                          |                           |                   |           |            |
| Direct Payroll                                      | \$ 48.5              | \$ 34.3                  |                           |                   |           | million/yr |
| Indirect Payroll                                    | \$ 34.2              | \$ 33.7                  |                           |                   |           | million/yr |
| Maui  | \$ 21.1              | \$ 20.7                  |                           |                   |           | million/yr |
| Oahu  | \$ 13.2              | \$ 13.0                  |                           |                   |           | million/yr |
| Total Payroll                                       | \$ 82.7              | \$ 68.0                  |                           |                   |           | million/yr |
| Maui  | \$ 69.5              | \$ 55.0                  |                           |                   |           | million/yr |
| Oahu  | \$ 13.2              | \$ 13.0                  |                           |                   |           | million/yr |
| Residents Supported                                 |                      |                          |                           |                   |           |            |
| Maui  | 2,459                | 2,420                    |                           |                   |           | people     |
| Oahu  | 531                  | 522                      |                           |                   |           | people     |
| Total   | 2,989                | 2,942                    |                           |                   |           | people     |
| <b>Diversified Agriculture Development Activity</b> |                      |                          |                           |                   |           |            |
| Field Preparations                                  |                      |                          |                           |                   |           |            |
| Cropland  |                      |                          |                           | 15,950            | 5,280     | acres      |
| Pastures, irrigated                                 |                      |                          |                           | 4,700             | 3,800     | acres      |
| Pastures, unirrigated                               |                      |                          |                           | 9,100             | 20,670    | acres      |
| Building Space                                      |                      |                          |                           | 319,000           | 105,600   | sf         |
| Green energy (solar)                                |                      |                          |                           | 37.5              | 37.5      | mW         |
| Development Period                                  |                      |                          |                           | 10                | 6         | years      |
| Expenditures and Sales                              |                      |                          |                           |                   |           |            |
| Total Development Expenditures                      |                      |                          |                           | \$ 214.7          | \$ 144.8  | million    |
| Average Annual Development Expenditures             |                      |                          |                           | \$ 21.5           | \$ 24.1   | million/yr |
| Indirect Sales                                      |                      |                          |                           | \$ 18.5           | \$ 18.8   | million/yr |
| Maui  |                      |                          |                           | \$ 12.0           | \$ 12.2   | million/yr |
| Oahu  |                      |                          |                           | \$ 6.5            | \$ 6.6    | million/yr |
| Total Expenditures and Indirect Sales               |                      |                          |                           | \$ 39.9           | \$ 42.9   | million/yr |
| Maui  |                      |                          |                           | \$ 33.5           | \$ 36.3   | million/yr |
| Oahu  |                      |                          |                           | \$ 6.5            | \$ 6.6    | million/yr |
| Profits   |                      |                          |                           | \$ 4.0            | \$ 4.3    | million/yr |
| Employment  |                      |                          |                           |                   |           |            |
| Direct/on-site jobs                                 |                      |                          |                           | 208               | 176       | jobs       |
| Indirect jobs, offsite                              |                      |                          |                           | 119               | 116       | jobs       |
| Maui  |                      |                          |                           | 77                | 76        | jobs       |
| Oahu  |                      |                          |                           | 42                | 41        | jobs       |
| Total jobs  |                      |                          |                           | 326               | 293       | jobs       |
| Maui  |                      |                          |                           | 285               | 252       | jobs       |
| Oahu  |                      |                          |                           | 42                | 41        | jobs       |
| Payroll   |                      |                          |                           |                   |           |            |
| Direct payroll                                      |                      |                          |                           | \$ 8.8            | \$ 7.7    | million/yr |
| Indirect payroll                                    |                      |                          |                           | \$ 5.7            | \$ 5.6    | million/yr |
| Maui  |                      |                          |                           | \$ 3.5            | \$ 3.4    | million/yr |
| Oahu  |                      |                          |                           | \$ 2.2            | \$ 2.2    | million/yr |
| Total payroll                                       |                      |                          |                           | \$ 14.5           | \$ 13.3   | million/yr |
| Maui  |                      |                          |                           | \$ 12.3           | \$ 11.1   | million/yr |
| Oahu  |                      |                          |                           | \$ 2.2            | \$ 2.2    | million/yr |
| Residents Supported                                 |                      |                          |                           |                   |           |            |
| Maui  |                      |                          |                           |                   |           |            |
| Oahu  |                      |                          |                           | 641               | 567       | people     |
| Total   |                      |                          |                           | 88                | 87        | people     |

**Table 9. Central Maui Agricultural Economic and Fiscal Impacts**  
(continued)

| Item  | Baseline Conditions  |                          |                           | Future Conditions |           | Units      |
|---|----------------------|--------------------------|---------------------------|-------------------|-----------|------------|
|   | Typical Sugar (2006) | Recent Sugar (2008-2013) | Interim Conditions (2017) | Proposed Action   | No Action |            |
| <b>Diversified Agriculture Operations</b>           |                      |                          |                           | 730               | 654       | people     |
| Beef cattle (cow and calf units)                    |                      |                          |                           |                   |           |            |
| Pasture, irrigated                                  |                      |                          |                           | 4,700             | 3,800     | units      |
| Pasture, unirrigated                                |                      |                          |                           | 2,600             | 5,906     | units      |
| Total   |                      |                          |                           | 7,300             | 9,706     | units      |
| Agriculture Production                              |                      |                          |                           |                   |           |            |
| Community Farm                                      |                      |                          |                           | 8                 | 3         | m lbs/yr   |
| Orchards  |                      |                          |                           | 321.3             | 104.5     | m lbs/yr   |
| Tropical Fruits                                     |                      |                          |                           | 9                 | 3         | m lbs/yr   |
| Row and annual crops                                |                      |                          |                           | N.E.              | N.E.      |            |
| Energy crops  |                      |                          |                           | N.E.              | N.E.      |            |
| Calves  |                      |                          |                           | 4,326             | 5,752     | calves/yr  |
| Energy Production                                   |                      |                          |                           | 82,125            | 82,125    | mWh/yr     |
| Sales   |                      |                          |                           |                   |           |            |
| Direct Sales  |                      |                          |                           |                   |           |            |
| Crop Sales  |                      |                          |                           |                   |           |            |
| Community Farm                                      |                      |                          |                           | \$ 8.0            | \$ 3.0    | million/yr |
| Orchards  |                      |                          |                           | \$ 128.5          | \$ 41.8   | million/yr |
| Tropical Fruits                                     |                      |                          |                           | \$ 13.5           | \$ 4.5    | million/yr |
| Row and annual crops                                |                      |                          |                           | \$ 4.8            | \$ 1.6    | million/yr |
| Energy crops  |                      |                          | \$ 0.4                    | \$ 1.1            | \$ 0.4    | million/yr |
| Total crops   |                      |                          | \$ 0.4                    | \$ 155.9          | \$ 51.3   | million/yr |
| Calves  |                      |                          | \$ 0.1                    | \$ 4.8            | \$ 6.3    | million/yr |
| Energy sales  |                      |                          |                           | \$ 8.2            | \$ 8.2    | million/yr |
| Total Direct Sales                                  |                      |                          | \$ 0.5                    | \$ 168.9          | \$ 65.9   | million/yr |
| Indirect Sales                                      |                      |                          | \$ 0.5                    | \$ 160.7          | \$ 57.7   | million/yr |
| Maui  |                      |                          | \$ 0.3                    | \$ 104.4          | \$ 37.5   | million/yr |
| Oahu  |                      |                          | \$ 0.2                    | \$ 56.2           | \$ 20.2   | million/yr |
| Direct and Indirect Sales                           |                      |                          | \$ 1.1                    | \$ 329.5          | \$ 123.5  | million/yr |
| Maui  |                      |                          | \$ 0.9                    | \$ 273.3          | \$ 103.4  | million/yr |
| Oahu  |                      |                          | \$ 0.2                    | \$ 56.2           | \$ 20.2   | million/yr |
| Profits   |                      |                          | \$ 0.1                    | \$ 33.0           | \$ 12.4   | million/yr |
| Employment  |                      |                          |                           |                   |           |            |
| Direct/on-site jobs                                 |                      |                          | 7                         | 793               | 273       | jobs       |
| Indirect jobs, offsite                              |                      |                          | 3                         | 349               | 120       | jobs       |
| Maui  |                      |                          | 2                         | 227               | 78        | jobs       |
| Oahu  |                      |                          | 1                         | 122               | 42        | jobs       |
| Total jobs  |                      |                          | 10                        | 1,142             | 393       | jobs       |
| Maui  |                      |                          | 9                         | 1,020             | 351       | jobs       |
| Oahu  |                      |                          | 1                         | 122               | 42        | jobs       |
| Payroll   |                      |                          |                           |                   |           |            |
| Direct payroll                                      |                      |                          | \$ 0.3                    | \$ 28.5           | \$ 9.9    | million/yr |
| Indirect payroll                                    |                      |                          | \$ 0.1                    | \$ 16.8           | \$ 5.8    | million/yr |
| Maui  |                      |                          | \$ 0.1                    | \$ 10.3           | \$ 3.6    | million/yr |
| Oahu  |                      |                          | \$ 0.1                    | \$ 6.5            | \$ 2.2    | million/yr |
| Total payroll                                       |                      |                          | \$ 0.5                    | \$ 45.3           | \$ 15.6   | million/yr |
| Maui  |                      |                          | \$ 0.4                    | \$ 38.8           | \$ 13.4   | million/yr |
| Oahu  |                      |                          | N.E.                      | \$ 6.5            | \$ 2.2    | million/yr |
| Residents Supported                                 |                      |                          |                           |                   |           |            |
| Maui  |                      |                          | 19                        | 2,294             | 790       | people     |
| Oahu  |                      |                          | 2                         | 260               | 90        | people     |
| Total   |                      |                          | 21                        | 2,554             | 879       | people     |
| <b>9.c. Fiscal Impacts</b>                          |                      |                          |                           |                   |           |            |
| <b>Sugar Cane Operations</b>                        |                      |                          |                           |                   |           |            |
| State Revenues                                      | \$ 5.88              | \$ 5.08                  |                           |                   |           | million/yr |
| Maui County Property Taxes                          | \$ 0.05              | \$ 0.07                  |                           |                   |           | million/yr |
| C&C Honolulu, Excise Tax Surcharge                  |                      | \$ 0.04                  |                           |                   |           | million/yr |
| <b>Diversified Agriculture Development Activity</b> |                      |                          |                           |                   |           |            |
| State Revenues                                      |                      |                          |                           | \$ (0.01)         | \$ (1.22) | million/yr |
| State Taxes   |                      |                          |                           | \$ 1.86           | \$ 1.90   | million/yr |
| Energy Subsidy                                      |                      |                          |                           | \$ (1.88)         | \$ (3.13) | million/yr |
| Maui County Property Taxes                          |                      |                          |                           | N.E.              | N.E.      |            |
| C&C Honolulu, Excise Tax Surcharge                  |                      |                          |                           | \$ 0.01           | \$ 0.01   | million/yr |
| <b>Diversified Agriculture Operations</b>           |                      |                          |                           |                   |           |            |
| State Revenues                                      |                      |                          | \$ 0.03                   | \$ 4.46           | \$ 1.66   | million/yr |
| Maui County Property Taxes                          |                      |                          | \$ 0.02                   | \$ 0.80           | \$ 0.65   | million/yr |
| C&C Honolulu, Excise Tax Surcharge                  |                      |                          | \$ -                      | \$ 0.14           | \$ 0.05   | million/yr |

Source: Plasch Econ Pacific, LLC



those involved with supplying goods and services to families, including grocery workers, store clerks, restaurant workers, service providers, etc. Sugar operations generated about 710 indirect jobs in 2006. The total direct and indirect employment was 1,300, of which about 1,100 jobs were on Maui. The payroll was about \$48.5 million for the direct jobs and \$82.7 million for all direct and indirect jobs. The direct and indirect jobs provided by sugar operations supported an estimated 3,300 residents. Refer to **Table 9**, Section 9.b.

**b. Fiscal Impact Assessment**

In 2006, sugar operations generated about \$5.9 million in State tax revenues and rental payments paid to the State. Most of the revenues were derived from excise taxes on consumption expenditures by families supported by the direct and indirect jobs that were provided personal income taxes paid by these same families. The revenues were low because the sale of the exported sugar was exempt from the excise taxes. Property taxes paid by HC&S to the County of Maui were about \$50,000 per year. Refer to **Table 9**, Section 9.c.

**2. Recent Sugar Cane Operations (2008-2013)**

This baseline time period covers impacts for a six-year period between 2008 and 2013, prior to the termination of sugar cane cultivation. The plantation shut down operations over a two-year period ending in 2016.

Between 2008 and 2013, HC&S cultivated 36,180 acres of sugar cane, of which about 30,320 acres were in the EMI service area (approximately 84 percent). Refer to **Table 9**, Section 9.a.

**a. Economic Impact Assessment**

For the 2008 to 2013 period, HC&S produced an average of about 136,300 tons of raw sugar per year (a decrease of 8.9 tons from 2006), and sold sugar and energy to generate annual revenues of about \$116 million in direct sales (an increase of about \$15 million). Total direct and indirect sales averaged nearly \$220 million per year, of which an estimated \$183 million was on Maui and \$36 million on Oahu. Profits from sugar operations and indirect sales were estimated at \$22 million.

For the 2008 to 2013 period, average employment and payroll was slightly less than the 2006 period. HC&S employed about 620 workers and indirect employment is estimated at 700 workers. Payroll for direct jobs was estimated at \$34.3 million, while total payroll for direct and indirect jobs was

\$68.0 million (Plasch Econ Pacific, LLC, 2019). Refer to **Table 9**, Section 9.b.

**b. Fiscal Impact Assessment**

For the 2008 to 2013 period, sugar operations generated an average of about \$5.1 million in State tax revenues and rental payments paid to the State. Property taxes paid by HC&S to the County of Maui were about \$70,000 per year. The increase from 2006 was due to a higher tax rate. The City and County of Honolulu derived about \$40,000 per year from the excise tax surcharge. Refer to **Table 9**, Section 9.c.

**3. Interim Diversified Agriculture Operations**

In 2017, about 200 acres in Central Maui were used to grow the energy crop, pongamia, and about 500 acres were for unirrigated pasture. Refer to **Table 9**, Section 9.a.

**a. Economic Impact Assessment**

In 2017, there were limited cattle grazing and pongamia cultivation in Central Maui. However, both operations were under development producing negligible revenues in 2017. These activities generated an estimated 10 direct and indirect jobs with total payroll of \$0.5 million. Refer to **Table 9**, Section 9.b.

**b. Fiscal Impact Assessment**

In 2017, diversified agriculture operations in Central Maui generated about \$30,000 in tax revenues. Property taxes paid by HC&S to the County of Maui were about \$20,000 per year. Property taxes decreased because of the land was assessed at a lower value following the close of sugar operations. The City and County of Honolulu derived negligible revenues from the excise tax surcharge. Refer to **Table 9**, Section 9.c.

**B. FUTURE CONDITIONS**

The Central Maui agricultural lands are now owned by Mahi Pono, which acquired these lands from A&B in December 2018. Mahi Pono's current plans for Central Maui envision cultivating a broad range of food and non-food crops for local consumption and export, including orchard crops (citrus, macadamia nuts, coffee, avocado, etc.), tropical fruits, vegetables and melons, row crops, annual crops, energy crops, and grass-fed cattle. In addition, the company plans to lease some of its land to other farmers at favorable terms, including relatively low rents for long-term periods.

## 1. **Proposed Action**

Mahi Pono has developed an initial Farm Plan that is consistent with the anticipated surface water supply from East Maui under the IIFS. The 30,000-acre Farm Plan calls for a mix of crops, irrigated and unirrigated pasture, and green energy (solar farm). Over one-third of the land scheduled for crop farming is being prepared or will soon be prepared for farming. Refer to **Table 9**, Section 9.a.

### a. **Economic Impact Assessment**

#### i. **Development Activities**

Implementation of the Mahi Pono Farm Plan would require conversion of former sugar cane lands into cropland, irrigated pasture, and unirrigated pasture. An estimated 319,000 square feet of building space (for washing and packing areas, storage, offices, etc.) would be required, as well as the development of a 37.5 mW solar farm with storage batteries. The total development expenditures would be about \$214.7 million, or an average expenditure of about \$21.5 million per year assuming a 10-year development period. Indirect sales associated with development activities are estimated to be \$18.5 million per year for a total of \$39.9 million per year, of which \$33.5 million would be on Maui and \$6.5 million on Oahu. Profits on development activity and indirect sales would be about \$4.0 million per year.

Direct and indirect employment associated with the development activities to implement the Mahi Pono Farm Plan would average about 326 jobs, of which 285 jobs would be on Maui and 42 jobs on Oahu. Actual employment would vary over the 10-year development period. Payroll for the direct and indirect jobs would average \$14.5 million per year and these jobs would support an estimated 730 residents. Refer to **Table 9**, Section 9.b.

#### ii. **Operations**

Full development of the Mahi Pono Farm Plan under the Proposed Action would result in a substantial amount of crop production, including about 8 million pounds per year from the Community Farm, 321 million pounds per year from orchards, and 9 million pounds per year of tropical fruits, plus production from row crops, annual crops, and energy crops. Annual sales are expected to reach \$155.9 million. The pastures would support a cattle herd of about 7,300 cow-and-calf animal units, produce over 4,300 calves

per year, and generate revenues of about \$4.8 million per year. The solar farm would generate about 82,125 mW of electricity per year, with revenues of about \$8.2 million per year. Combined farm and energy revenues would reach \$168.9 million per year in direct sales, which would exceed the 2006 revenues from sugar production of \$101 million, and the \$116 million average for the 2008 to 2013 period.

Purchases of goods and services by farmers and the families of employees would generate indirect sales and, in turn, these suppliers would generate more indirect sales by their purchase of goods and services. The indirect sales are estimated at about \$160.7 million per year.

Total direct and indirect sales would be about \$329.5 million per year, of which about \$273.3 million would be on Maui and about \$56.2 million on Oahu. Profits from farm operations, energy operations, and indirect sales would be about \$33 million.

At full build out, farm employment is expected to reach about 790 jobs, or about 160 more than provided by sugar operations in 2006. The jobs would be typical of those provided by diversified-crop farming and ranching-managing soils and pests, operating and maintaining irrigation systems, planting crops, pruning trees, harvesting crops, sorting and washing crops, packing crops, trucking crops to markets and shipping terminals, moving cattle among pastures, maintaining fences, marketing, accounting, etc. The increase in employment would be gradual, with most jobs filled by former sugar cane workers, skilled workers from Maui and other islands, recent graduates of agricultural programs at Hawai'i high schools and colleges, and unskilled workers who would receive on-the-job training.

In addition to direct jobs, the purchase of goods and services by farmers and ranchers and by the families of their employees would generate an estimated 350 jobs. In total, about 1,140 direct and indirect jobs would be supported, including about 1,000 jobs on Maui. Payroll is estimated at \$45.3 million for all direct and indirect jobs. The direct and indirect jobs would support an estimated 2,550 residents. Refer to **Table 9**, Section 9.b.

**b. Fiscal Impact Assessment**

**i. Development Activities**

The conversion of Central Maui farmlands from sugar cane to diversified agriculture and green energy would generate an average of about \$1.9 million per year in State taxes, for a 10-year cumulative total of about \$18.6 million. However, developers of solar farms receive a State subsidy of \$500,000 per 1 mW of generating capacity. For the planned green energy (solar farm), the State subsidy would average about \$1.88 million per year, year cumulative total of about \$18.8 million. Thus, State tax revenues from development minus the energy subsidy would result in a cumulative loss of about \$100,000 (with rounding). Given the nature of Hawai'i's tax system, the County of Maui would derive negligible tax revenues from the anticipated development activity. Over the 10-year development period, the City and County of Honolulu would derived cumulative excise tax surcharges of about \$1.0 million. Refer to **Table 9**, Section 9.c.

**ii. Operations**

Diversified agricultural operations would generate an estimated \$4.5 million in State tax revenues by 2030. Property taxes paid by to the County of Maui would be about \$800,000 per year. The City and County of Honolulu would derived about \$140,000 per year from the excise tax surcharge. Refer to **Table 9**, Section 9.c.

**2. No Action Alternative**

As previously mentioned, the No Action Alternative would result in no Water Lease from the State, however the EMI Aqueduct System could divert some portion of the water within the Collection Area if it deemed it economically feasible to do so. Under the No Action Alternative, Mahi Pono would need to implement a scaled-down Farm Plan to account for the reduced irrigation water. This scaled-down Farm Plan would involve a significant reduction in acreage dedicated to crop cultivation and an increase in unirrigated pasture. Refer to **Table 9**, Section 9.b.

**a. Economic Impact Assessment**

**i. Development Activities**

The total cost for developing the scaled-down Farm Plan under the No Action Alternative would be \$144.8 million, or an average of



about \$24.1 million per year over a six-year development period. Indirect sales are expected to average \$18.8 million per year for total development expenditures of \$42.9 million per year, of which \$36.3 million would be on Maui and \$6.6 million on Oahu. Profits on development activity and indirect sales would be about \$4.3 million per year.

Direct and indirect employment associated with the development activities to implement the scaled-down Farm Plan would average about 295 jobs, of which 250 jobs would be on Maui and 40 jobs on Oahu. Actual employment would vary over the 6-year development period. Payroll for the direct and indirect jobs would average \$13.3 million per year and these jobs would support an estimated 570 residents. Refer to **Table 9**, Section 9.b.

ii. **Operations**

The scaled-down Mahi Pono Farm Plan under the No Action Alternative would result in about one-third as much crop production as the Proposed Action: about 3 million pounds per year from the Community Farm, 104.5 million pounds per year from orchards, and 3 million pounds per year of tropical fruits, plus production from row crops, annual crops, and energy crops. Annual sales are expected to reach \$51.3 million. The pastures would support a cattle herd of about 9,700 cow-and-calf animal units, produce nearly 9,700 calves per year, and generate revenues of about \$6.3 million per year. The solar farm would generate about 82,125 mW of electricity per year, with revenues of about \$8.2 million per year.

Combined farm and energy revenues would reach about \$65.9 million per year in direct sales and \$57.7 million per year in indirect sales for a total of \$123.5 million per year, of which about \$103.4 million would be on Maui and \$20.2 million on Oahu. Profits from farm operations, energy operations, and indirect sales would be about \$12.4 million.

The scaled-down Farm Plan under the No Action Alternative would result in about one-third as much employment as the Proposed Action: about 270 direct jobs, 120 indirect jobs, and 390 total jobs. Payroll for direct and indirect jobs is estimated at \$15.6 million. The direct and indirect jobs would support an estimated 880 residents. Refer to **Table 9**, Section 9.b.

**b. Fiscal Impact Assessment**

**i. Development Activities**

For the No Action Alternative, the conversion of Central Maui farmlands from sugar cane to diversified agriculture and green energy would generate an average of about \$1.9 million per year in State taxes, for a 6-year cumulative total of about \$11.4 million. For the planned green energy (solar farm), the State subsidy would average about \$3.1 million per year, for a 6-year cumulative total of about \$18.8 million. Thus, State tax revenues minus the energy subsidy would average a negative \$1.2 million per year, for a 6-year cumulative total of a negative \$7.3 million. Again, the County would derive negligible tax revenues from the anticipated development activity. The City and County of Honolulu would derived cumulative excise tax surcharges of about \$60,000. Refer to **Table 9**, Section 9.c.

**ii. Operations**

For the No Action Alternative, State tax revenues would be less than half that of the Proposed Action: about \$1.7 million per year. Property taxes paid by to the County of Maui would be about \$650,000 per year. The decrease from the previous alternative is because more land would be used for pasture, which is assessed at a lower value than cropland. The City and County of Honolulu will derived about \$50,000 per year from the excise tax surcharge. Refer to **Table 9**, Section 9.c.

**3. Reduced Water Lease Alternative**

For the Reduced Water Lease Alternative, the impacts would be proportional to the amount of water diverted through the EMI Aqueduct System.

# SUMMARY | VII

## VII. SUMMARY

The Proposed Action (proposed Water Lease) assessed herein would allow for continued domestic and agricultural water service to the Maui Department of Water Supply (MDWS) Upcountry System and Nāhiku Community while also providing water for agricultural cultivation in Central Maui. The Water Lease would be subject to the June 2018 Findings of Fact, Conclusions of Law, and Decision and Order (D&O) adopted by the Commission on Water Resource Management (CWRM), which set the Interim Instream Flow Standards (IIFS) for 24 East Maui Streams located within the License Area.<sup>5</sup> As a result, the potential future flow of surface water from East Maui will be significantly reduced compared to past water diversions that occurred for over 90 years. Pursuant to the CWRM D&O, ample stream water should be available to irrigate taro lo'i and the small farms relying on East Maui Streams.

This Study has assessed the economic and fiscal impacts associated with EMI operations as well as on East Maui farming, the MDWS Upcountry Water System service area, Nāhiku community, and agricultural cultivation in Central Maui. Below is a summary of the economic and fiscal impacts anticipated for these areas of potential effect.

### A. EMI OPERATIONS

The Proposed Action would allow EMI to divert an estimated 87.95 mgd from the License Area, along with an additional 4.37 mgd from lands west of the License Area, for an estimated total diversion of 92.32 mgd. EMI operating costs are largely fixed and are anticipated to be similar to the average operating cost experienced during recent sugar operations. EMI operating costs are assumed to be similar across all alternatives, with the only variation being the amount of Water Lease payments made to the State. As such, while costs remain relatively constant, the per unit cost for delivery of water increases as the amount of water diverted decreases. Total operational costs for EMI are expected to be \$2.3 million per year, or \$0.068 per kgal, under the Proposed Action, compared to \$1.4 million or \$0.129 per kgal under the No Action Alternative.

---

<sup>5</sup> The chart on pages 268-269 of the CWRM D&O identifies 25 streams and tributaries, one of which (Ohia/Waianu) is located below the EMI Aqueduct System and has never been diverted into the EMI Aqueduct System. Although the original Petitions to Amend the Interim Instream Flow Standards identified 27 streams, CWRM found that there were 24, not 27, streams that were the subject of the contested case. The difference being that (i) Waikani is not a stream but a waterfall of Wailuānui Stream; (ii) Alo is a tributary of Waikamoi Stream; (iii) Pua'aka'a is a tributary of Kopiliula Stream; and (iv) Piinaau and Palauhulu are separate streams that join together before reaching the ocean. See CWRM D&O, Findings of Fact 56, 2018.

Economic impacts associated with EMI operations, excluding the Water Lease payment to the State, would be similar for the Proposed Action and No Action alternatives. Total direct spending and indirect sales is estimated at \$1.4 million. EMI is expected to employ a staff of 17 people with a payroll of \$0.8 million.

Under the Proposed Action, EMI would contribute Lease payments to the State Special Land Development Fund based on an appraisal conducted prior to Lease issuance. Assuming the amount of the Water Lease is based on the equivalent per unit cost under revocable permit rent set in November 2018, the annual payment to the Special Land Development Fund would be \$846,700, including set-asides for the Office of Hawaiian Affairs and the Department of Hawaiian Home Lands of \$169,300 and \$254,000, respectively.

It is noted that under the No Action Alternative, assessment of flow data could result in decisions to reduce the size of the EMI Aqueduct System to reduce operation and maintenance costs. However, potential system reductions are not known at this time and cannot be determined until there is actual flow data to analyze and determine how best to optimize the EMI Aqueduct System. It is also noted that EMI may determine that it is not economically feasible to operate and maintain the system at all under the No Action Alternative.

## **B. EAST MAUI**

The CWRM D&O setting the IIFS for East Maui Streams returns free flowing water, with no upstream diversions, to all streams which have historically supported significant taro cultivation. Ample stream water should be available for taro farms and other small farms in East Maui. There are about 45 acres in East Maui suitable for growing taro and about 35 acres for truck crops.

The impacts of East Maui farming activity would be the same for the Proposed Action, No Action, and Reduced Water Lease Alternatives. At full development, East Maui farms would produce about 1.0 million pounds per year of taro and about 400,000 pounds per year of other crops, resulting in \$2.9 million in direct and indirect sales per year. Farms would support a total of 21 direct and indirect jobs. State revenues, Maui County property taxes, and City and County of Honolulu excise tax surcharge revenues associated with East Maui farming activities would be nominal.

## **C. NĀHIKU**

The Proposed Action would allow for the continued water service for the approximately 43 water meters in the Nāhiku community. It is unclear whether it will be financially feasible to continue to operate and maintain the EMI Aqueduct System under the No Action Alternative or the Reduced Water Lease Alternative. If operation of the EMI Aqueduct



System is discontinued under the No Action Alternative or the Reduced Water Lease Alternative, the Nāhiku community would be adversely impacted as it would lose its source of potable water.

## **D. UPCOUNTRY MAUI**

### **1. Domestic Water Use**

Between 2004 and 2013, average customer water use for the Upcountry Maui Water System was 7.9 mgd, including 7.1 mgd supplied by the EMI Aqueduct System through the Wailoa Ditch. MDWS anticipates it will need to develop up to 7.95 mgd of new water source to meet future demands in Upcountry Maui through 2030.

Under the Proposed Action, it is assumed that EMI will continue to supply 7.1 mgd to MDWS. The rate MDWS pays to EMI will increase from the existing agreement of \$0.06 per kgal because EMI's per unit operating cost will increase as a result of fixed costs being spread out over a lower volume of water diverted and possible higher lease payments to the State compared to historic payments.

MDWS would need to develop the additional 7.95 mgd to meet future demands. An analysis conducted by Brown and Caldwell indicates that incremental basal wells would be a strategy to meet future demands, assuming no reduction in surface water flows. The life-cycle unit cost of developing and operating wells is \$34 per kgal, which far exceeds the current average water service rate of \$4 per kgal. The total life-cycle cost for 7.95 mgd of new wells is \$1.2 billion. It is assumed that MDWS would seek a variety of funding sources to cover the cost to develop the new wells. Nevertheless, due to the significant cost of new water source development, it would be reasonable to expect that the water service rate would increase.

Under the No Action Alternative, it is assumed that MDWS would need to find a replacement water source for the 7.1 mgd that is currently supplied by the EMI Aqueduct System in addition to the 7.95 mgd required to meet future water demands. In total, MDWS would need to develop 15.05 mgd of new water source. Potential strategies for replacement and new water sources for Upcountry Maui include a combination of incremental basal wells and/or new raw water storage reservoirs. According to Brown and Caldwell, the life-cycle unit cost to develop wells and reservoirs for Upcountry Maui if surface water is reduced is \$38 per kgal. This would translate to \$2.6 billion, compared to \$1.2 billion under the Proposed Action. The significantly higher costs associated with the No Action Alternative would impact the County's Water Supply Fund and would be expected to have a corresponding impact to MDWS finances and on the ratepayers Countywide.

In 2017, there were approximately 37,100 residents and 14,200 households within the Upcountry Maui service area. These households had a collective income of \$1.1 billion and residential property values within the Upcountry Maui service area was about \$2.3 billion. There were approximately 880 businesses in Upcountry Maui in 2017, employing 5,400 individuals with a payroll estimated at \$245.7 million. The County of Maui projects that population in Upcountry Maui will grow to approximately 43,700 (16,700 households). It is estimated that there would be 1,100 businesses in Upcountry Maui employing 6,700 individuals in 2030. Under the No Action Alternative, population and business growth may be constrained if development of replacement and new water sources cannot keep pace with demand. As such, the number of residents, households, and businesses in Upcountry Maui may be less than what is currently projected for 2030 under the Proposed Action.

## **2. Agricultural Water Use**

Approximately 40 percent of MDWS' customers in Upcountry Maui are agricultural users. In addition, MDWS provides non-potable water to the Kula Agricultural Park (KAP), which consists of 31 farm lots totaling 447 acres. Maui County has recently purchased an additional 262 acres in Upcountry Maui for the expansion of the KAP. The Proposed Action would allow farming to continue and expand at the KAP, and continue at other farms that irrigate crops with water from the EMI Aqueduct System. In total, about 1,510 acres would be farmed in 2030, and this farming would generate about \$31.8 million per year in direct and indirect sales, about 150 direct and indirect jobs, and about \$5.8 million in payroll for these jobs.

Under the No Action Alternative, there may not be water available for MDWS from the EMI Aqueduct System. Assuming domestic customers would have priority over agricultural customers with respect to new water source development, farmers in Upcountry Maui would lack water to irrigate their crops until the new water sources are operational. As a result, farms would be required to close or relocate to Central Maui. Even after the new water source is operational, little commercial farming is expected to return to Upcountry Maui because of the better agronomic conditions in Central Maui. Therefore, farming activity is expected to be near zero for the farms that depended on water from the EMI Aqueduct System in 2017.

## **E. CENTRAL MAUI**

The Proposed Action will enable the EMI Aqueduct System to continue to provide water service for the cultivation of agricultural lands in Central Maui. Mahi Pono has prepared a Farm Plan that calls for a mix of crops, irrigated and unirrigated pasture, and green energy (solar farm). Full development of the Mahi Pono Farm Plan would result in

substantial crop production and \$155.9 million in direct crop sales. Total combined farm sales, including crops, cattle, and energy revenues would reach \$168.9 million per year in direct sales, which would exceed the 2006 revenues from sugar production of \$101 million, and the \$116 million average for 2008 to 2013. Farm employment is expected to reach 790 jobs, or about 160 more than provided by sugar operations in 2006. Diversified agricultural operations would generate an estimated \$4.5 million in State tax revenues by 2030. Property taxes paid by to the County of Maui would be about \$800,000 per year. The City and County of Honolulu would derived about \$140,000 per year from the excise tax surcharge.

Under the No Action Alternative, Mahi Pono would need to implement a scaled-down Farm Plan to account for the reduced irrigation water. This scaled-down Farm Plan would result in a significant reduction in acreage dedicated to crop cultivation and an increase in unirrigated pasture.

The Proposed Action, when compared to the No Action Alternative, would result in three (3) times as much food production, including greater food self-sufficiency and more exports, about \$206 million per year more in direct and indirect sales, about 750 more direct and indirect jobs, and \$29.7 million per year more in total payroll. Development activity associated with preparing fields and related improvements would last four (4) years longer and have higher development-related sales and employment. The Proposed Action would result in about 11,570 acres more of green open space in the form of farms and irrigated pastures (20,650 acres versus 9,080 acres).

The Reduced Water Lease Alternative would see impacts that are proportional to the amount of water diverted through the EMI Aqueduct System.

REFERENCES

VIII

## VIII. REFERENCES

Brown and Caldwell, Petition to Amend Interim Instream Flow Standards for Waikamoi, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Waiohue, Paakea, Kapaula & Hanawi Streams, Case No. CCH-MA13-01, Letter to Mr. Caleb P. Row, Deputy Corporation Counsel, December 23, 2014.

Commission on Water Resource Management, Petition to Amend Interim Instream Flow Standards for Honopou, Hanehoi/Puolua (Huelo), Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, Ohia (Waianu), Waiokamilo, Kualani (Hamau), Wailuanui, Waikani, West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Waiohue, Paakea, Waiaaka, Kapaula, Hanawi, and Makapipi Streams, Findings of Fact, Conclusions of Law, & Decision and Order (CCH-MA 13-01), June 20, 2018.

County of Maui, Department of Water Supply, (Draft) Maui Island Water Use & Development Plan, 2019.

County of Maui, Department of Water Supply, Fiscal Year 2017 Annual Report, 2017.

County of Maui, Department of Water Supply, Fiscal Year 2018 Annual Report, 2018.

County of Maui, Department of Water Supply, Upcountry Priority List, January 3, 2019.

County of Maui, Real Property Assessment Division, 2017 RPT Full Assessment Listing for 2017, 2017.

Gale Cengage Learning, Business Summary Report, 2018.

Gale Cengage Learning, Complete Demographic Comparison Report, 2018.

Gale Cengage Learning, Household Summary Report, 2018.

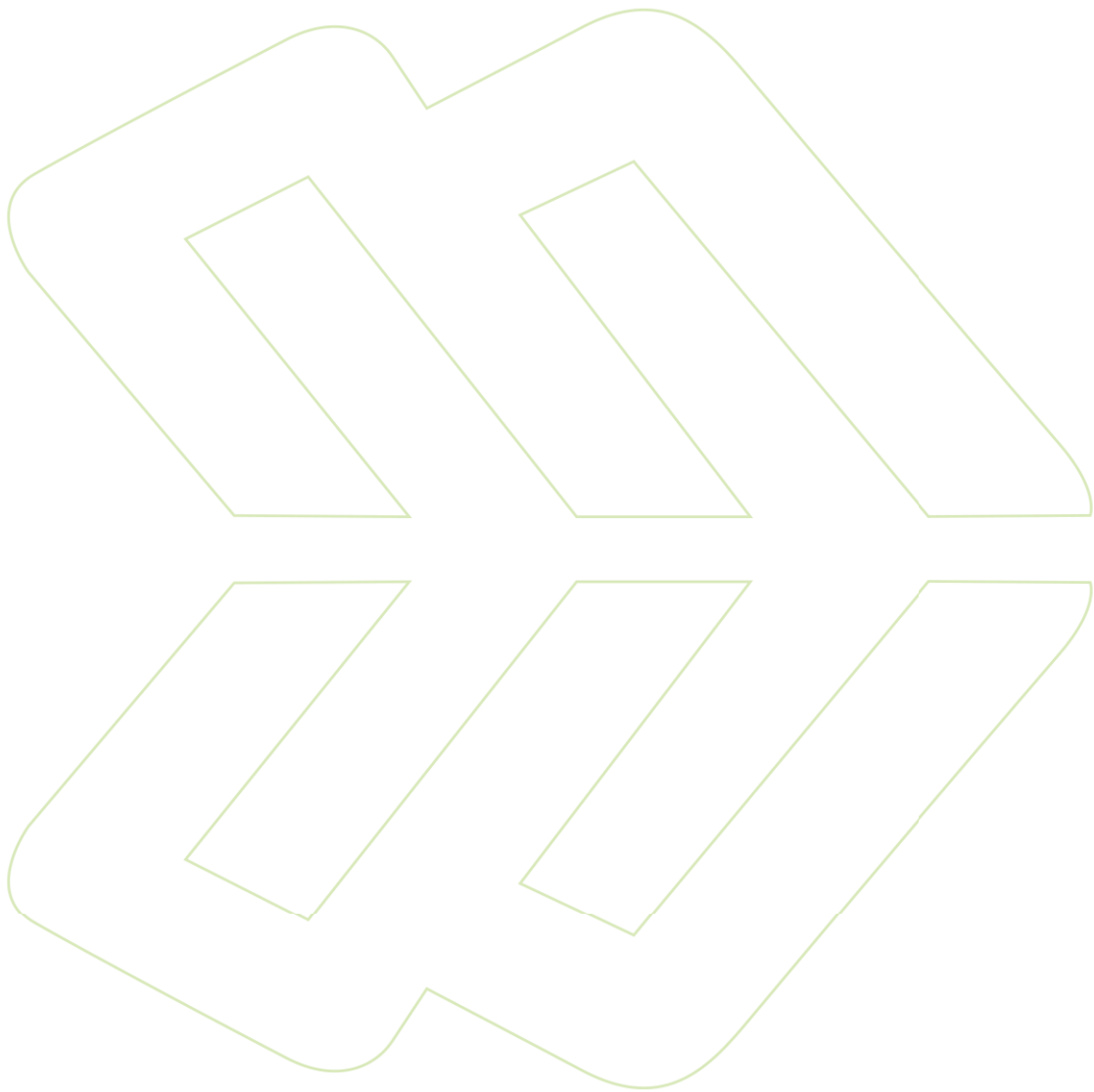
Plasch Econ Pacific, LLC, East Maui Water Lease: Agricultural and Related Impacts, 2019.

State of Hawai'i, Department of Agriculture, Statewide Agricultural Land Use Baseline 2015, 2016.

State of Hawai'i, Department of Business, Economic Development, & Tourism, The Hawai'i State Input-Output Study: 2012 Benchmark Report, August 2016.

U.S. Census Bureau, 2010 Census.





**MUNEKIYO HIRAGA**

Planning. Project Management. Sustainable Solutions.

**001827**

---

# **APPENDIX I:**

East Maui Water Lease:  
Agricultural and Related Economic  
Impacts

Plasch Econ Pacific, LLC



***EAST MAUI WATER LEASE:  
AGRICULTURAL AND RELATED ECONOMIC IMPACTS***

---

---



***EAST MAUI WATER LEASE:  
AGRICULTURAL AND RELATED ECONOMIC IMPACTS***

---

---

*PREPARED FOR:*  
**Wilson Okamoto Corporation**

*PREPARED BY:*  
**Plasch Econ Pacific LLC**

**June 2019**



# CONTENTS

|  |             |
|--|-------------|
| <b>ACRONYMS AND ABBREVIATIONS .....</b>                          | <b>A-1</b>  |
| <b>EXECUTIVE SUMMARY .....</b>                                   | <b>ES-1</b> |
| <b>1. INTRODUCTION .....</b>                                     | <b>1</b>    |
| a. Proposed Water Lease .....                                    | 1           |
| b. Content and Purpose .....                                     | 2           |
| c. Scope of Analysis .....                                       | 2           |
| d. Methodology .....   | 5           |
| e. Organization of the Report .....                              | 6           |
| <b>2. EMI AQUEDUCT SYSTEM.....</b>                               | <b>7</b>    |
| a. Overview of the EMI System.....                               | 7           |
| b. Watershed and Lease Areas .....                               | 8           |
| c. East Maui Water Lease .....                                   | 9           |
| d. Water Flows from State vs Private Lands .....                 | 9           |
| <b>3. INTERIM INSTREAM FLOW STANDARDS .....</b>                  | <b>10</b>   |
| <b>4. BASELINE CONDITIONS AND WATER-LEASE ALTERNATIVES .....</b> | <b>10</b>   |
| a. Past Water Diversions.....                                    | 10          |
| b. Future Water-Lease Alternatives .....                         | 11          |
| c. Duration of Lease .....                                       | 12          |
| <b>5. AGRICULTURAL CONDITIONS .....</b>                          | <b>13</b>   |
| a. Central Maui .....  | 13          |
| b. Upcountry Maui .....  | 22          |
| c. East Maui .....   | 25          |
| <b>6. OUTLOOK FOR AGRICULTURE .....</b>                          | <b>26</b>   |
| a. Central Maui .....  | 26          |
| b. Upcountry Maui .....  | 27          |
| c. East Maui .....   | 28          |

---

|   |           |
|---|-----------|
| <b>7. WATER SUPPLY AND ALLOCATION .....</b>   | <b>29</b> |
| a. Past Water Diversions .....  | 29        |
| b. Future Water-Lease Alternatives .....  | 31        |
| <b>8. AGRICULTURAL LAND USE .....</b>   | <b>33</b> |
| a. Central Maui .....   | 33        |
| b. Upcountry Maui .....   | 36        |
| c. East Maui .....  | 38        |
| <b>9. AGRICULTURAL WATER USE .....</b>  | <b>39</b> |
| a. Central Maui .....   | 39        |
| b. Upcountry Maui .....   | 40        |
| c. East Maui .....  | 41        |
| <b>10. AGRICULTURAL DEVELOPMENT AND OPERATIONS .....</b>                                  | <b>41</b> |
| a. Central Maui .....   | 42        |
| b. Upcountry Maui .....   | 45        |
| c. East Maui .....  | 47        |
| <b>11. EMPLOYMENT, PAYROLL AND POPULATION SUPPORTED .....</b>                             | <b>47</b> |
| a. Central Maui .....   | 47        |
| b. Upcountry Maui .....   | 50        |
| c. East Maui .....  | 51        |
| <b>12. STATE AND COUNTY REVENUES .....</b>  | <b>52</b> |
| a. Overview .....   | 52        |
| b. Central Maui .....   | 53        |
| c. Upcountry Maui .....   | 55        |
| d. East Maui .....  | 56        |
| <b>13. SUMMARY OF ECONOMIC IMPACTS AND BENEFITS .....</b>                                 | <b>56</b> |
| a. Major Impacts and Benefits .....   | 56        |
| b. Water Lease Limited to CWRM D&O Alternative<br>vs the No Water Lease Alternative ..... | 61        |
| c. Water Lease with Less than CWRM D&O Alternative .....                                  | 62        |
| <b>14. CONSISTENCY WITH STATE AND COUNTY AGRICULTURAL POLICIES .....</b>                  | <b>63</b> |
| <b>15. REFERENCES .....</b>   | <b>64</b> |

**FIGURES**

|  |    |
|--|----|
| 1. EMI Aqueduct System .....                               | 67 |
| 2. EMI Lease Areas .....                                   | 68 |
| 3. Central Maui Ag Lands and Water-Service Areas .....     | 69 |
| 4. Central Maui, NRCS Soil Ratings, Irrigated .....        | 70 |
| 5. Central Maui, NRCS Soil Ratings, Non Irrigated .....    | 71 |
| 6. Central Maui, ALISH Soil Ratings .....                  | 72 |
| 7. Central Maui, LSB Soil Ratings .....                    | 73 |
| 8. Central Maui, High-Quality Farmland .....               | 74 |
| 9. Central Maui, Sugar Yields .....                        | 75 |
| 10. Central Maui, Solar Radiation .....                    | 76 |
| 11. Central Maui, Rainfall .....                           | 77 |
| 12. Central Maui, Important Agricultural Lands (IAL) ..... | 78 |
| 13. Upcountry Maui, Water System Service Area .....        | 79 |
| 14. Upcountry Maui, Ag Lands and Activities .....          | 80 |
| 15. Upcountry Maui, NRCS Soil Ratings, Irrigated .....     | 81 |
| 16. Upcountry Maui, NRCS Soil Ratings, Non Irrigated ..... | 82 |
| 17. Upcountry Maui, ALISH Soil Ratings .....               | 83 |
| 18. Upcountry Maui, LSB Soil Ratings .....                 | 84 |
| 19. Upcountry Maui, High-Quality Farmland .....            | 85 |
| 20. Upcountry Maui, Solar Radiation .....                  | 86 |
| 21. Upcountry Maui, Rainfall .....                         | 87 |
| 22. East Maui Taro Streams .....                           | 88 |
| 23. Mahi Pono Near-Term Farm Plan .....                    | 89 |

**TABLES**

|   |       |
|---|-------|
| ES-1. ....  | ES-15 |
| 1. Water Supply, Allocation, and Costs .....          | T-1   |
| 2. Agricultural Land Use .....                        | T-2   |
| 3. Agricultural Water Use .....                       | T-4   |
| 4. Agricultural Development and Operations .....      | T-6   |
| 5. Employment, Payroll and Population Supported ..... | T-10  |
| 6. State and County Revenues .....                    | T-14  |

---

**APPENDIX**

|  |     |
|--|-----|
| State and County Goals, Objectives, Policies and Guidelines Related<br>to Agricultural Lands ..... | A-1 |
|--|-----|

## ACRONYMS AND ABBREVIATIONS

|                         |   |
|-------------------------|---|
| A&B                     | Alexander & Baldwin, Inc.   |
| ac                      | acre  |
| ALISH                   | Agricultural Lands of Importance in the State of Hawai‘i                          |
| au                      | animal units  |
| BLNR                    | Board of Land and Natural Resources, State of Hawai‘i                             |
| County                  | County of Maui  |
| CPI                     | Consumer Price Index  |
| CWRM                    | Commission on Water Resource Management   |
| D&O                     | Decision and Order by CWRM  |
| DBEDT                   | Department of Business, Economic Development and Tourism,<br>State of Hawai‘i     |
| DHHL                    | Department of Hawaiian Home Lands, State of Hawai‘i                               |
| dir                     | direct  |
| direct impacts          | the initial impacts (sales, employment, and payroll) generated by<br>an an action |
| diversified agriculture | As used in Hawai‘i, crops other than sugarcane and pineapple                      |
| DLIR                    | Department of Labor and Industrial Relations, State of Hawai‘i                    |
| DLNR                    | Department of Land and Natural Resources, State of Hawai‘i                        |
| EMI                     | East Maui Irrigation Company, Ltd.  |
| EMI System              | The aqueduct system operated by EMI   |
| final sales             | sales subject to the 4% State excise tax  |
| gad                     | gallons per acre per day  |
| GIS                     | geographic information system   |
| har                     | harvested   |
| HC&S                    | Hawaiian Commercial and Sugar Co.   |
| high-quality farmland   | Land having high soil ratings   |
| household spending      | the purchase of goods and services by employees and their<br>families             |
| I-O Model               | Input-output model of Hawai‘i’s economy, State of Hawai‘i                         |



---

|                    |  |
|--------------------|--|
| IAL                | Important Agricultural Lands   |
| IIFS               | Interim Instream Flow Standards  |
| indirect impacts   | the secondary impacts (sales, employment, and payroll) generated by the purchase of goods and services by the companies, their workers, and the families of workers included in the direct impacts |
| intermediate sales | sales subject to the 0.5% State excise tax   |
| Kula Ag Park       | Kula Agricultural Park   |
| lb                 | pound  |
| Lease              | East Maui Water Lease  |
| LSB                | Land Study Bureau  |
| LUC                | Land Use Commission, State of Hawai‘i  |
| Mahi Pono          | Mahi Pono LLC and its affiliated companies   |
| MDWS               | Maui Department of Water Supply  |
| MECO               | Maui Electric Company  |
| mgd                | million gallons per day  |
| MHI                | Munekiyo Hiraga, Inc.  |
| mW                 | megawatts  |
| mWh                | megawatt hours   |
| n.e.               | not estimated  |
| Nā Moku            | Nā Moku ‘Aupuni ‘O Koolau Hui, Beatrice Kepani Kekahuna, Marjorie Walleth, and Elizabeth Lehua Lapenia   |
| NAFTA              | North America Free Trade Agreement   |
| NHLS               | Native Hawaiian Legal Corporation  |
| NRCS               | Natural Resources Conservation Service, US Department of Agriculture   |
| PEP                | Plasch Econ Pacific LLC  |
| res                | residents  |
| sf                 | square feet  |
| State              | State of Hawai‘i   |
| unit               | cow-and-calf unit  |
| Water Lease        | East Maui Water Lease  |
| yr                 | year   |

# EXECUTIVE SUMMARY

## 1. EAST MAUI WATER LEASE

### a. Proposed Lease

In 2001, Alexander & Baldwin, Inc. (**A&B**) and its subsidiary East Maui Irrigation Company, LLC (**EMI**)—A&B and EMI are herein referred to collectively as A&B—requested that the Board of Land and Natural Resources (**BLNR**) offer a long-term East Maui Water Lease (the **Water Lease** or **Lease**) at public auction.

Under the proposed Lease, the State of Hawai‘i would allow the continued diversion of East Maui surface water for delivery to Central Maui and Upcountry Maui. The Central Maui agricultural lands, as well as other lands formerly owned by A&B, are now owned by various entities including MP EMI, LLC MP Central A, LLC, MP Central B, LLC, MP CPR, LLC, MP East A, LLC, MP East B, LLC, and MP West, LLC (individually or collectively, **Mahi Pono**) which acquired these lands from A&B in December 2018. In addition, since early 2019, Mahi Pono owns 50% of EMI and is the managing member of EMI; A&B is the other member of EMI.

For the purposes of this Environmental Impact Statement, the Proposed Action constitutes the issuance of one long-term (30-year) Water Lease from the BLNR that authorizes the lessee the *"right, privilege, and authority to enter and go upon"* the License Area for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing EMI Aqueduct System (**EMI System**) which supplies water to domestic and agricultural water users. The Water Lease, which will be awarded by public auction, will enable the lessee to enter upon lands owned by the State of Hawai‘i in order to maintain and repair existing access roads and trails used as part of the EMI System, and will allow for the continued operation of the EMI System to deliver water to the MDWS for domestic and agricultural water needs in Upcountry Maui, including the agricultural users at the Kula Agricultural Park (**Kula Ag Park**) and the 262-acre Park expansion, as well as for the Nāhiku community, which, through MDWS, draws up to 20,000 to 45,000 gpd, dependent on weather, directly from the EMI System. It will also allow the continued supply of water to approximately 30,000 acres of agricultural lands in Central Maui now owned by Mahi Pono.

Compared to past water diversions that occurred for over 90 years, the potential future flow of surface water from East Maui has been reduced significantly due to a June 2018 Decision and Order (**D&O**) by the Commission on Water Resource Management (**CWRM**) to fully or partially restore stream flows in East Maui, which also incorporates previous A&B decisions to voluntarily reduce stream diversions.

**b. Duration of Lease**

The request submitted to BLNR was for a long-term 30-year Water Lease. A Water Lease of that duration is needed to provide sufficient time for Mahi Pono to implement its Farm Plan and provide a return on its investment.<sup>1</sup> A&B is requesting a long-term Water Lease in order to provide sufficient time for Mahi Pono to implement its Farm Plan, and to provide a return on its investment. An estimated 10 years will be required for Mahi Pono and its lessees to remove volunteer sugarcane and weeds from 30,000 acres, amend soils, install field improvements, build warehouses and other structures, and plant crops. The predominant crops will be various types of orchard trees (avocado, coffee, citrus, macadamia nuts, etc.), which reflect a long-term commitment to farming. About 5 to 12 years will be required for orchard trees to reach full maturity, after which the trees will provide yields for 35 to over 100 years.

A short-term Water Lease would derail development of the Mahi Pono Farm Plan as well as any plan to convert the Central Maui lands to diversified agriculture because of the risk of not being able to farm for a long enough period to recover their planned investment. Conversely, the longer the term of the Water Lease, the greater the beneficial agricultural and economic impacts because of the certainty that comes from a long-term lease, which could encourage greater investment in long-term improvements. The State has the authority to issue a Water Lease with up to a 65-year term. However, the analysis used herein assumes a 30-year Water Lease. As mentioned, a longer term Lease would generate greater beneficial impacts.

**2. BASELINE CONDITIONS AND WATER-LEASE ALTERNATIVES**

This analysis of agricultural impacts addresses (1) three baseline conditions for past surface-water diversions from East Maui, and (2) three future water-lease alternatives represented by estimates for the year 2030:

- Past baseline conditions
  - Typical Sugar (2006 Crop)

This baseline covers surface-water diversions and related agricultural impacts for the 2006 sugarcane crop in Central Maui. This year represents typical sugarcane operations during the 20-year period from 1987 to 2006: rainfall in East Maui was regarded as normal, the restoration of stream flows was not large enough to significantly affect HC&S operations, and the plantation was economically healthy.

---

1. Mahi Pono's Farm Plan utilizes most of the water available after consideration of the CWRM D&O, however, it is understood that Department of Hawaiian Home Lands (DHHL) is entitled to establishing a reservation of water prior to the issuance of the Lease.

The EMI System also delivered water to the MDWS to meet a portion of the requirements of Upcountry Maui. In addition, water was delivered to the MDWS for the Nahiku community in East Maui.

- Recent Sugar (Years 2008 to 2013)

This baseline covers average surface-water diversions and related agricultural impacts for the 6-year period just prior to the closure of HC&S: 2008 to 2013.

This period is not typical of sugar operations in that rainfall was below normal, water returned to East Maui streams was large enough to adversely affect sugarcane operations, and HC&S struggled to achieve profitable operations. Also, a large volume of brackish groundwater was used to irrigate the sugarcane in order to maintain high levels of biomass for energy production, even though the high salinity decreased sugar yields.

- Post Sugar (Year 2017)

The analysis for Post Sugar is for the year 2017, after sugar operations ended and diversified agricultural initiatives were just beginning. The EMI System continued to deliver water to the MDWS for Upcountry Maui and Nahiku.

— Alternatives for the future

- Water Lease Limited to CWRM D&O Alternative (proposed action/preferred alternative)

For this alternative, the State would offer at public auction a Water Lease that would enable the awarded lessee the right to divert the East Maui streams in an amount up to the maximum flow allowed by the CWRM D&O. Due to the CWRM D&O and prior voluntary decisions by A&B, significantly less water will be available to Central Maui from the EMI System than has been the case in the past. This report assumes that the Water Lease supplies water through the EMI System for use in Central Maui.

Mahi Pono scaled its Farm Plan, which includes water to lessees of Mahi Pono in Central Maui, to match the available supply of surface water. Under this alternative, it is projected that 30,000 acres of diversified agriculture in Central Maui could be supported. If more water were available, then more crops would be planted. If less water were available, then the Farm Plan would be changed, possibly increasing land for pasture and decreasing land for crops.

The EMI System would continue to supply surface water to the MDWS for Upcountry Maui, but the supply would be maintained at its recent level and not increased to accommodate future growth. Also, water would continue to be delivered to the MDWS for the Nahiku community in East Maui.

- Water Lease with Less than CWRM D&O Alternative

For this alternative, the Water Lease that is put to public auction would allow surface water to be diverted from East Maui, but at a lower level than in the previous alternative. The water would be used to irrigate fields in Central Maui, and to continue water deliveries to the MDWS but at a lower level than under the Water Lease Limited to CWRM D&O Alternative.

Depending on the available supply of surface water, Maui Pono would have to scale down its Farm Plan to the amount of water available.

This alternative is not included in Table ES1 because no particular amount of decreased flow of surface water from East Maui is currently known. However, Section 5.c of this Executive Summary provides information needed to estimate agricultural and related economic impacts for various levels of reduced flow of surface water.

- No Water Lease Alternative

For this alternative, no surface-water would be diverted from State lands in East Maui. Surface water would continue to flow to Central Maui, but it would be limited to waters originating from private lands. Nearly all available water would be used to irrigate fields in Central Maui. Because the agreements with MDWS provide that the delivery of water to MDWS for Upcountry Maui is contingent upon the Lease being issued, no water is presumed to be provided to the MDWS.

This alternative would require major changes to the Mahi Pono Farm Plan in order to reduce their demand for irrigation water and match the available supply.

### **3. GEOGRAPHIC AREAS AND AGRICULTURAL CONDITIONS**

The Water Lease would affect three farm areas:

- Central Maui

This area comprises the Central Maui lands owned by Mahi Pono, which are former HC&S sugarcane lands that historically were serviced



by the EMI System, along with supplemental brackish groundwater pumped from wells now owned by Mahi Pono. These lands are east of Maui Veterans Highway. In this report, Central Maui excludes the former sugarcane lands irrigated with surface water from the West Maui Ditch System. These excluded fields are located west of Maui Veterans Highway.

Central Maui has some of the best agricultural conditions in the State for farming, including a large area in a compact configuration, high-quality soils, high solar radiation, a location near markets and shipping terminals, potentially ample water at low delivery costs (assuming a new Water Lease with a reasonable use fee), and rents that will be comparatively low for lessees.

Most of the water for irrigating crops must come from surface water. Upper fields can be irrigated only with surface water, and lower fields can be irrigated with a mix of surface water and brackish groundwater. Because of salinity and the salt tolerance of diversified crops, the use of brackish water on the lower fields is limited to about 30% of the water applied. Combining the upper and lower fields, the overall water split across all 30,000 acres would be approximately 80% surface water and 20% brackish groundwater water.

If insufficient water is available from the EMI System, then crop farming will have to be reduced.

— Upcountry Maui

The Kula Ag Park and other farm areas in Upcountry Maui (together with Upcountry's domestic water users) depend upon water supplied by the EMI System and delivered by the MDWS. If insufficient water is available from the EMI System, then these farms would be affected.

Upcountry Maui has lands that are suitable for farming, but the conditions are not as good as those in Central Maui. Farms are small and scattered, solar radiation is less, farms are farther from markets and shipping terminals, water is limited and expensive, and annual rents at the Kula Ag Park are much higher than those planned for Central Maui (\$1,200 per acre vs \$150 per acre).

— East Maui

Because of the heavy rainfall on the windward slopes of Haleakalā and the many streams in East Maui, many *makai* areas along the streams are well-suited for growing taro and truck crops. Also, a number of the landowners have appurtenant and riparian rights to use water from these streams for farming.

The CWRM D&O has and will result in increased stream flows, thereby allowing increased farming activity in East Maui.

#### **4. OUTLOOK FOR AGRICULTURE**

##### **a. Central Maui**

Provided that sufficient water is available, Central Maui is expected to host a major expansion in crop farming and cattle grazing. Mahi Pono's current plans for Central Maui envision cultivating a broad range of food and non-food crops for local consumption and export, including orchard crops (citrus, macadamia nuts, coffee, avocado, etc.), tropical fruits, vegetables and melons, row crops, annual crops, energy crops, and grass-fed cattle. In addition, the company plans to lease some of its land to other farmers at favorable terms, including relatively low rents for long periods.

To the extent economically feasible, Mahi Pono and other farmers on its land will grow food crops for the Hawai'i market. However, the Hawai'i market is too small to use all of the available farmland in Central Maui solely to serve the Hawaii market, and thus some export is necessary.

Central Maui agricultural land that cannot be farmed is likely to be used for grazing cattle.

Depending on the supply of surface water delivered to Central Maui, the amount of land used could range from (1) about 5,280 acres in crops and 24,470 acres in pasture, to (2) about 15,950 acres in crops and 13,800 acres in pasture. An additional 250 acres would be used for green energy.

##### **b. Upcountry Maui**

For the Water Lease Limited to CWRM D&O Alternative, existing farming in Upcountry Maui would continue, and the Kula Ag Park would expand by at least 262 acres as planned. Other than this expansion, no significant increase of commercial agriculture is anticipated in Upcountry Maui, primarily because Central Maui offers better conditions for farming. However, some residents of Upcountry Maui may engage in limited semi-commercial agriculture because they are attracted to the farming lifestyle.

For the No Water Lease Alternative, water deliveries by the EMI System to the MDWS would drop to zero. Several years would be required for the MDWS to develop groundwater wells or other alternatives to fill the shortfall in supply, and the feasibility of such development is uncertain. Assuming domestic customers would have priority over agricultural customers, farmers in Upcountry Maui would lack water to irrigate their crops until the new wells are operational. As a result, farms would close or relocate to Central Maui. Even after the new wells are operational, little commercial farming is expected to return to Upcountry Maui because Central Maui has better conditions for farming.

For the Water Lease with Less than CWRM D&O Alternative, this report assumes the impacts on farming would be proportional to the reduction in the supply of water delivered by the EMI System to the MDWS.

### **c. East Maui**

In the past, farmers in East Maui have reported that surface-water diversions to supply water to Central Maui left insufficient water in the streams for them to take full advantage of the agricultural potential in East Maui.

However, ample stream water should now be available to irrigate taro lo‘i and the small farms relying on East Maui streams because the CWRM D&O “will return free flowing water, with no upstream diversions, to all streams which have historically supported significant kalo cultivation ...” The large volume of water that flows out of the taro lo‘i can be used to irrigate other crops.

Given the CWRM D&O to fully restore the flow of all taro streams in East Maui, all alternatives are expected to result in the same expansion of taro and other farming in East Maui.

## **5. SUMMARY OF FINDINGS**

### **a. Major Impacts and Benefits**

Table ES-1 summarizes the major impacts and benefits for the past baseline conditions and two of the three alternatives for the future. The table is divided into 6 parts: (1) Water Supply and Allocation, (2) Agricultural Land Use, (3) Agricultural Water Use, (4) Agricultural Development and Operations, (5) Employment and Payroll, and (6) State and County Revenues. Mahi Pono’s current Farm Plan assumes full development by about 2030. Also, all dollar amounts are expressed in 2018 purchasing power.

#### Water Supply and Allocation

The supply of East Maui surface water that is available for Central and Upcountry Maui is projected to decline significantly: from about 156.54 mgd for Typical Sugar, to 92.32 mgd for the Water Lease Limited to CWRM D&O Alternative, and to 30.76 mgd for the No Water Lease Alternative. For the No Water Lease Alternative, all of the water would come from private lands.

The total water supply (surface water plus groundwater) would decline from about 199.04 mgd for Typical Sugar to 113.63 for the Water Lease Limited to CWRM D&O Alternative and 38.44 mgd for No Water Lease Alternative. The use of groundwater is limited in order to keep salinity below about 30‰ when applied to lower fields in Central Maui.

For the Water Lease Limited to CWRM D&O Alternative, about 106.53 mgd would be allocated to Central Maui for agricultural use, and 7.1 to MDWS for Upcountry Maui.<sup>2</sup> For the No Water Lease Alternative, all of the water would be allocated to Central Maui for agricultural use.

### Agricultural Land Use

#### *Central Maui*

For the Water Lease Limited to CWRM D&O Alternative, about 15,950 acres would be used for growing crops, including 12,850 acres for orchard crops and 3,100 acres for other crops. About 13,800 acres would be used for pasture, of which about 4,700 acres would be irrigated. About 250 acres would be used for green energy, such as a solar farm.

For the No Water Lease Alternative, the reduced supply of water would require a major reallocation of land from growing crops to unirrigated pasture. About 5,250 acres would be used for growing crops, including 4,180 acres for orchard crops and 1,100 acres for other crops. About 24,470 acres would be used for pasture, of which about 3,800 acres would be irrigated. Land for green energy would remain at 250 acres.

#### *Upcountry Maui*

For the Water Lease Limited to CWRM D&O Alternative, about 1,520 acres of farmland would be irrigated with water from the EMI System.

For the No Water Lease Alternative, farmlands in Upcountry Maui that have been irrigated with water from the EMI System are expected to drop to zero acreage for the reasons given in Section 4.b of this Executive Summary.

#### *East Maui*

As indicated in the CWRM D&O, stream restoration could result in 44.83 acres planted in taro in East Maui, and 35.09 acres in other crops. These estimated acreages are the same for all alternatives.

### Agricultural Water Use

#### *Central Maui*

Agricultural water use in Central Maui is projected to decline from about 143.19 mgd for Typical Sugar to 82.34 mgd for the Water Lease Limited to CWRM D&O Alternative and 29.72 mgd for No Water Lease Alternative.

---

2. 7.1 mgd was the long-term average presented in the CWRM D&O.

*Upcountry Maui*

For the Water Lease Limited to CWRM D&O Alternative, about 4.16 mgd would be used to irrigate farms supplied with water from the EMI System.

For the No Water Lease Alternative, it is assumed that no water would be delivered from the EMI System.

*East Maui*

For all water-lease alternatives, gross and net water requirements would be about 6.28 and 1.52 mgd, respectively (derived from the CWRM D&O acreage estimates for the affected farms in East Maui). The high gross water requirement reflects the fact that nearly 80% of the water used for growing taro is diverted from streams, passes through lo'i, and is then returned to the streams.

Agricultural Development and Operations*Central Maui*

For the Water Lease Limited to CWRM D&O Alternative, converting Central Maui from sugarcane to diversified agriculture would entail a capital investment of about \$214.7 million for land preparation and improvements, with expenditures spread out over approximately 10 years. During this period, expenditures and indirect sales would average about \$39.9 million per year. Corresponding figures for the No Water Lease alternative are \$144.8 million invested over about 6 years, with expenditures and indirect sales averaging about \$42.9 million per year.

At full operations, and assuming the Water Lease Limited to CWRM D&O Alternative, farm sales would total about \$160.7 million per year, of which about \$104.4 million would be Hawai'i sales and \$56.2 million would be export sales. Adding energy sales of about \$8.2 million results in total direct sales of about \$168.9 million per year. Direct and indirect sales would total about \$329.5 million per year.

The direct sales of about \$160.7 million per year exceeds sales during sugar operations: about \$100.7 million per year for Typical Sugar, and about \$115.6 million for Recent Sugar. The HC&S revenues figures are for the former plantation lands east of Maui Veterans Highway, and not the entire plantation.

For the No Water Lease Alternative, operations would generate much lower farm sales: about \$57.7 million per year in farm sales, of which about \$46.1 million would be Hawai'i sales and \$11.5 million would be export sales. Adding energy sales results in total direct sales of about \$65.9 million per year. Direct and indirect sales would total about \$123.5 million per year.



*Upcountry Maui*

For the Water Lease Limited to CWRM D&O Alternative, the farms that depend on water from the EMI System would generate direct sales of about \$14.1 million per year. Direct and indirect sales would total about \$31.8 million per year.

For the No Water Lease Alternative, these figures would drop to zero.

*East Maui*

For all water-lease alternatives, the farms in East Maui that depend on stream water would generate about \$1.4 million per year in direct sales, and about \$2.9 million per year in direct and indirect sales.

Employment and Payroll*Central Maui*

For the Water Lease Limited to CWRM D&O Alternative, converting Central Maui from sugarcane to diversified agriculture would employ an average of about 210 workers over a period of about 10 years. Corresponding figures for the No Water Lease Alternative are an average of about 175 workers over about 6 years.

At full operations of farming operations in Central Maui, and assuming the Water Lease Limited to CWRM D&O Alternative, employment would reach about 790 direct jobs with a payroll of about \$28.5 million per year, and 1,140 direct and indirect jobs with a payroll of \$45.3 million. The direct employment of 790 jobs would exceed the 630 direct jobs formerly provided by HC&S for Typical Sugar. The HC&S employment figure is for the former plantation lands east of Maui Veterans Highway, and not the entire plantation.

For the No Water Lease Alternative, full operations would provide about 270 direct jobs with a payroll of about \$9.9 million per year, and 390 direct and indirect jobs with a payroll of \$15.6 million.

*Upcountry Maui*

For the Water Lease Limited to CWRM D&O Alternative, the farms that depend on water from the EMI System would provide about 100 jobs with a payroll of about \$3.5 million per year, and would generate about 150 direct and indirect jobs having a payroll of \$5.8 million.

For the No Water Lease Alternative, these figures would drop to zero.

*East Maui*

For all water-lease alternatives, the farms in East Maui that depend on stream water would provide about 14 jobs with a payroll of about \$500,000 per year, and generate about 21 direct and indirect jobs having a payroll of about \$800,000.

## State and County Revenues

### *Central Maui*

For the Water Lease Limited to CWRM D&O Alternative, the expenditures on land preparation and capital improvements needed to convert Central Maui from sugarcane to diversified agriculture would generate State tax revenues of about \$18.62 million over the assumed 10-year development period, but this would be offset by energy subsidies of \$18.75 million, for net loss of about \$130,000. State revenues would come from excise taxes, corporate income taxes, and personal income taxes. The County derives negligible tax revenues from development activity: there are no major County taxes on expenditures for land preparation and improvements, profits generated, or the payroll of those involved with the development activity. However, once the improvements are completed, the County will benefit from an increase in property-tax revenues due to the increased property values.

For the No Water Lease Alternative, the conversion would generate State tax revenues of about \$11.41 million over the assumed 6-year development period, but this would be offset by energy subsidies of \$18.75 million, for a net loss of about \$7.34 million.

At full operations of farming operations in Central Maui, and assuming the Water Lease Limited to CWRM D&O Alternative, State tax revenues would be about \$4.46 million per year, and County property taxes would be about \$800,000 per year. Property taxes for the County are low because agricultural land is assessed at agricultural values, not at market values.

For the No Water Lease Alternative, full operations would generate State tax revenues of about \$1.66 million per year, and County tax revenues of about \$650,000. Tax revenues for the State are less because crop production and sales would be less. Property taxes are lower because more of the land would be used for pasture, which has a lower assessed value than cropland.

### *Upcountry Maui*

For the Water Lease Limited to CWRM D&O Alternative, the farms that depend on water from the EMI System would generate annual State taxes of about \$540,000, and County revenues of about \$850,000. The County revenues include property taxes and rents from the Kula Ag Park.

For the No Water Lease Alternative, most of these figures would drop to zero or near zero because of the loss of farms and farm production. The County would lose rents from the Kula Ag Park, and property tax revenues would be lower, assuming the agricultural lands would be assessed at pasture values.

### *East Maui*

For all water-lease alternatives, the East Maui farms would generate about \$67,000 per year in State taxes and about \$100 in County property taxes.

**b. Water Lease Limited to CWRM D&O Alternative vs the No Water Lease Alternative****Central Maui**

For Central Maui, the Water Lease Limited to CWRM D&O Alternative would provide far more economic activity and benefits than would the No Water Lease Alternative. The difference between the two alternatives would be as follows:

- About 11,570 acres more green open space in the form of farms and irrigated pastures (20,650 acres vs 9,080 acres).
- About three times as much food production, including greater food self-sufficiency and more exports.
- About \$206 million per year more in direct and indirect sales (\$329.5 million vs \$123.5 million).
- About 750 more direct and indirect jobs (1,140 jobs vs 390 jobs).
- About \$29.7 million per year more in total payroll (\$45.3 million vs \$15.6 million).
- Development activity (land preparation and capital improvements) lasting about 4 years longer (10 years vs 6 years), with similar magnitudes of sales and employment (about \$40 million per year direct and indirect sales, and about 300 direct and indirect jobs).
- About \$2.9 million per year more in State and County tax revenues (\$4.6 million vs \$1.7 million).

**Upcountry Maui**

For Upcountry Maui, the Water Lease Limited to CWRM D&O Alternative would allow farming to continue and expand at the Kula Ag Park, and continue at other farms that irrigate crops with water originating from the EMI System. In total, about 1,510 acres would be farmed in 2030, generating about \$31.8 million per year in direct and indirect sales, about 150 direct and indirect jobs, and about \$5.8 million in payroll for these jobs.

For the No Water Diversions Alternative, farming activity is expected to be near zero for the farms that depended on water from the EMI System in 2017. For these farms, water to irrigate crops is not expected to be available for several years, and once farming ends, significant farming is not expected to return to the area because of better farming conditions in Central Maui.

**East Maui**

All alternatives would result in the same agricultural activity and benefits for East Maui (see Table 7., Section 7c).

**c. Water Lease with Less than CWRM D&O Alternative**

For the Water Lease with Less than CWRM D&O Alternative, the State would allow water to be diverted from East Maui to Central Maui in an amount falling between (1) the 92.32-mgd flow estimated for the Water Lease Limited to CWRM D&O Alternative, and (2) the 30.76-mgd flow estimated for the No Water Lease Alternative. To demonstrate the impacts of such an intermediate alternative, the following table provides (1) the impacts of the Water Lease Limited to CWRM D&O Alternative at full operations of the Mahi Pono Farm plan, and (2) the incremental changes in these impacts (in red) caused by each mgd-reduction in surface water from the 92.32-mgd flow estimated for the Water Lease Limited to CWRM D&O Alternative.

|                               | <b><u>Central<br/>Maui</u></b> | <b><u>Upcountry<br/>Maui</u></b> | <b><u>Units</u></b> |
|-------------------------------|--------------------------------|----------------------------------|---------------------|
| — Land use                    |                                |                                  |                     |
| • Crops                       | 15,950                         | 1,509                            | acres               |
| Decrease per 1 mgd            | 173.31                         | 24.51                            | acres               |
| • Irrigated pasture           | 4,700                          |                                  | acres               |
| Decrease per 1 mgd            | 14.62                          |                                  | acres               |
| • Unirrigated pasture         | 9,100                          |                                  | acres               |
| Increase per 1 mgd            | 187.93                         |                                  | acres               |
| — Sales, Ag operations        |                                |                                  |                     |
| • Direct sales                | \$168.9                        | \$15.1                           | million/yr          |
| Decrease per 1 mgd            | \$1.673                        | \$0.245                          | million/yr          |
| • Direct and indirect sales   | \$329.5                        | \$31.8                           | million/yr          |
| Decrease per 1 mgd            | \$3.346                        | \$0.517                          | million/yr          |
| — Employment                  |                                |                                  |                     |
| • Direct                      | 793                            | 101                              | jobs                |
| Decrease per 1 mgd            | 8.447                          | 1.634                            | jobs                |
| • Direct and indirect         | 1,142                          | 149                              | jobs                |
| Decrease per 1 mgd            | 12.164                         | 2.418                            | jobs                |
| — Payroll                     |                                |                                  |                     |
| • Direct payroll              | \$28.5                         | \$3.5                            | million/yr          |
| Decrease per 1 mgd            | \$0.303                        | \$0.057                          | million/yr          |
| • Direct and indirect payroll | \$45.3                         | \$5.8                            | million/yr          |
| Decrease per 1 mgd            | \$0.481                        | \$0.095                          | million/yr          |
| — State Revenues              | \$4.46                         | \$0.54                           | million/yr          |
| Decrease per 1 mgd            | \$0.0456                       | \$0.0088                         | million/yr          |

Thus, each 1-mgd reduction of surface water from the Water Lease Limited to CWRM D&O Alternative would result in the following changes for Central Maui (first column of the above table): a reduction by about 173 acres of land in crops, a reduction by about 15 acres of land in irrigated pasture, an increase of about 188 acres of land in unirrigated pasture, a reduction in direct sales on Maui of about \$1.7 million per year, a reduction in direct-and-indirect sales on Maui and O‘ahu of about \$3.3 million per year, about 8.5 fewer direct jobs on Maui having a payroll of about \$300,000 per year, about 12 fewer direct-and-indirect jobs on Maui and O‘ahu having a payroll of about \$500,000 per year, and a reduction in State revenues of about \$50,000 per year. Significant but smaller changes would occur for Upcountry Maui (second column of the above table).

## **6. CONSISTENCY WITH STATE AND COUNTY AGRICULTURAL POLICIES**

Of the three alternatives, the Water Lease Limited to CWRM D&O Alternative is the most compatible with State and County agricultural policies. This alternative would (1) preserve and protect the most agricultural land and water, and (2) promote the most agricultural activity.



Table ES-1. Summary

| Item  | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units |
|---|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|-------|
|   |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |       |
| <b>1. WATER SUPPLY AND ALLOCATION</b>                         |                         |                  |                 |               |                                    |             |       |
| <b>Water supply (before system losses)</b>                    |                         |                  |                 |               |                                    |             |       |
| Surface water from East Maui                                  |                         |                  |                 |               |                                    |             |       |
| From State lands  | Table 1. Section 1.a    | n.e.             | n.e.            | n.e.          | 61.57                              | -           | mgd   |
| From private lands  | Table 1. Section 1.a    | n.e.             | n.e.            | n.e.          | 30.76                              | 30.76       | mgd   |
| Total surface water   | Table 1. Section 1.a    | 156.54           | 113.71          | 23.99         | 92.32                              | 30.76       | mgd   |
| Brackish groundwater  | Table 1. Section 1.a    | 42.50            | 69.90           | -             | 21.31                              | 7.69        | mgd   |
| Total water supply  | Table 1. Section 1.a    | 199.04           | 183.61          | 23.99         | 113.63                             | 38.44       | mgd   |
| <b>Water allocations (before system losses)</b>               |                         |                  |                 |               |                                    |             |       |
| MDWS  | Table 1. Section 1.b    | 3.23             | 7.10            | 2.86          | 7.10                               | -           | mgd   |
| Central Maui, Ag and related uses                             | Table 1. Section 1.b    | 195.81           | 180.78          | n.e.          | 106.53                             | 38.44       | mgd   |
| <b>2. AGRICULTURAL LAND USE</b>                               |                         |                  |                 |               |                                    |             |       |
| <b>Central Maui</b>   |                         |                  |                 |               |                                    |             |       |
| Sugarcane   | Table 2. Section 2.a    | 29,427           | 30,320          |               |                                    |             | acres |
| Upper fields (surface water only)                             | Table 2. Section 2.a    | 12,800           | 12,729          |               |                                    |             | acres |
| Lower fields (surface and brackish water)                     | Table 2. Section 2.a    | 16,627           | 17,591          |               |                                    |             | acres |
| Diversified Ag and energy                                     |                         |                  |                 |               |                                    |             |       |
| Crops, irrigated  |                         |                  |                 |               |                                    |             |       |
| Orchards  | Table 2. Section 2.a    |                  |                 |               | 12,850                             | 4,180       | acres |
| Other crops   | Table 2. Section 2.a    |                  |                 | 200           | 3,100                              | 1,100       | acres |
| Total crops   |                         |                  |                 | 200           | 15,950                             | 5,280       | acres |
| Pasture   |                         |                  |                 |               |                                    |             |       |
| Irrigated   | Table 2. Section 2.a    |                  |                 | -             | 4,700                              | 3,800       | acres |
| Unirrigated   | Table 2. Section 2.a    |                  |                 | 500           | 9,100                              | 20,670      | acres |
| Total pasture   |                         |                  |                 | 500           | 13,800                             | 24,470      | acres |
| Green energy (solar)  | Table 2. Section 2.a    |                  |                 |               | 250                                | 250         | acres |
| Fallow  |                         |                  |                 | 29,300        |                                    |             | acres |
| Total Ag and energy   |                         |                  |                 | 30,000        | 30,000                             | 30,000      | acres |
| Irrigated fields  | Table 2. Section 2.a    |                  |                 |               | 20,650                             | 9,080       | acres |
| Upper fields (surface water only)                             | Table 2. Section 2.a    |                  |                 |               | 6,390                              | 2,720       | acres |
| Lower fields (surface and brackish water)                     | Table 2. Section 2.a    |                  |                 |               | 14,260                             | 6,360       | acres |
| <b>Upcountry Maui (farms supplied with water from EMI)</b>    |                         |                  |                 |               |                                    |             |       |
| Kula Ag Park  | Table 2. Section 2.b    |                  |                 | 447           | 709                                | -           | acres |
| Other Farms   | Table 2. Section 2.b    |                  |                 | 800           | 800                                | -           | acres |
| Total farmland  |                         |                  |                 | 1,247         | 1,509                              | -           | acres |
| <b>East Maui (farms with appurtenant and riparian rights)</b> |                         |                  |                 |               |                                    |             |       |
| Taro  | Table 2. Section 2.c    |                  |                 |               | 44.8                               | 44.8        | acres |
| Other farms   | Table 2. Section 2.c    |                  |                 |               | 35.1                               | 35.1        | acres |
| Total farmland  |                         |                  |                 |               | 79.9                               | 79.9        | acres |
| <b>3. AGRICULTURAL WATER USE (after system losses)</b>        |                         |                  |                 |               |                                    |             |       |
| <b>Central Maui</b>   |                         |                  |                 |               |                                    |             |       |
| Sugar operations  |                         |                  |                 |               |                                    |             |       |
| Total water use, sugarcane                                    | Table 3. Section 3.a    | 143.19           | 132.45          |               |                                    |             | mgd   |
| By source   |                         |                  |                 |               |                                    |             |       |
| Surface water   | Table 3. Section 3.a    | 112.07           | 81.24           |               |                                    |             | mgd   |
| Brackish groundwater  | Table 3. Section 3.a    | 31.12            | 51.21           |               |                                    |             | mgd   |
| By area   |                         |                  |                 |               |                                    |             |       |
| Upper fields (surface water only)                             | Table 3. Section 3.a    | 62.28            | 55.61           |               |                                    |             | mgd   |
| Lower fields (surface and brackish water)                     | Table 3. Section 3.a    | 80.90            | 76.84           |               |                                    |             | mgd   |
| Brackish water share  |                         |                  |                 |               |                                    |             |       |
| All fields  | Table 3. Section 3.a    | 21.7%            | 38.7%           |               |                                    |             |       |
| Lower fields  | Table 3. Section 3.a    | 38.5%            | 66.6%           |               |                                    |             |       |

Table ES-1. Summary of Impacts

(Continued)

| Item   | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units      |
|--|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|------------|
|  |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |            |
| Diversified Ag   |                         |                  |                 |               |                                    |             |            |
| Total water use, crops and irrigated pasture               | Table 3. Section 3.a    |                  |                 | 0.68          | 82.34                              | 29.72       | mgd        |
| By source  |                         |                  |                 |               |                                    |             |            |
| Surface water  | Table 3. Section 3.a    |                  |                 |               | 65.87                              | 23.77       | mgd        |
| Brackish groundwater                                       | Table 3. Section 3.a    |                  |                 |               | 27.69                              | 9.97        | mgd        |
| By area  |                         |                  |                 |               |                                    |             |            |
| Upper fields (surface water only)                          | Table 3. Section 3.a    |                  |                 |               | 27.69                              | 9.97        | mgd        |
| Lower fields (surface and brackish water)                  | Table 3. Section 3.a    |                  |                 |               | 54.65                              | 19.75       | mgd        |
| Brackish water share                                       |                         |                  |                 |               |                                    |             |            |
| All fields   | Table 3. Section 3.a    |                  |                 |               | 20.0%                              | 20.0%       |            |
| Lower fields   | Table 3. Section 3.a    |                  |                 |               | 30.1%                              | 30.1%       |            |
| Upcountry Maui (farms supplied with water from EMI)        |                         |                  |                 |               |                                    |             |            |
| Kula Ag Park   | Table 3. Section 3.b    |                  |                 | 0.46          | 1.46                               | -           | mgd        |
| Other Farms  | Table 3. Section 3.b    |                  |                 | 1.36          | 2.70                               | -           | mgd        |
| Total farmland   |                         |                  |                 | 1.82          | 4.16                               | -           | mgd        |
| East Maui (farms with appurtenant and riparian rights)     |                         |                  |                 |               |                                    |             |            |
| Gross water use (includes water returned to streams)       |                         |                  |                 |               |                                    |             |            |
| Taro farms   | Table 3. Section 3.c    |                  |                 | n.e.          | 6.28                               | 6.28        | mgd        |
| Other farms  |                         |                  |                 |               | (included with water for taro)     |             |            |
| Net water use  | Table 3. Section 3.c    |                  |                 | n.e.          | 1.52                               | 1.52        | mgd        |
| Taro farms   | Table 3. Section 3.c    |                  |                 |               | 1.34                               | 1.34        | mgd        |
| Other farms  | Table 3. Section 3.c    |                  |                 |               | 0.18                               | 0.18        | mgd        |
| <b>4. AGRICULTURAL DEVELOPMENT AND OPERATIONS</b>          |                         |                  |                 |               |                                    |             |            |
| Central Maui   |                         |                  |                 |               |                                    |             |            |
| Sugar operations   |                         |                  |                 |               |                                    |             |            |
| Direct sales   | Table 4. Section 4.a    | \$ 100.7         | \$ 115.6        |               |                                    |             | million/yr |
| Direct and indirect sales                                  | Table 4. Section 4.a    | \$ 191.4         | \$ 219.7        |               |                                    |             | million/yr |
| Diversified Ag   |                         |                  |                 |               |                                    |             |            |
| Development activity                                       |                         |                  |                 |               |                                    |             |            |
| Development period   | Table 4. Section 4.a    |                  |                 |               | 10                                 | 6           | years      |
| Expenditures and sales                                     |                         |                  |                 |               |                                    |             |            |
| Total development expenditures                             | Table 4. Section 4.a    |                  |                 |               | \$ 214.7                           | \$ 144.8    | million    |
| Average annual development expenditures                    | Table 4. Section 4.a    |                  |                 |               | \$ 21.5                            | \$ 24.1     | million/yr |
| Average annual development expenditures and indirect sales | Table 4. Section 4.a    |                  |                 |               | \$ 39.9                            | \$ 42.9     | million/yr |
| Operations   |                         |                  |                 |               |                                    |             |            |
| Direct sales   |                         |                  |                 |               |                                    |             |            |
| Farm sales   |                         |                  |                 |               |                                    |             |            |
| Hawaii sales   | Table 4. Section 4.a    |                  |                 |               | \$ 104.4                           | \$ 46.1     | million/yr |
| Export sales   | Table 4. Section 4.a    |                  |                 |               | \$ 56.2                            | \$ 11.5     | million/yr |
| Total farm sales   | Table 4. Section 4.a    |                  |                 |               | \$ 160.7                           | \$ 57.7     | million/yr |
| Energy Sales   | Table 4. Section 4.a    |                  |                 |               | \$ 8.2                             | \$ 8.2      | million/yr |
| Total direct sales   | Table 4. Section 4.a    |                  |                 | \$ 0.5        | \$ 168.9                           | \$ 65.9     | million/yr |
| Direct and indirect sales                                  | Table 4. Section 4.a    |                  |                 | \$ 1.1        | \$ 329.5                           | \$ 123.5    | million/yr |
| Upcountry Maui (farms supplied with water from EMI)        |                         |                  |                 |               |                                    |             |            |
| Development activity, Kula Ag Park                         |                         |                  |                 |               |                                    |             |            |
| Increase in acreage  | Table 2. Section 2.b    |                  |                 |               | 262                                | -           | acres      |
| Development period   | Table 4. Section 4.b    |                  |                 |               | 5                                  | -           | years      |
| Expenditures and sales                                     |                         |                  |                 |               |                                    |             |            |
| Total development expenditures                             | Table 4. Section 4.b    |                  |                 |               | \$ 1.3                             | \$ -        | million    |
| Average annual development expenditures                    | Table 4. Section 4.b    |                  |                 |               | \$ 0.3                             | \$ -        | million/yr |
| Average annual development expenditures and indirect sales | Table 4. Section 4.b    |                  |                 |               | \$ 0.6                             | \$ -        | million/yr |
| Operations, Kula Ag Park and other farms                   |                         |                  |                 |               |                                    |             |            |
| Direct sales   | Table 4. Section 4.b    |                  |                 | \$ 12.5       | \$ 15.1                            | \$ -        | million/yr |
| Direct and indirect sales                                  | Table 4. Section 4.b    |                  |                 | \$ 26.3       | \$ 31.8                            | \$ -        | million/yr |

Table ES-1. Summary of Impacts

(Continued)

| Item  | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units      |
|---|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|------------|
|   |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |            |
| <b>East Maui (farms with appurtenant and riparian rights)</b> |                         |                  |                 |               |                                    |             |            |
| Direct sales  | Table 4. Section 4.c    |                  |                 |               | \$ 1.4                             | \$ 1.4      | million/yr |
| Direct and indirect sales                                     | Table 4. Section 4.c    |                  |                 |               | \$ 2.9                             | \$ 2.9      | million/yr |
| <b>5. EMPLOYMENT AND PAYROLL</b>                              |                         |                  |                 |               |                                    |             |            |
| <b>Central Maui</b>   |                         |                  |                 |               |                                    |             |            |
| Sugar operations  |                         |                  |                 |               |                                    |             |            |
| Employment  |                         |                  |                 |               |                                    |             |            |
| Direct jobs   | Table 5. Section 5.a    | 630              | 620             |               |                                    |             | jobs       |
| Direct and indirect jobs                                      | Table 5. Section 5.a    | 1,342            | 1,321           |               |                                    |             | jobs       |
| Payroll   |                         |                  |                 |               |                                    |             |            |
| Direct payroll  | Table 5. Section 5.a    | \$ 48.5          | \$ 34.3         |               |                                    |             | million/yr |
| Direct and indirect payroll                                   | Table 5. Section 5.a    | \$ 82.7          | \$ 68.0         |               |                                    |             | million/yr |
| <b>Diversified Ag</b>   |                         |                  |                 |               |                                    |             |            |
| Development activity  |                         |                  |                 |               |                                    |             |            |
| Development period  | Table 4. Section 4.b    |                  |                 |               | 10                                 | 6           | years      |
| Employment  |                         |                  |                 |               |                                    |             |            |
| Direct jobs   | Table 5. Section 5.a    |                  |                 |               | 208                                | 176         | jobs       |
| Direct and indirect jobs                                      | Table 5. Section 5.a    |                  |                 |               | 326                                | 293         | jobs       |
| Payroll   |                         |                  |                 |               |                                    |             |            |
| Direct payroll  | Table 5. Section 5.a    |                  |                 |               | \$ 8.8                             | \$ 7.7      | million/yr |
| Direct and indirect payroll                                   | Table 5. Section 5.a    |                  |                 |               | \$ 14.5                            | \$ 13.3     | million/yr |
| <b>Operations</b>   |                         |                  |                 |               |                                    |             |            |
| Employment  |                         |                  |                 |               |                                    |             |            |
| Direct jobs   | Table 5. Section 5.a    |                  |                 | 7             | 793                                | 273         | jobs       |
| Direct and indirect jobs                                      | Table 5. Section 5.a    |                  |                 | 10            | 1,142                              | 393         | jobs       |
| Payroll   |                         |                  |                 |               |                                    |             |            |
| Direct payroll  | Table 5. Section 5.a    |                  |                 | \$ 0.3        | \$ 28.5                            | \$ 9.9      | million/yr |
| Direct and indirect payroll                                   | Table 5. Section 5.a    |                  |                 | \$ 0.5        | \$ 45.3                            | \$ 15.6     | million/yr |
| <b>Upcountry Maui (farms supplied with water from EMI)</b>    |                         |                  |                 |               |                                    |             |            |
| Development activity  |                         |                  |                 |               |                                    |             |            |
| Development period  | Table 4. Section 4.a    |                  |                 |               | 5                                  | -           | years      |
| Employment  |                         |                  |                 |               |                                    |             |            |
| Direct jobs   | Table 5. Section 5.b    |                  |                 |               | 5.2                                | -           | jobs       |
| Direct and indirect jobs                                      | Table 5. Section 5.b    |                  |                 |               | 7.5                                | -           | jobs       |
| Payroll   |                         |                  |                 |               |                                    |             |            |
| Direct payroll  | Table 5. Section 5.b    |                  |                 |               | \$ 0.21                            | \$ -        | million/yr |
| Direct and indirect payroll                                   | Table 5. Section 5.b    |                  |                 |               | \$ 0.31                            | \$ -        | million/yr |
| <b>Operations</b>   |                         |                  |                 |               |                                    |             |            |
| Employment  |                         |                  |                 |               |                                    |             |            |
| Direct jobs   | Table 5. Section 5.b    |                  |                 | 83            | 101                                | -           | jobs       |
| Direct and indirect jobs                                      | Table 5. Section 5.b    |                  |                 | 123           | 149                                | -           | jobs       |
| Payroll   |                         |                  |                 |               |                                    |             |            |
| Direct payroll  | Table 5. Section 5.b    |                  |                 | \$ 2.9        | \$ 3.5                             | \$ -        | million/yr |
| Direct and indirect payroll                                   | Table 5. Section 5.b    |                  |                 | \$ 4.8        | \$ 5.8                             | \$ -        | million/yr |
| <b>East Maui (farms with appurtenant and riparian rights)</b> |                         |                  |                 |               |                                    |             |            |
| Employment  |                         |                  |                 |               |                                    |             |            |
| Direct jobs   | Table 5. Section 5.c    |                  |                 | n.e.          | 14                                 | 14          | jobs       |
| Direct and indirect jobs                                      | Table 5. Section 5.c    |                  |                 | n.e.          | 21                                 | 21          | jobs       |
| Payroll   |                         |                  |                 |               |                                    |             |            |
| Direct payroll  | Table 5. Section 5.c    |                  |                 | n.e.          | \$ 0.5                             | \$ 0.5      | million/yr |
| Direct and indirect payroll                                   | Table 5. Section 5.c    |                  |                 | n.e.          | \$ 0.8                             | \$ 0.8      | million/yr |

Table ES-1. Summary of Impacts

(Continued)

| Item   | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units      |
|--|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|------------|
|  |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |            |
| 6. STATE AND COUNTY REVENUES                                   |                         |                  |                 |               |                                    |             |            |
| Central Maui   |                         |                  |                 |               |                                    |             |            |
| Sugar operations   |                         |                  |                 |               |                                    |             |            |
| State revenues   | Table 6. Section 6.a    | \$ 5.88          | \$ 5.08         |               |                                    |             | million/yr |
| Maui County property taxes                                     | Table 6. Section 6.a    | \$ 0.05          | \$ 0.07         |               |                                    |             | million/yr |
| City and County of Honolulu, excise tax surcharge              | Table 6. Section 6.a    |                  | \$ 0.04         |               |                                    |             | million/yr |
| Diversified Ag   |                         |                  |                 |               |                                    |             |            |
| Development activity   |                         |                  |                 |               |                                    |             |            |
| State revenues (cumulative)                                    | Table 6. Section 6.a    |                  |                 |               | \$ (0.13)                          | \$ (7.34)   | million    |
| State taxes  | Table 6. Section 6.a    |                  |                 |               | \$ 18.62                           | \$ 11.41    | million    |
| Energy subsidy   | Table 6. Section 6.a    |                  |                 |               | \$ (18.75)                         | \$ (18.75)  | million    |
| Maui County revenues (cumulative)                              | Table 6. Section 6.a    |                  |                 |               | n.e.                               | n.e.        | million    |
| City and County of Honolulu, excise tax surcharge (cumulative) | Table 6. Section 6.a    |                  |                 |               | \$ 0.06                            | \$ 0.04     | million    |
| Operations   |                         |                  |                 |               |                                    |             |            |
| State revenues   | Table 6. Section 6.a    |                  |                 | \$ 0.03       | \$ 4.46                            | \$ 1.66     | million/yr |
| Maui County property taxes                                     | Table 6. Section 6.a    |                  |                 | \$ 0.02       | \$ 0.80                            | \$ 0.65     | million/yr |
| City and County of Honolulu, excise tax surcharge              | Table 6. Section 6.a    |                  |                 | \$ 0.00       | \$ 0.14                            | \$ 0.05     | million/yr |
| Upcountry Maui (farms supplied with water from EMI)            |                         |                  |                 |               |                                    |             |            |
| Development activity   |                         |                  |                 |               |                                    |             |            |
| State revenues (cumulative)                                    | Table 6. Section 6.b    |                  |                 |               | \$ 0.18                            | \$ -        | million    |
| Maui County revenues (cumulative)                              | Table 6. Section 6.b    |                  |                 |               | n.e.                               | n.e.        | million    |
| City and County of Honolulu, excise tax surcharge (cumulative) | Table 6. Section 6.b    |                  |                 |               | n.e.                               | ne.         | million    |
| Operations   |                         |                  |                 |               |                                    |             |            |
| State revenues   | Table 6. Section 6.b    |                  |                 | \$ 0.45       | \$ 0.54                            | \$ -        | million/yr |
| Maui County revenues   | Table 6. Section 6.b    |                  |                 | \$ 0.54       | \$ 0.85                            | \$ 0.00     | million/yr |
| City and County of Honolulu, excise tax surcharge              | Table 6. Section 6.b    |                  |                 | \$ 0.002      | \$ 0.002                           | \$ -        | million/yr |
| East Maui (farms with appurtenant and riparian rights)         |                         |                  |                 |               |                                    |             |            |
| State revenues   | Table 6. Section 6.c    |                  |                 | n.e.          | \$ 0.067                           | \$ 0.067    | million/yr |
| Maui County property taxes                                     | Table 6. Section 6.c    |                  |                 | n.e.          | \$ 0.0001                          | \$ 0.0001   | million/yr |
| City and County of Honolulu, excise tax surcharge              | Table 6. Section 6.c    |                  |                 | n.e.          | \$ 0.0003                          | \$ 0.0003   | million/yr |

# EAST MAUI WATER LEASE: AGRICULTURAL AND RELATED ECONOMIC IMPACTS

## 1. INTRODUCTION

### a. Proposed Water Lease

Since 1986, the Board of Land and Natural Resources (**BLNR**) has been issuing 1-year revocable permits for four license areas in East Maui to Alexander & Baldwin, Inc. (**A&B**) and its subsidiary East Maui Irrigation Company, LLC (**EMI**)—A&B and EMI are herein referred to collectively as A&B. The permits have allowed A&B to divert surface water via the aqueduct system owned by EMI (the **EMI System**) to (1) irrigate fields in Central Maui and (2) supply water to the Maui Department of Water Supply (**MDWS**) for use in Upcountry Maui, including agricultural users at the Kula Agricultural Park, as well as for the Nāhiku community, which draws up 20,000 to 45,000 gallons per day, dependent on weather, from the EMI System.

In 2001, A&B requested that the BLNR offer a long-term (30 years) East Maui Water Lease (the **Water Lease** or **Lease**) at public auction for the right, privilege and authority to enter and go upon State-owned lands in East Maui for the purposes of developing, diverting, transporting and using government-owned waters. BLNR action on issuing a Water Lease has been delayed for various reasons, including the requirement that an environmental review be completed before a lease could be issued.

Under the proposed Lease, the State of Hawai‘i would allow the continued diversion of East Maui surface water for delivery to Central Maui and Upcountry Maui. The Central Maui agricultural lands, as well as other lands formerly owned by A&B, are now owned by MP Central A, LLC, MP Central B, LLC, MP CPR, LLC, MP East A, LLC, MP East B, LLC, MP West, LLC, and MP EMI, LLC (individually or collectively, "**Mahi Pono**"), which acquired these lands from A&B in December 2018. In addition, since early 2019, Mahi Pono owns 50% of EMI and is the managing member of EMI; A&B is the other member of EMI.

Compared to past water diversions that occurred for over 90 years under continuous sugar cultivation (since 1923 when the EMI System reached full development), the potential future flow of surface water from East Maui has been reduced significantly due to a June 2018 Decision and Order (**D&O**) by the Commission on Water Resource Management (**CWRM**) to fully or partially restore stream flows in East Maui, which also incorporates previous A&B decisions to voluntarily reduce stream diversions.



## **b. Content and Purpose**

This report addresses the agricultural and related economic impacts of the proposed Lease. It was prepared to support the Environmental Impact Statement being prepared under Hawaii Revised Statutes Chapter 343, by Wilson Okamoto Corporation. Compliance with the requirements of Hawaii Revised Statutes Chapter 343 is necessary before the BLNR can consider issuing the Lease.

## **c. Scope of Analysis**

### Baseline and Water Lease Alternatives

The analysis addresses the following baseline and alternative surface-water diversions from East Maui:

— Past baseline conditions

- Typical Sugar (2006 Crop)

The analysis for Typical Sugar is for the year 2006, which was before significant stream restorations. The EMI System also delivered water to the MDWS to meet a portion of the requirements of Upcountry Maui. In addition, water was delivered to the MDWS for the Nahiku community in East Maui.

- Recent Sugar (Years 2008 to 2013)

The analysis for Recent Sugar covers the 2008-to-2013 period. The EMI System continued to deliver water to the MDWS for Upcountry Maui and Nahiku.

- Post Sugar (Year 2017)

The analysis for Post Sugar is for the year 2017, after sugar operations ended and diversified agriculture initiatives were just beginning. The EMI System continued to deliver water to the MDWS for Upcountry Maui and Nahiku.

— Alternatives for the future

- Water Lease Limited to CWRM D&O<sup>1</sup>

For this alternative, surface water would be diverted from East Maui up to the maximum flow allowed by the D&O. The water would be used to irrigate fields in Central Maui, and to continue water deliveries to the MDWS at the current level.

---

1. Mahi Pono's Farm Plan utilizes most of the water available after consideration of the CWRM D&O, however, it is understood that the Department of Hawaiian Home Lands (DHHL) is entitled to a reservation of water prior to the issuance of the Lease.

- Water Lease with Less than CWRM D&O

For this alternative, surface water would be diverted from East Maui, but at a lower level than for the previous alternative. The water would be used to irrigate fields in Central Maui, and to continue water deliveries to the MDWS but at a lower level than currently.

- No Water Lease

For this alternative, no surface-water would be diverted from State lands in East Maui. Surface water would continue to flow to Central Maui, but it would be limited to waters originating from private lands. Nearly all available water would be used to irrigate fields in Central Maui. Because the agreements with MDWS provide that the delivery of water to MDWS for Upcountry Maui is contingent upon the Lease being issued, for the purposes of this report, no water is presumed to be provided to the MDWS.

More details on the baseline conditions and the alternatives for the future are provided in Section 4.

### Geographic Areas

The analysis addresses three farm areas:

- Central Maui

This area comprises the Central Maui lands owned by Mahi Pono, which are former HC&S sugarcane lands that historically were serviced by the EMI System, along with supplemental brackish groundwater pumped from wells now owned by Mahi Pono. These lands are east of Maui Veterans Highway. In this report, Central Maui excludes the former sugarcane lands irrigated with surface water from the West Maui Ditch System. These excluded fields are located west of Maui Veterans Highway.

Most of the Central Maui lands are now planned for various crops and cattle ranching. Most of the water for irrigating crops must come from surface water. Upper fields can be irrigated only with surface water, and lower fields can be irrigated with a mix of surface water and brackish groundwater. Because of salinity and the salt tolerance of diversified agricultural crops, the use of brackish water on the lower fields is limited to about 30% of the water applied. Combining the upper and lower fields, the overall water split across all 30,000 acres would be approximately 80% surface water and 20% brackish groundwater.

If insufficient water is available from the EMI System, then crop farming will have to be reduced.

— Upcountry Maui

The EMI System supplies water to the MDWS, some of which is then delivered to the County's Kula Ag Park and other farm areas in Upcountry Maui, and more water is planned for the 262-acre expansion of the Park. In addition, water from the EMI System supplies a portion of the water distributed by the MDWS Upcountry Water System to residents, businesses, Kamehameha Schools, the Department of Hawaiian Home Lands, and government facilities. The communities served include Kula, Pukalani, Makawao, Ha'ikū, Hali'imaile, Waiakoa, Keokea, Waiohuli, 'Ulupalakua, Kanaio, Olinda, 'Oma'opio, Kula Kai, and Pūlehu.

If insufficient water is available from the EMI System, then the MDWS will have to develop new water sources, and farming may have to be reduced. Also, domestic and business customers of MDWS may have to reduce their water use.

— East Maui

Some of the water from East Maui streams is diverted for taro farms and other farm operations. An increase in stream flows, as ordered by the CWRM D&O, allows for an increase in taro and other farm activity in East Maui.

In the material which follows, the primary focus of the agricultural impact analysis is on Central Maui because this where most of the changes in agriculture are expected to occur, and the area that will be affected most by a Water Lease from the State.

### Agronomic Conditions

Agronomic conditions are summarized for each of the three geographic areas, including:

- Soil quality.
- Solar radiation.
- Elevations.
- Slopes
- Climatic conditions.
- Access to irrigation water.
- Access to markets.

### Economic Impacts

For each condition/alternative and geographic area, the analysis addresses the following agricultural impacts:

- Supply of water available for agriculture.
- Acreages by agricultural use.
- Water use.
- Production.
- Sales.
- Employment.
- Payroll.
- State and county taxes generated (excise, income, and property taxes).

The analysis of economic impacts is limited to the economic impacts associated with agricultural activities, and do not include the impacts associated with the operations of the EMI System.

## **d. Methodology**

### Multipliers

Acreages by agricultural use are translated into economic impacts based on a number of multipliers. These multipliers reflect the professional judgment of the consultant, and were derived from the following sources: various agricultural projects in Hawai‘i; Hawai‘i farmers, ranchers, and land owners; publications by the U.S. Department of Agriculture; publications by the Hawai‘i Department of Agriculture; publications by the University of Hawai‘i, College of Tropical Agriculture and Human Resources; U.S. Census data; the *State of Hawai‘i Data Book*; *The Hawai‘i State Input-Output Study: 2017 Benchmark Report (I-O Model)*; employment and labor rates from the Department of Labor and Industrial Relations (**DLIR**); and State and County tax rates.

### Direct and Indirect Impacts

“**Direct**” economic impacts (gross sales, employment, payroll, etc.) are the immediate effects of a change in a particular sector of the economy. Traditionally, “indirect” impacts are changes in other sectors of the economy that are caused by the direct impacts, but exclude impacts related to the purchase of goods and services by employees and their families (**household spending**). Traditionally, “induced” impacts are changes in the economy that are caused by the household spending by those who are affected by the direct and indirect changes in the economy. In this report, “**indirect**” economic impacts are redefined broadly to include both the traditional indirect economic impacts and the induced economic impacts.

### 2018 Dollars

Dollar amounts are expressed in terms of 2018 purchasing power and market conditions. Values, prices, costs and dollar amounts for prior years are adjusted for inflation to 2018 dollars based on the Honolulu Consumer Price Index (**CPI**) for Urban Consumers. Dollar amounts after 2018 are not increased to account for inflation, appreciation of property values, changes in labor rates, changes in building costs, or other changes in market conditions.

### Future Impacts

The economic impacts of future agricultural operations are based on (1) full implementation of farm plans, and (2) the farms reaching full maturity. Most of these impacts are expected to occur by 2030, but production and sales could increase after this date due to the maturing of some orchard trees. The year 2030 is used for future impacts in order to be consistent with long-term plans by the County of Maui.

### Accuracy of Estimates

Much of the analysis contained in this report is quantitative in nature, where numbers are used to help communicate anticipated plans and impacts. However, these numbers should not be interpreted as precise predictions. Rather, they represent the best estimates of what is expected to occur based on available information about planned development and operations, market conditions, and tax rates. In practice, the future may bring significant deviations from the projections.

## **e. Organization of the Report**

Section 2 provides information on the EMI System, Lease areas and the lease alternatives. The EMI System and lease areas are shown in Figures 1 and 2, respectively.

Section 3 provides information on the CWRM D&O, and on Interim Instream Flow Standards (**IIFS**).

Section 4 defines the baseline conditions and the water-lease alternatives that are analyzed in this report.

Section 5 provides information on the agronomic conditions of the three agricultural areas addressed in the analysis.

Section 6 provides an overview of the agricultural outlook for Central Maui, Upcountry Maui, and East Maui.

Sections 7 through 12 and their corresponding Tables 1 through 6 provide the analysis of agricultural impacts, including:



- Section 7 and Table 1: Water Supply and Allocation
- Section 8 and Table 2: Agricultural Land Use
- Section 9 and Table 3: Agricultural Water Use
- Section 10 and Table 4: Agricultural Development and Operations
- Section 11 and Table 5: Employment, Payroll and Population Supported
- Section 12 and Table 6: State and County Revenues

Each table covers the three past baseline conditions and two of the three lease alternatives. The Water Lease with Less than CWRM D&O Alternative is not included in the tables because the flow of surface water from East Maui has not been specified. However, Section 13 provides the information needed to estimate agricultural and related economic impacts for assumed flows.

Each table of the tables is divided into three parts, one for each geographic area. The tables provide the detailed assumptions and calculations, while the text highlights the main findings. In these tables, the quantities appearing in **bold** highlight the more significant impacts.

Section 13 summarizes the economic impacts and benefits of the alternatives.

Section 14 summarizes the consistency of the Lease with State and County agricultural policies.

The figures and tables are at the end of the report, along with an Appendix that provides a summary of State and County goals, objectives, policies and guidelines related to agricultural lands.

## 2. EMI AQUEDUCT SYSTEM

### a. Overview of the EMI System

Since 1878, A&B or its predecessors and EMI have operated the EMI System, which is an integrated system of diversions, ditches, intakes, and tunnels that collect surface water from streams located on the rainy windward slopes of East Maui. This surface water is then transported to the comparatively dry agricultural fields in Central Maui.

The EMI System, which was completed in 1923, consists of about 388 intakes, over 24 miles of ditches, about 50 miles of tunnels, and numerous small dams, pipes, and flumes. Dirt roads and trails provide access to maintain the system.

The EMI System has four parallel levels of water ditches, running from east to west across the East Maui mountains. From *mauka* to *makai*, these are the Wailoa, New Hāmākua, Lowrie, and New Ha‘ikū ditches. The Wailoa and Lowrie ditches run year-round, while the New Hāmākua and New Ha‘ikū ditches run on surplus water from the other ditches. Wailoa is the highest elevation ditch, thus has access to large and reliable sources of

water. The Lowrie Ditch captures water that cascades down from higher elevations, and has ground water sources that contribute to generally year round flow. The Wailoa water can be sent to 4 turbines that have a production capacity of 6.1 MW.

Two of the main areas for measuring the water flow from the EMI System are at Honopou Stream and Maliko Gulch. Honopou Stream is the western boundary at the end of the State license areas. Maliko Gulch is considered the end of the EMI System and the beginning of the Central Maui field irrigation system.

Historically, the surface water was used to irrigate the HC&S sugarcane fields—fields which are now planned for diversified agriculture. In addition, a portion of the water from East Maui is delivered to MDWS for the domestic water needs of Upcountry Maui and the irrigation needs of small farms throughout Upcountry, as well as in the County’s Kula Ag Park. The MDWS also delivers up a small volume of water to the Nahiku community in East Maui.

The estimated replacement cost of the EMI System would exceed \$325 million (updated from Wilcox).

#### **b. Watershed and Lease Areas**

The watersheds from which the EMI System collects water total about 50,000 acres on the north slope of Haleakala, of which Mahi Pono now owns about 17,000 acres and the State owns about 33,000 acres. Historically, the right to collect water from State lands has been leased to A&B and its predecessors, with the first lease having been granted by the administration of King Kalākaua.

As shown in Figure 2, the State lands include four License Areas:

- Nahiku: TMKs (2)1-2-04:05, 07; 10,111.220 acres, more or less
- Ke‘anae: TMK (2)1-1-02:02 (por.); 10,768.000 acres, more or less
- Honomanu: TMK (2)1-1-001:443; 381.000 acres, more or less
- Huelo: TMKs (2)1-1-001:05 and (2)2-9-014:01, 05,11 ,12,17; 8,752.690 acres, more or less

The License Areas are within the Ko‘olau Forest Reserve while mauka portions of the Ke‘anae and Nahiku License Areas are bordered by the Kipahulu and Nana Forest Reserve. The Hanawi Natural Area Reserve also lies within the Nahiku License Area.

Thirty seven (37) streams are within the proposed Lease area, two of which are below the EMI System and therefore have never been diverted by the EMI System. However, ten of those streams have been ordered for full restoration, meaning that A&B has and/or will be stopping all diversions and restoring full water flow as required by the D&O. In addition, diversions will be reduced for several other streams.

**c. East Maui Water Lease**

As discussed in Section 1.a, A&B requested that the BLNR offer a long-term Water Lease at public auction. The objectives for the Lease are as follows:

— **Continue to provide water to support agriculture in Central Maui**

The proposed Water Lease will allow the EMI System to continue to supply water to support agriculture on approximately 30,000 acres of fields in Central Maui. Although A&B/HC&S ended its sugar operations in 2016, A&B had planned and Mahi Pono currently plans to put as much of the former sugarcane lands into other diversified agricultural uses as economically feasible.

— **Continue to meet domestic and agricultural water demands in Upcountry Maui**

The EMI System supplies water to the MDWS Upcountry Water System, which is the second largest system in the County. The continuation of the proposed Water Lease is necessary to continue MDWS's service for agricultural and domestic purposes in Upcountry Maui.

MDWS's service includes delivery of non-potable water that originate from the EMI System to the Kula Ag Park and the planned 262-acre expansion of the Park.

— **Continue to serve community water demands in the Nahiku Community**

The Nahiku community, a small community in Eastern Maui, draws about 41,000 gallons per day from the EMI System. The water is delivered by the MDWS. The proposed Water Lease is critical to continued water service for this community.

— **Preserve and maintain the EMI System**

The EMI System is a major capital asset that supplies water to support both agriculture and domestic uses. The proposed Water Lease will allow this valuable asset to be preserved and maintained to serve these needs for water.

**d. Water Flows from State vs Private Lands**

Historically, it has been recognized that 70% of the EMI System flow east of Honopou Stream comes from State lands, and 30% comes from private lands, and thus this assumption is utilized in this report. Between Honopou Stream and Maliko Gulch, all of the additional water flow comes from private lands.

### 3. INTERIM INSTREAM FLOW STANDARDS

On May 24, 2001, the Native Hawaiian Legal Corporation filed petitions with CWRM to Amend the Interim Instream Flow Standards (**IIFS**) for 27 East Maui streams on behalf of Nā Moku ‘Aupuni ‘O Koolau Hui, Beatrice Kepani Kekahuna, Marjorie Wallett, and Elizabeth Lehua Lapenia (collectively **Nā Moku**).

In 2007, A&B ceased diversion on Waiokamilo Stream, fully restoring flows to the stream, in response to an interim order by the BLNR.

In June 2018, the CWRM amended the IIFS for East Maui streams. In its D&O, CWRM fully or partially restored stream flows for most of the petitioned East Maui streams, and limited the volume of water which can be diverted from East Maui streams. The D&O “will return free flowing water, with no upstream diversions, to all streams which have historically supported significant kalo cultivation (Honopou, Huelo, Hanehoi, Pi‘ina‘au, Palauhulu, Ohia (Waianui), Waiokamilo, Kualani, Wailuanui, Makapipi).”<sup>2</sup>

### 4. BASELINE CONDITIONS AND WATER-LEASE ALTERNATIVES

This analysis of agricultural impacts addresses (1) three baseline conditions for past and recent surface-water diversions from East Maui, and (2) three future water-lease alternatives represented by estimates for the year 2030.

#### a. Past Water Diversions

The three baseline conditions for past surface-water diversions from East Maui include the following:

— Typical Sugar (2006 Crop)

This baseline covers surface-water diversions and related agricultural impacts for the 2006 sugarcane crop in Central Maui. This year represents typical sugarcane operations during the 20-year period from 1987 to 2006: rainfall in East Maui was regarded as normal, the restoration of stream flows was not large enough to significantly affect HC&S operations, and the plantation was economically healthy.

Selected agricultural impacts are provided for Central Maui but, with a few exceptions, are not provided for Upcountry Maui and East Maui. For these areas, agricultural impacts of more recent periods are more relevant.

---

2. Although the Executive Summary in the CWRM D&O mentioned Kualani and Ohia, those streams (also referred to as Hamau and Waianu) have never been diverted by the EMI System. CWRM D&O FOF 57.

— Recent Sugar (Years 2008 to 2013)

This baseline covers average surface-water diversions and related agricultural impacts for the 6-year period just prior to the closure of HC&S: 2008 to 2013. The plantation shut down operations over a 2-year period ending in 2016.

This period is not typical of sugar operations in that rainfall was below normal, water returned to East Maui streams was large enough to adversely affect sugarcane operations, and HC&S struggled to achieve profitable operations. Also, a large volume of brackish groundwater was used to irrigate the sugarcane in order to maintain high levels of biomass for energy production, even though the high salinity decreased sugar yields.

— Post Sugar (Year 2017)

This baseline covers surface-water diversions and related agricultural impacts for 2017, after HC&S ceased its sugar operations and diversified agriculture initiatives were just beginning.

## **b. Future Water-Lease Alternatives**

The three future water-lease alternatives include the following:

— Water Lease Limited to CWRM D&O Alternative (proposed action/preferred alternative)

For this alternative—which is the proposed action/preferred alternative—the State would offer a Water Lease at public auction that allows surface water to be diverted from State lands in East Maui up to the maximum flow allowed by the CWRM D&O under the IIFS. Due to IIFS and prior voluntary decisions by A&B, significantly less surface water will be available to Central from the EMI System than has been the case in the past. This report assumes that Mahi Pono is the successful bidder for the Water Lease.

Mahi Pono scaled its Farm Plan, which includes water to lessees of Mahi Pono, to match the available supply of surface water. Under this alternative, it is projected that 30,000 acres of diversified agriculture in Central Maui could be supported, of which over 20,000 acres would be irrigated. If more water were available, then more crops would be planted. If less water were available, then the Farm Plan would be changed, possibly increasing land for pasture and decreasing land for crops.



The EMI System would continue to supply surface water to the MDWS for Upcountry Maui, but the supply would be maintained at its recent level and not increased to accommodate future growth. Also, water would continue to be delivered to the MDWS for the Nahiku community in East Maui.

— Water Lease with Less than CWRM D&O Alternative

For this alternative, the Water Lease that would be put to public auction would allow surface water to be diverted from East Maui, but at a lower level than in the previous alternative. The water would be used to irrigate fields in Central Maui, and to continue water deliveries to the MDWS but at a lower level than under the Water Lease Limited to CWRM D&O alternative. Depending on the available supply of surface water, Maui Pono would have to scale down its Farm Plan to the amount of water available.

As mentioned previously, this alternative is not included in the tables because no particular amount of decreased flow of surface water from East Maui is currently known. However, Section 13 provides information needed to estimate agricultural and related economic impacts for various levels of reduced flow of surface water

— No Water Lease Alternative

For the this alternative, no surface-water would be diverted from State lands in East Maui. Surface water would continue to flow to Central Maui, but it would be limited to waters originating from private lands. Nearly all available water would be used to irrigate fields in Central Maui. Because the agreements with MDWS provide that the delivery of water to MDWS for Upcountry Maui is contingent upon the Lease being issued, no water is presumed to be provided to the MDWS.

This alternative would require major changes to the Mahi Pono Farm Plan in order to reduce their demand for irrigation water and match the available supply.

The estimated agricultural impacts discussed in the following sections are for the year 2030.

### **c. Duration of Lease**

A&B is requesting that the State offer at public auction a long-term (30 years) Water Lease in order to provide sufficient time for Mahi Pono to implement its Farm Plan, returning agriculture to approximately 30,000 acres in Central Maui, and to provide a return on its investment.

An estimated 10 years will be required for Mahi Pono and lessees to remove volunteer (i.e., rogue) sugarcane and weeds from 30,000 acres, amend soils, install field improvements (e.g., irrigation systems, fencing, etc.), build warehouses and other structures), and plant crops.

In addition, about 5 years or more will be required for avocado, citrus and coffee trees to reach full maturity, and 12 years or more for macadamia nuts. After reaching maturity, macadamia nuts trees will provide yields for 35 years or more, citrus and coffee for 50 years or more, and avocado for over 100 years.

In order for Mahi Pono and other farmers to justify the very substantial investment in a 30,000-acre farm, a long-term water lease will be required. A short-term lease would derail development of the Mahi Pono Farm Plan—or any long term agricultural use of the Central Maui fields including any plan to convert the Central Maui lands to diversified agriculture—because of the risk of not being able to farm for a long enough period to recover their planned investment.

Conversely, the longer the term of the Water Lease, the greater the agricultural and economic benefits because of the certainty that comes from a long-term lease, which could encourage greater investment in long-term improvements. The State has the authority to issue a Water Lease with up to a 65-year term. However, the analysis used herein assumes a 30-year Water Lease.

## **5. AGRICULTURAL CONDITIONS**

### **a. Central Maui**

#### Acreage and Layout

The Central Maui fields are shown in Figure 3, and include the areas east of Maui Veterans Highway (areas in blue and purple). The blue areas are upper fields which can be irrigated only with surface water, and the purple fields are lower fields which can be irrigated with a mix of surface water and brackish groundwater.

The fields total about 30,000 acres encompassing most of Central Maui. As can be seen in Figure 3, the configuration is geographically compact.

#### Soil Ratings

Three classification systems are commonly used to rate Hawai'i soils: (1) Land Capability Grouping, (2) Agricultural Lands of Importance to the State of Hawai'i, and (3) Overall Productivity Rating. The soil ratings are for about 30,302 acres of the Central Maui fields that have been irrigated with water from the EMI System.

*Land Capability Grouping (NRCS Rating)*

The 1972 Land Capability Grouping by the U.S. Department of Agriculture, **NRCS** rates soils according to eight levels, ranging from the highest classification level “I” to the lowest “VIII” defined as follows:

- Class I: few limitations that restrict their use.
- Class II: moderate limitations that reduce the choice of plants or require moderate conservation practices.
- Class III: severe limitations that reduce the choice of plants, require special conservation practices, or both.
- Class IV: very severe limitations that reduce the choice of plants, require very careful management, or both.
- Class V: not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture or range, woodland, or wildlife habitat.
- Class VI: severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife habitat.
- Class VII: very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife habitat.
- Class VIII: limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife habitat, or water supply, or to esthetic purposes.

The sub-classification defines the limitations:

- c: climate/limited rainfall.
- e: subject to erosion.
- s: stoniness, unfavorable texture, shallowness, or low water-holding capacity.
- w: excess water/poorly drained.

Figures 4 and 5 show the NRCS ratings of the Central Maui agricultural lands, with and without irrigation. Based in geographic information system (**GIS**) analysis by Munekiyo Hiraga, Inc. (**MHI**), the estimated acreages for each class, with and without irrigation, are as follows:

|             | <u>Acres, with Irrigation</u> | <u>Acres, without Irrigation</u> |
|-------------|-------------------------------|----------------------------------|
| — Class I   | 4,449 (14.7%)                 | 0                                |
| — Class II  | 17,216 (56.8%)                | 1,644 (5.4%)                     |
| — Class III | 3,051 (10.1%)                 | 5,233 (17.3%)                    |
| — Class IV  | 2,629 (8.7%)                  | 15,364 (50.7%)                   |
| — Class V   | 0                             | 0                                |

---

|             |                  |                  |
|-------------|------------------|------------------|
| — Class VI  | 282 (0.9%)       | 5,386 (17.8%)    |
| — Class VII | 2,642 (8.7%)     | 2,642 (8.7%)     |
| — Not rated | <u>33</u> (0.1%) | <u>33</u> (0.1%) |
| — Total     | 30,302           | 30,302           |

With irrigation, approximately 71.5% of the fields are rated Class I or Class II. However, without irrigation, no lands are rated Class I and only about 5.4% are rated Class II.

*Agricultural Lands of Importance in the State of Hawai‘i (ALISH)*

ALISH ratings were developed in 1977 by the NRCS, UH College of Tropical Agriculture and Human Resources, and the State of Hawai‘i, Department of Agriculture. This system classifies land into three broad categories:

- Prime: agricultural land which is land that is best suited for the production of crops because of its ability to sustain high yields with relatively little input and with the least damage to the environment.
- Unique: agricultural land which is non-Prime agricultural land used for the production of specific high-value crops.
- Other: agricultural land which is non-Prime and non-Unique agricultural land that is important to the production of crops.

Figure 6 shows the ALISH ratings of the Central Maui agricultural lands. The estimated acreages for each rating are as follows:

|             |                     |
|-------------|---------------------|
|             | <u>Acres</u>        |
| — Prime     | 25,669 (84.7%)      |
| — Unique    | 0                   |
| — Other     | 2,254 (7.4%)        |
| — Not rated | <u>2,378</u> (7.9%) |
| — Total     | 30,302              |

These ratings reflect the fact that the Central Maui lands were irrigated in 1977. With less water, less acreage would be rated as Prime.

*Overall Productivity Rating (LSB Rating)*

In 1967, the UH Land Study Bureau (LSB) developed an Overall Productivity Rating for Maui soils, which classifies soils according to five levels, with “A” representing the class of highest productivity and “E” the lowest. The ratings reflect the irrigation in 1967.

Figure 7 shows the LSB ratings of the Central Maui agricultural lands. The estimated acreages for each rating are as follows:

|             | <u>Acres</u>      |
|-------------|-------------------|
| — A         | 24,128 (79.6%)    |
| — B         | 3,439 (11.3%)     |
| — C         | 1,443 (4.8%)      |
| — D         | 667 (2.1%)        |
| — E         | 438 (1.4%)        |
| — Not rated | <u>207</u> (0.7%) |
| — Total     | 30,302            |

About 27,567 acres (90.9%) are high-quality lands rated A or B.

These ratings reflect the fact that the Central Maui lands were irrigated in 1967. With less water, less acreage would be rated as A or B.

#### *Summary Evaluation of Soil Quality*

In this report, the term **“high-quality farmland”** is used to describe land that is rated I or II by NRCS, Prime or Unique by ALISH, or A or B by the LSB. Under this definition, 27,097 acres in Central Maui consist of high-quality farmland (see Figure 8). The high-quality farmlands are scattered throughout Central Maui.

With less water, less acreage would be rated as high-quality farmland.

#### Sugar Yields

Another measure of the agronomic quality of the Central Maui lands is average sugar yields. Assuming good agricultural practices, yields are generally higher for fields having good soils, high solar radiation, and sufficient water. Lands considered good for growing sugarcane are good for growing many other crops.

Figure 9 shows average sugar yields (tons per harvested acres) in Central Maui for the 1994-to-2016 period. Hawai‘i sugarcane was a 2-year crop, unlike most other areas throughout the world where cane is grown as a 1-year crop. Thus, annual yields are half the numbers shown in Figure 9.

Figure 9 is consistent with Figure 8; the good farmlands in Central Maui are scattered throughout the former plantation.

#### Elevations

Elevations of the Central Maui fields range from 5 feet to 1,100 feet in mauka areas.



### Slopes

Slopes of the Central Maui fields range from zero to over 7%. During severe rains storms, level fields are more prone to flooding and possible losses of vegetable crops, while fields having higher slopes are more prone to erosion.

### Climatic Conditions

Like other areas in Hawai‘i, Central Maui has a mild *semitropical* climate that is due primarily to three factors: (1) Hawai‘i’s mid-Pacific location near the Tropic of Cancer, (2) the surrounding warm ocean waters that vary little in temperature between the winter and summer seasons, and (3) the prevailing northeasterly tradewinds that bring air having temperatures which are close to those of the surrounding waters.

### *Solar Radiation*

Central Maui receives considerable sunshine, with average daily insolation ranging from slightly less than 450 calories per square centimeter per day in mauka areas, to over 500 calories near Pā‘ia (see Figure 10). Other high-quality farm areas in the State—such as Kunia and ‘Ewa on O‘ahu, and the fields in the southwest corner of Kaua‘i—have similar high-levels of solar radiation.

### *Rainfall*

Average annual rainfall in the Central Maui ranges from less than 15 inches per year in the southern part of the isthmus to over 50 inches in the north-eastern area of Central Maui (see Figure 11). Most of this rainfall occurs during the winter rainy season (October through April), while the summer months (May through September) are hot and dry.

Because of the low annual rainfall and/or seasonal rainfall, irrigation water is needed to grow crops in Central Maui.

### *Temperatures*

Average temperatures range from the low 60s in the winter to the mid 80s in the summer. The mild temperatures are favorable for growing many crops.

### *Winds*

The prevailing tradewinds blow from a northeasterly direction across the isthmus and out to sea. Occasional strong winds can cause crop damage if they are not protected by windbreaks.

### Irrigation Water and Salinity

The Central Maui fields can be irrigated with water from two sources: (1) East Maui surface water delivered by the EMI System and (2) brackish groundwater wells. Fields west of Maui Veterans Highway, which are not included in the analysis, can be irrigated with surface water from the West Maui Ditch System and supplemental brackish groundwater. Water from the West Maui Ditch System are not used to irrigate fields east of Maui Veterans Highway.

### *Surface Water*

A major advantage of farming Central Maui fields is that the EMI System can deliver by gravity a large volume of water at relatively low delivery cost. For the 2008-to-2013 period, the delivery cost was about 3.9 cents per 1,000 gallons vs about 52 cents for brackish groundwater. This accounting includes the payments to the State for the water, but does not include the cost of delivering surface water from Maliko Gulch to the fields in Central Maui—costs which were borne by HC&S. Also the cost of surface water per 1,000 gallons will increase with less available surface water since fixed costs will be spread over a smaller volume of water.

For comparison, the MDWS buys water from Wailuku Water Co. and Maui Land and Pine at 53.5 cents and 27.6 cents per 1,000 gallons, respectively. Farmers in Central O‘ahu—who compete with Maui farmers in the Honolulu and export markets—are charged 58 cents per 1,000 gallons for surface water from Waiahole Ditch.

The higher-elevation fields in Central Maui can be irrigated only with surface water from the EMI System for two reasons: (1) the high pumping cost of groundwater, and (2) the existing water-distribution system was not designed to deliver expensive groundwater to these higher-elevation fields.

Surface water is also used on the lower-elevation fields, but it is mixed with brackish groundwater. The surface water lowers the salinity (which can adversely affect crop yields), and reduces pumping costs.

### *Brackish Groundwater*

Brackish groundwater is available from 15 brackish wells in Central Maui having a combined pumping capacity of 228 million gallons per day (**mgd**).<sup>3</sup> For the 2008-to-2013 period, these wells delivered about 70 mgd of brackish groundwater to the lower-elevation fields that were planted in sugarcane. The brackish groundwater is mixed with surface in order to lower the salinity of the water applied to crops. Because of salinity and the salt

---

3. "Pumping capacity" as used here refers to the size of the currently installed pumps and not the quality or quantity of the water source.

tolerance of crops, the useable supply of brackish groundwater is limited by the supply of surface water.

As mentioned, water from these wells is comparatively expensive at about 52 cents per 1,000 gallons. This cost is based on electricity provided by Maui Electric Company (MECO) to power the pumps.

### *Salinity of Irrigation Water*

According to the Maui Department of Water Supply, “Many of the older high-capacity irrigation wells and shafts operated by sugarcane plantations in central Maui reported salinity exceeding 4 percent of seawater” (“Maui Island Water Use and Development Plan Draft, Part III Regional Plan, Central Aquifer Sector Area,” Nov. 2018). Akinaka & Associates (A&A) found that, during prolonged droughts, the brackish groundwater in Central Maui had average salinity of about 3.6% seawater (chlorides of about 703 mg/L), and this level of salinity is assumed for analysis.

Crops sensitive to salinity can be irrigated with diluted brackish water with little reduction in yields, provided that the water is less than about 0.9% seawater (derived from Government of Western Australia, Department of Agriculture and Food, “Water Salinity and Plant Irrigation,” and Wikipedia, “Salt Tolerance of Crops”).

Less than half of the crops planned for the lower-elevation fields are sensitive to salinity. With this in mind, a reasonably aggressive adjustment to this 0.9% seawater mix would result in irrigation water containing about 1.1% seawater. This adjustment would result in a target figure for irrigation water in the lower elevation fields of Central Maui of more than 70% surface water and less than 30% brackish groundwater ( $30\% \times 3.6\% = 1.1\%$ ). The upper elevation fields of Central Maui would be irrigated with 100% surface water. Combining the upper and lower fields, the overall water split across all 30,000 acres would be approximately 80% surface water and 20% brackish groundwater water.

The irrigation system in Central Maui was not designed to vary the mix of surface water and brackish groundwater to accommodate crop needs of different fields. As a result, the surface-to-groundwater mix will be the same across all of the lower fields that can be irrigate with groundwater.

### Road Access

Access to the Central Maui fields is provided by Hāna Highway, Haleakalā Highway, Maui Veterans Highway, and Baldwin Avenue. In addition, many miles of plantation roads allow movement within the former HC&S plantation.

### Surrounding Uses

Surrounding uses are as follows:

- West: former sugarcane lands most of which are planned by Mahi Pono for continued agricultural use. These lands are irrigated with (1) surface water from the West Maui Ditch System and (2) brackish groundwater.
- North: coastal communities.
- East: agriculture and limited urban develop.
- South: coastal communities, Kealia Pond National Wildlife Refuge, and ranching.

### Locational Advantages and Disadvantages

#### *Maui Island Market*

Farmers in Central Maui are well-located for supplying the Maui Island market because of the short trucking distance to Kahului, which is the Island's commercial, industrial, processing, distribution and transportation center. Kahului and nearby communities are also the largest population center on the island for both customers and labor.

While the Maui Island market is significant, it is comparatively small: in 2015, Maui County had a *de facto* population of about 215,190 residents and visitors.

#### *Honolulu Market*

All Maui farmers are at a disadvantage when competing against O'ahu farmers in supplying the Honolulu market due to inter-island shipping costs, delays and extra handling. In comparing barge and air-cargo services, shipping by barge is less expensive and larger loads can be shipped, but the shipments are slow and infrequent. Air service is faster and frequent, but it is far more expensive and capacities are limited.

In 2015, O'ahu had a *de facto* population of about 1,054,386 residents and visitors—over five times greater than the Maui market.

#### *Mainland Market*

Compared to Hawai'i, the mainland market is enormous: in 2015, the U.S. population totaled 320.9 million. In supplying this market with products that can be carried by container ship—i.e., crops having long shelf-lives such as coffee, nuts, and canned fruit—farmers on Maui are competitive with farmers on O'ahu and the other islands. Even though freight from Maui must first be barged to Honolulu then transferred onto a container ship, Matson's overseas shipping service includes inter-island barge service at no additional fee. With the exception of some minor port charges, Matson charges a common fare for all the islands.

In the case of fresh crops that must be shipped by air to the mainland—i.e., crops having short shelf-lives such as fresh vegetables, fruits, and flowers—farmers on Maui are at a disadvantage compared to O'ahu farmers because most mainland air cargo is shipped via Honolulu's Daniel K. Inouye International Airport. Compared to farmers on O'ahu, Maui farmers encounter additional costs, delays, and handling to cover inter-island air-cargo

service and transferring the fresh crops from small inter-island aircraft to large overseas aircraft.

However, overseas air-cargo service from Maui has improved because the current generation of aircraft can depart from the short runway at Kahului with a full load of passengers and a full load of cargo in the hold. This direct service allows farmers on Maui to be more competitive in mainland markets. However, the lift capacity from Maui is limited by the number of direct flights.

In the U.S. mainland market, Hawai‘i farmers must also compete against farmers on the mainland and in Mexico, Central and South America, Southeast Asia, etc. Most of the competing farm areas have lower production and delivery costs than Hawai‘i does. Competing against Mexico is particularly difficult given the North America Free Trade Agreement (NAFTA) and Mexico’s proximity to major U.S. markets.

#### Summary of Locational Advantages

In terms of location, farmers in Central Maui are well-situated to supply the small Maui Island market. And compared to other farmers in Hawai‘i, they can also compete reasonably well in supplying mainland markets, as long as their crops have long shelf-lives and so can be shipped by surface vessel.

However, compared to farmers on O‘ahu, they are at a disadvantage in supplying the Honolulu market. Furthermore, they are at a disadvantage in supplying mainland markets if their crops have short shelf-lives and so must be shipped by air. Also, farmers on Maui are at a disadvantage in competing against the low-cost producers who supply mainland markets.

#### Land-Use Designations

About 29,455 acres (98%) of the subject 30,000 acres of farmland in Central Maui are in the State Agricultural District. About 545 acres scattered among 18 parcels are designated Urban. Even though these lands are designated Urban, they are zoned Agriculture and Mahi Pono does not plan to develop them for urban uses.

At the County level, all of the subject 30,000 acres are designated for agricultural use in various plans, and are zoned Agriculture.

In addition, most of the Central Maui farmland is designated as Important Agricultural Lands (IAL)—see Figure 12. In 2009, the State Land Use Commission (LUC) approved a petition by A&B to designate 27,102 acres of its Maui lands as IAL, including about 23,000 acres of its Central Maui lands serviced by the EMI System.

As stated in HRS Chapter 205: “The objective for the identification of important agricultural lands is to identify and plan for the maintenance of a strategic agricultural land resource base that can support a diversity of agricultural activities and opportunities that expand agricultural income and job opportunities and increase agricultural self-sufficiency



for current and future generations.” IALs are defined as lands that: “(1) Are capable of producing sustained high agricultural yields when treated and managed according to accepted farming methods and technology; (2) Contribute to the State's economic base and produce agricultural commodities for export or local consumption; or (3) Are needed to promote the expansion of agricultural activities and income for the future, even if currently not in production.”

The IAL designation provides the farmer access to incentives that promote profitable agricultural operations. Incentives include the approval to construct on-site farm dwellings and employee housing, income tax credits for agricultural costs, financing opportunities, loan guarantees, and expedited State-level permitting for agricultural processing facilities.

#### Potential Urbanization of Ag Land

Portions of the Central Maui farmland abut land in the Urban District (see Figure 3). However, Mahi Pono is not planning urban development on any of its farmland.

#### Ag Lease Terms

Subject to the terms of the Water Lease, Mahi Pono plans to offer favorable lease terms for its lands in Central Maui, including anticipated rents of \$150 per acre per year. This rate is low compared to annual per-acre rents of about \$350 for large farm parcels on O‘ahu, over \$400 for State Ag Parks on O‘ahu, and about \$1,200 for the County’s Kula Ag Park.

#### Summary of Agricultural Conditions

Central Maui has some of the best agricultural conditions in the State for farming, including a large area in a compact configuration, high-quality soils, high solar radiation, a location near markets and shipping terminals, and potentially ample water at low delivery costs (assuming a new Water Lease with a reasonable use fee), and for lessees rents that will be comparatively low.

### **b. Upcountry Maui**

#### Agricultural Lands and Activities

The Upcountry Water System Service Area is shown in Figure 13, and the agricultural lands and activities in this area are shown in Figure 14.

#### Soil Ratings

Figures 15 and 16 show the NRCS ratings of Upcountry agricultural lands, with and without irrigation. For Kula, the estimated acreages for each class, with and without irrigation, are as follows:

|             | <u>Acres, Irrigated</u> | <u>Acres, Non-irrigated</u> |
|-------------|-------------------------|-----------------------------|
| — Class I   | 0                       | 0                           |
| — Class II  | 0                       | 0                           |
| — Class III | 384 (85.9%)             | 0                           |
| — Class IV  | 0                       | 384 (86.0%)                 |
| — Class V   | 0                       | 0                           |
| — Class VI  | 48 (10.8%)              | 48 (10.8%)                  |
| — Class VII | 0                       | 15 (3.3%)                   |
| — Not rated | <u>15</u> (3.3%)        | <u>0</u>                    |
| — Total     | 447                     | 447                         |

For the other Upcountry lands, estimated acreages for each class, with and without irrigation, are as follows:

|              | <u>Acres, Irrigated</u> | <u>Acres, Non-irrigated</u> |
|--------------|-------------------------|-----------------------------|
| — Class I    | 1 (0.0%)                | 0                           |
| — Class II   | 5,614 (9.2%)            | 5,466 (9.0%)                |
| — Class III  | 9,010 (14.8%)           | 8,933 (14.6%)               |
| — Class IV   | 6,834 (11.2%)           | 20,121 (33.0%)              |
| — Class V    | 0                       | 0                           |
| — Class VI   | 6,172 (10.1%)           | 14,177 (23.2%)              |
| — Class VII  | 12,088 (19.8%)          | 12,088 (19.8%)              |
| — Class VIII | 178 (0.3%)              | 178 (0.3%)                  |
| — Missing    | 21,067                  |                             |
| — Not rated  | <u>76</u> (0.1%)        | <u>76</u> (0.1%)            |
| — Total      | 61,040                  | 61,040                      |

Figure 17 shows the ALISH ratings for the Upcountry agricultural lands. The estimated acreages for each rating are as follows:

|             | <u>Acres, Kula</u> | <u>Acres, Other Upcountry</u> |
|-------------|--------------------|-------------------------------|
| — Prime     | 63 (14.1%)         | 14,893 (24.4%)                |
| — Unique    | 0                  | 18 (0%)                       |
| — Other     | 354 (79.1%)        | 28,331 (46.4%)                |
| — Not rated | <u>30</u> (6.8%)   | <u>17,797</u> (29.6%)         |
| — Total     | 447                | 61,040                        |

Figure 18 shows the LSB ratings for the Upcountry agricultural lands. The estimated acreages for each rating are as follows:

|             | <u>Acres, Kula</u> | <u>Acres, Other Upcountry</u> |
|-------------|--------------------|-------------------------------|
| — A         | 432 (96.6%)        | 16,723 (27.4%)                |
| — B         | 0                  | 4,802 (7.9%)                  |
| — C         | 0                  | 22,392 (36.7%)                |
| — D         | 0                  | 12,933 (21.2%)                |
| — E         | 0                  | 2,294 (3.8%)                  |
| — Not rated | <u>15</u> (3.4%)   | <u>1,896</u> (3.1%)           |
| — Total     | 447                | 61,040                        |

About 432 acres of the Kula agricultural lands and about 17,134 acres of the Other Upcountry lands consist of high-quality farmland (see Figure 19).

### Climatic Conditions

#### *Solar Radiation*

Upcountry Maui receives moderate sunshine, with average daily insolation ranging from less than 350 to 450 calories per square centimeter per day, although a small portion of Upcountry Maui receives 500 calories (see Figure 20). The Kula Ag Park receives about 450 calories per square centimeter per day.

#### *Rainfall*

Average annual rainfall in Upcountry Maui ranges from 15 to nearly 120 inches (see Figure 21). The Kula Ag Park receives an average of less than 25 inches per year.

#### *Temperatures*

At Kula, average temperatures range from the low 50s in the winter to the high 70s in the summer.

#### *Winds*

As with Central Maui, the prevailing tradewinds in Upcountry Maui blow from a northeasterly direction. Occasional strong winds can cause crop damage if they are not protected by windbreaks.

### Irrigation Water

The MDWS supplies irrigation water to the small farmers in Upcountry Maui. For large-volume users, the cost is \$1.10 per 1,000 gallons for potable (treated) water and \$1 per

1,000 gallons for non-potable water. These rates are far more expensive than the irrigation water for Central Maui sourced from the EMI System or private brackish wells (see Subsection 5.a).

EMI charges 6 cents per 1,000 gallons to deliver East Maui surface water to the MDWS for the Kula Ag Park and other Upcountry farm areas, as well as for domestic use. This charge includes (1) EMI's cost to deliver water to Maliko Gulch (about 3.9 cents), plus (2) HC&S's cost to deliver water from Maliko Gulch to the MDWS system.

In the future, EMI's charges to the MDWS could increase because (1) the fixed costs EMI incurs will be spread over a lower volume of water diverted from East Maui, and (2) the lease payments and conditions attached to Lease from the State for water diverted from State lands could be costly.

#### Road Access

Access from Upcountry Maui to the markets and shipping terminals in Kahalui are provided via Kula Highway and Haleakalā Highway. Trucking distance from the Kula Ag Park to the harbor is about 14 miles.

#### Surrounding Uses

The Kula Ag Park and many of the Upcountry grazing lands are surrounded by open space, while many of the small farms are located near residential communities.

#### Locational Advantages and Disadvantages

The locational advantages and disadvantages for Upcountry Maui are similar to those for Central Maui, although the trucking distances are longer.

#### Summary of Agricultural Conditions

Upcountry Maui has lands that are suitable for farming, but the general conditions are not as good as those in Central Maui. The farms are small and scattered, solar radiation is less, farms are farther from markets and shipping terminals, water is limited and expensive, and annual rents at the Kula Ag Park are much higher than those planned for Central Maui (\$1,200 per acre vs \$150 per acre).

#### **c. East Maui**

Because of the heavy rainfall on the windward slopes of Haleakalā and the many streams in East Maui, many *makai* areas along the streams are well-suited for growing taro

and truck crops. Also, a number of the landowners have appurtenant and riparian rights to use water from these streams for farming. The East Maui taro streams are shown in Figure 22.

Collectively, the known landowners have about 45 acres in East Maui that are suitable for growing taro, and about 35 acres suitable for truck crops (see Section 8.c). This accounting includes only the known existing and potential farms in East Maui addressed by the CWRM D&O.

Solar radiation for these areas is less than 350 calories per square centimeter per day, which is similar to or slightly below other taro-growing areas in Hawai‘i.

## **6. OUTLOOK FOR AGRICULTURE**

### **a. Central Maui**

Provided that sufficient water is available, Central Maui is expected to host a major expansion in crop farming and cattle grazing. As indicated above, the area has very favorable conditions for agriculture, including:

- A very large supply of agricultural land in a compact configuration.
- Favorable agronomic conditions for much of this land (i.e., high-quality soils, high solar radiation, moderate slopes, etc.).
- Access to water delivered at a relatively low cost through the EMI System, assuming the Water Lease Limited to CWRM D&O Alternative and no significantly higher costs that result from the Water Lease rent payments and conditions (the delivery includes the payments to the State for the Water Lease).

In late December 2018, A&B announced that it sold (1) about 41,000 acres of Central Maui land to Mahi Pono, including almost all the farmland serviced by the EMI System. However, A&B retained ownership of the Pu‘unēnē mill property and other remnant parcels.

Mahi Pono is a joint farming venture between (1) Pomona Farming LLC based in California, and (2) Public Sector Pension Investment Board of Canada. The Mahi Pono team has significant experience cultivating diverse crops and managing cattle operations on more than 100,000 acres on the continental U.S. Also, the company has established market channels, and substantial financial resources.

Mahi Pono’s current plans for Central Maui envision cultivating a broad range of food and non-food crops for local consumption and export, including orchard crops (citrus, macadamia nuts, coffee, avocado, etc.), tropical fruits, vegetables and melons, row crops, annual crops, energy crops, and grass-fed cattle. In addition, the company plans to lease some of its land to other farmers at favorable terms, including relatively low rents (anticipated to be \$150 per acre per year) for long periods. Orchard crops reflect a long-term commitment to farming.



To the extent economically feasible, Mahi Pono and other farmers on its land will grow food crops for the Hawai'i market. However, the Hawai'i market is too small to use all of the available farmland in Central Maui solely to serve the Hawai'i market, and thus some export is necessary. Currently, Hawai'i farmers use about 15,000 acres to supply about one-third of the fresh fruits, vegetables and melons consumed in Hawai'i (this does not include nuts or coffee). Self-sufficiency is low because of low-cost imports from the mainland.

Depending on the supply of surface water delivered to Central Maui, the amount of land used could range from (1) about 5,280 acres in crops and 24,470 acres in pasture, to (2) about 15,950 acres in crops and 13,800 acres in pasture. An additional 250 acres would be used for green energy.

Mahi Pono paid about \$6,400 per acre for its purchase of the Central Maui fields. This compares to over \$30,000 per acre for large parcels of good farmland on O'ahu, and about \$100,000 per acre for farmland in Oxnard, California, which is about 60 miles west-northwest of the large Los Angeles market and shipping terminals. The price Mahi Pono paid for the land may assist with their goal of achieving profitable agricultural operations without requiring supplemental income from non-agricultural activities.

Central Maui agricultural land that cannot be farmed—possibly because of insufficient water or insufficient demand for crops that can be profitably grown in the area—is likely to be used for grazing cattle. Even though cattle grazing yields far lower returns and employment per acre than does farming, cattle grazing provides four benefits: (1) a productive use of agricultural land; (2) land management by the rancher (e.g., erosion control, preventing illegal dumping, etc.); (3) reduced fire hazard because the cattle help control the vegetation; and (4) reduced property taxes because the land is assessed at its agricultural value instead of its market value.

#### **b. Upcountry Maui**

The EMI System supplies water to the MDWS, which in turn treats and distributes a portion of this water to small farms in Upcountry Maui and the remainder to domestic users. The EMI System also delivers water to the County's Kula Ag Park distribution system. The supply of water delivered by the EMI System to the MDWS would remain at its current level under the Water Diversions Limited to the CWRM D&O Alternative. However, the charge by EMI to deliver water to MDWS could increase (see Section 5.b).

In 2018, A&B sold 262 acres to the County for the expansion of the Kula Ag Park, and agreed to supply the MDWS with 1 mgd of surface water from the EMI System to meet the needs of the expansion area, subject to the continuation of State permits or issuance of the Water Lease. The needed water allocation will result from infrastructure improvements to the reservoir and pumps that serve the Ag Park, and use existing deliveries from the EMI System more efficiently. Thus, the current level of water deliveries to the Kula Ag Park will suffice for both the existing and expanded Kula Ag Park areas.

The County has expressed a desire to expand the Park by an additional 610 acres, however this has not been funded or currently pursued. This expansion would require additional water be made available to the County from the EMI System.

Other than the Kula Ag Park, no significant increase of commercial agriculture is expected to occur in Upcountry Maui, primarily because Central Maui offers an abundant supply of high-quality farmland, higher solar radiation, flatter terrain, a location closer to markets and shipping terminals, and potentially far better access to water at a lower water rate. However, some residents of Upcountry Maui may engage in limited semi-commercial agriculture because they are attracted to the farming lifestyle, and farming would lower their property taxes. These semi-commercial farmers may sell some of their crops to help cover operating costs.

For the No Water Lease Alternative, water deliveries by the EMI System to the MDWS would drop to zero. As discussed in Section 9.b below, several years would be required for the MDWS to develop groundwater wells or other alternatives to fill the shortfall in supply, and the feasibility of such development is uncertain. Assuming domestic customers would have priority over agricultural customers, farmers in Upcountry Maui would lack water to irrigate their crops until the new wells are operational. As a result, farms would close or relocate to Central Maui. Even after the new wells are operational, little commercial farming is expected to return to Upcountry Maui because Central Maui has better conditions for farming.

For the Water Lease with Less than CWRM D&O Alternative, this report assumes the impacts on farming would be proportional to the reduction in the supply of water delivered by the EMI System to the MDWS.

### **c. East Maui**

A number of East Maui farmers divert stream water to irrigate taro lo‘i and small farms. Taro farming is a chosen way of life and an important cultural activity for many.

In the past, farmers in East Maui have reported that surface-water diversions to supply water to Central Maui left insufficient water in the streams for them to take full advantage of the agricultural potential in East Maui (CWRM D&O).

However, in light of the D&O, ample stream water should now be available to irrigate taro lo‘i and the small farms relying on East Maui streams. As mentioned previously, the D&O “will return free flowing water, with no upstream diversions, to all streams which have historically supported significant kalo cultivation ...” The large volume of water that flows out of the taro lo‘i can be used to irrigate other crops.

Given the CWRM D&O to fully restore the flow of all taro streams in East Maui, all alternatives are expected to result in the same expansion of taro and other farming in East Maui.

## 7. WATER SUPPLY AND ALLOCATION

Table 1 summarizes the supply and allocation of surface water from the EMI System, plus supplemental brackish groundwater used in Central Maui. The table covers the three past water diversions and two of the water-lease alternatives defined in Section 4.

### a. Past Water Diversions

#### Typical Sugar (2006 Crop)

A&B regards 2006 as typical during healthy sugar operations: rainfall in East Maui was regarded as normal, the restoration of stream flows was not large enough to significantly affect HC&S sugar operations, and the plantation was economically healthy.

To grow the 2006 sugarcane crop, the EMI System delivered an average of about 156.5 mgd based on daily readings measured at Maliko Gulch (see Table 1, Section 1.a). In actuality, flows vary greatly from day to day. This figure is a weighted average based on 30% of the EMI System flow in 2004, 55% of the flow in 2005, and 15% of the flow in 2006. A weighted average is used because Hawaiian sugarcane is normally a 2-year crop which requires more water in the initial months, and no water during the last month or so before harvesting.

The corresponding supply of brackish groundwater was approximately 42.5 mgd (see Table 1, Section 1.a). Thus the total water supply was about 199 mgd.

The 199 mgd were used as follows: (1) about 3 mgd by the MDWS for delivery to Upcountry Maui, (2) 143 mgd to irrigate sugarcane in Central Maui, (3) 0.25 mgd to irrigate pineapple, (4) 8 mgd for HC&S industrial activities, and (5) 44 mgd for system losses (see Table 1, Section 1.b).

System losses due to evaporation and leakage are estimated at 22.7% of the gross water use by agriculture, but excluding the water used for pineapple since the fields were close to Maliko Gulch (195.81 mgd total Ag use, less 0.25 mgd for pineapple  $\times$  22.7% = 44.39 mgd). The 22.7% figure for system losses is used for all water-lease alternatives.

After system losses, about 151 mgd were used for sugar operations (143.19 mgd for irrigation + 7.98 mgd for HC&S industrial uses = 151.17 mgd). About 95% of the water was used for irrigation (143.19 mgd  $\div$  151.17 mgd = 94.72%).

Of the 143 mgd that were used to irrigate sugarcane, about 112 mgd were surface water and 31 mgd were brackish groundwater (42.50 mgd gross supply of groundwater less system losses of 22.7%  $\times$  94.72% used for irrigation = 31.12 mgd of groundwater applied after system losses). Thus, brackish groundwater supplied about 22% of the water that was used for irrigating sugarcane (31.12 mgd  $\div$  143.19 mgd = 21.7%).

As shown in Section 1.c of Table 1, water delivery costs were about 3.5 cents per 1,000 gallons for surface water (MHI). The delivery costs for the surface water includes the payments to the State for the Water Lease.

### Recent Sugar (Years 2008 to 2013)

During the last 6 years of full sugarcane operations, and as reported in the CWRM D&O, A&B diverted an average approximately 114 mgd of surface water from East Maui, and pumped an average of approximately 70 mgd of brackish groundwater, for a total water supply of approximately 184 mgd (see Table 1, Section 1.a).

During the 2008-to-2013 period, the average supply of surface water was about 43 mgd less than that for the Typical Sugar Baseline ( $156.54 \text{ mgd} - 113.71 \text{ mgd} = 42.83 \text{ mgd}$ ). The reduction in surface water was due to (1) less rainfall and (2) stream-flow restoration in East Maui.

During the subject 6-year period, the average gross supply of about 184 mgd of surface water and brackish groundwater was used as follows: (1) approximately 7.1 mgd by the MDWS for delivery to Upcountry Maui, (2) approximately 132 mgd to irrigate sugarcane, (3) approximately 7 mgd for other uses in Central Maui, and (4) approximately 42 mgd for system losses (see Table 1, Section 1.b). The table also shows an adjustment of about 4 mgd due to under reported use by the MDWS in the CWRM D&O.

System losses due to evaporation and leakage are calculated to be approximately 23.05% of the gross water use by agriculture for the subject period.

After system losses, about 139 mgd were used for sugar operations ( $132.45 \text{ mgd}$  for irrigation +  $6.66 \text{ mgd}$  for HC&S industrial and other uses =  $139.11 \text{ mgd}$ ). Thus, about 95% of the water was used for irrigation ( $132.45 \div 139.11 = 95.21\%$ ).

Of the approximately 132 mgd that were used to irrigate sugarcane, about 81 mgd were surface water and 51 mgd were brackish groundwater ( $69.9 \text{ mgd}$  gross supply of groundwater less system losses of  $23.05\% \times 95.21\%$  used for irrigation =  $51.21 \text{ mgd}$  of groundwater applied after system losses). Thus, brackish groundwater supplied about 39% of the water to irrigate sugarcane ( $51.21 \text{ mgd} \div 132.45 \text{ mgd} = 38.7\%$ ). As noted in Section 3.a, a large volume of brackish groundwater was used to irrigate the sugarcane in order to maintain high levels of biomass for energy production, even though the high salinity decreased sugar yields.

As shown in Section 1.c of Table 1, water delivery costs were about 3.9 cents per 1,000 gallons for surface water, and about 52 cents per 1,000 gallons for brackish groundwater (MHI and A&B).

### Post Sugar (Year 2017)

After the closure of sugarcane operations, A&B reduced the flow of the EMI System to about 28 mgd in 2017 to meet the needs of MDWS, the initial diversified agricultural projects, and other existing Central Maui uses (see Table 1, Section 1.a). This 28 mgd is less than the 30.76 mgd available under the No Water Lease Alternative.

In 2017, A&B pumped a negligible amount of brackish groundwater. Thus, the total water supply was about 28 mgd.

Water uses included about (1) about 2.9 mgd by the MDWS to supply water to Upcountry Maui; (2) 1 mgd for industrial activities; (3) 4 mgd to irrigate crops; and (4) 20.5 mgd to maintain the reservoirs and for fire protection, plus system losses (not shown in Table 1). MDWS use of surface water from the EMI System was low in 2017 because heavy rainfall increased supplies from other County sources that depend on rainfall. As discussed in Section 9.b, about 1.5 mgd of the County water was for the Kula Ag Park and about 1.4 mgd was for other Upcountry users.

As shown in Section 1.c of Table 1, water delivery costs were about 16.2 cents per 1,000 gallons for surface water, and about 52 cents per 1,000 gallons for brackish groundwater (MHI and A&B). The cost of the surface water increased because fixed costs were spread over a much smaller volume of surface water from the EMI System.

## **b. Future Water-Lease Alternatives**

### Water Lease Limited to CWRM D&O Alternative (proposed action/preferred alternative)

For this alternative, the Water Lease that is put to auction would authorize continued diversions of surface water from State lands in East Maui up to the maximum allowed under the D&O. Most of the water would be used to irrigate crops in Central Maui. For Upcountry Maui and Nahiku, the EMI System would continue to supply water to the MDWS, but the supply would be maintained at its recent level and would not be increased to accommodate future growth. The charge by EMI to deliver water to MDWS will increase (see Section 5.b).

A&A estimates that compliance with the CWRM D&O would result in the EMI System being able to deliver a flow of 92.32 mgd (see Table 1, Section 1.a).

The supply of surface water from the EMI System would be reduced by about 66 mgd compared to the Typical Sugar Baseline (156.54 mgd less 92.32 = 64.22 mgd), and about 21 mgd compared to the Recent Sugar Baseline (113.71 mgd less 92.32 = 21.39 mgd).

Water deliveries by the EMI System to the MDWS would remain at about 7.1 mgd,<sup>4</sup> leaving about 84 mgd to irrigate crops in Central Maui (92.32 mgd from the EMI System less 7.1 mgd to the MDWS = 85.22 mgd).

Assuming a split of 80% surface water and 20% brackish groundwater for irrigating crops in Central Maui (i.e., a 4-to-1 mix), about 21 mgd of brackish groundwater would be required (85.22 mgd of surface water  $\div$  4 = 21.31 mgd). This 80%/20% split applies to the farm as a whole. However, all of the groundwater is applied to the lower fields, and none to the upper fields which are irrigated only with surface water. The resulting water mix that is applied to the lower fields is about 70% surface water and 30% brackish groundwater (see

---

4. 7.1 mgd was the long-term average presented in the CWRM D&O.



Table 3, Section 3.a). This mixture is consistent with safe use of brackish groundwater on diversified crops (see Section 5.a).

As shown in Section 1.a of Table 1, the water supply for the Central Maui fields and Upcountry Maui would total about 114 mgd (92.32 mgd of surface water plus 21.31 mgd of groundwater = 113.63 mgd).

As shown in Section 1.b of Table 1, agricultural water use in Central Maui would total about 107 mgd (a supply of 113.63 mgd less 7.1 mgd by the MDWS = 106.53). System losses are estimated at about 24 mgd (22.7% of 106.53 mgd = 24.18 mgd), leaving about 82 mgd applied to crops after system losses (106.53 mgd less 24.18 for losses = 82.34 mgd with rounding). Of this amount, about 66 mgd would be surface water (80% of 82.34 mgd = 65.88 mgd), and about 16 mgd would be brackish groundwater (20% of 82.34 mgd = 16.47 mgd). Some water would be used for industrial activities (e.g., the washing of crops), but the amount is not estimated.

As shown in Section 1.c of Table 1, water delivery costs would increase to about 6.8 cents per 1,000 gallons for surface water, and would remain at about 52 cents per 1,000 gallons for brackish groundwater. The delivery costs of the surface water includes the payments to the State for the water, and assumes that the rent payment will continue at its 2017 level.

#### Water Lease with Less than CWRM D&O Alternative

For this alternative, the Water Lease that is put to public auction would allow surface water to be diverted from East Maui, but at a lower level than in the previous alternative. As discussed in Section 4.b, this alternative is not included in the tables because no particular amount of decreased flow of surface water from East Maui is currently known.

#### No Water Lease Alternative

For this alternative, it is assumed that the State does not issue the requested Water Lease. And because the agreements between the County and A&B are contingent upon the Lease being issued, the supply of water to MDWS would terminate. As much water as possible from private lands in East Maui would be used to irrigate Central Maui fields.

Without the water from State lands, the EMI System would deliver a flow of about 31 mgd from private lands (see Table 1, Section 1.a). The surface water from the EMI System would be reduced by about 126 mgd compared to the Typical Sugar Baseline (156.54 mgd less 30.76 = 125.79 mgd with rounding), and about 83 mgd compared to the Recent Sugar Baseline (113.71 mgd less 30.76 = 82.96 mgd with rounding).

Assuming a split of 80% surface water and 20% brackish groundwater for irrigating crops in Central Maui, about 8 mgd of brackish groundwater would be required (30.76 mgd of surface water  $\div$  4 = 7.69 mgd). For the lower-elevation fields where groundwater is used,

this split translates to a mix of about 70% surface water and 30% brackish groundwater. As previously, this mixture is consistent with safe use of brackish groundwater on diversified crops. No brackish groundwater would be used on the higher-elevation fields.

As shown in Section 1.a of Table 1, the water supply for the Central Maui fields would total about 38 mgd (30.76 mgd of surface water plus 7.69 mgd of groundwater = 38.44 mgd with rounding).

All of this water would be used to irrigate crops in Central Maui. System losses are estimated at about 9 mgd (22.7% of 38.44 mgd = 8.73 mgd), leaving about 30 mgd applied to crops after system losses (38.44 mgd less 8.73 for losses = 29.72 mgd with rounding). Of this amount, about 24 mgd would be surface water (80% of 29.72 mgd = 23.77 mgd with rounding), and about 6 mgd would be brackish groundwater (20% of 29.72 mgd = 5.94 mgd).

As shown in Section 1.c of Table 1, water delivery costs would increase to about 12.9 cents per 1,000 gallons for surface water, and would remain at about 52 cents per 1,000 gallons for brackish groundwater.

## 8. AGRICULTURAL LAND USE

Table 2 shows acreages of past and projected agricultural land uses.

### a. Central Maui

#### Typical Sugar (2006 Crop)

HC&S grew sugarcane on fields in Central Maui from 1882 to 2016 (134 years). Over time, it grew to become the largest plantation in the islands, and it was the last Hawai'i sugar plantation to close. Its success was due to its large size and economies of scale, a compact configuration which reduced costs, favorable agronomic conditions (e.g., good soils and high solar radiation), and abundant low-cost water from the EMI System. Most of the HC&S fields were owned by A&B, but some were leased from the State and other entities.

For the 2006 crop year, HC&S grew sugarcane on about 35,180 acres, of which about 29,430 acres were irrigated by the EMI System and brackish groundwater wells, and about 5,750 acres were irrigated with water from the West Maui Ditch System and brackish groundwater wells (see Table 2, Section 2.a). For the fields irrigated by the EMI System, about 12,800 acres (43.5%) were upper fields irrigated only with surface water, and about 16,630 acres (56.5%) were lower fields irrigated with a mix of surface water and brackish groundwater.

#### Recent Sugar (Years 2008 to 2013)

For the 2008-to-2013 period, the above estimated acreages changed modestly (see Table 2, Section 2.a). The plantation was slightly larger at about 36,180 acres, of which about

30,320 acres were fields irrigated with water from the EMI System, including about 12,730 acres (42.0%) upper fields, and 17,590 acres (58%) lower fields.

Post Sugar (Year 2017)

In 2017, about 200 acres in Central Maui were used to grow the energy crop pongamia, and about 500 acres were for unirrigated pasture.

Water Lease Limited to CWRM D&O Alternative, Diversified Agriculture (Year 2030)

Mahi Pono has developed an initial Farm Plan consistent with the Water Lease Limited to CWRM D&O Alternative. This Plan will evolve over time based on a number of factors, including the available supply of surface water, experience which will be gained on crops that grow well in Central Maui, crops that are profitable, the size of the market for profitable crops, etc. For the Central Maui fields, planned estimated acreages are as follows (see Table 2, Section 2.a):

|  | <u>Acres</u> |
|--|--------------|
| — Crops  |              |
| • Community Farm (vegetables, melons, etc.)  | 800          |
| • Orchards (lemons, limes, mandarins, oranges, macadamia nuts, coffee, avocados, etc.) | 12,850       |
| • Tropical fruits (dragon fruit, guava, lilikoi, papaya, white pineapple, etc.)        | 600          |
| • Row crops and annual crops (potatoes, etc.)  | 1,200        |
| • <u>Energy crops</u>  | <u>500</u>   |
| • Total Crops  | 15,950       |
| — Pasture  |              |
| • Irrigated  | 4,700        |
| • <u>Unirrigated</u>   | <u>9,100</u> |
| • Total Pasture  | 13,800       |
| — <u>Green energy (solar farms)</u>  | <u>250</u>   |
| — Total Acreage  | 30,000       |

Over 80% of the land in crops will be used for orchards (12,850 acres ÷ 15,950 acres). As mentioned, orchard farming reflects a long-term commitment to agriculture.

About 6,390 acres of upper fields would be irrigated with just surface water because they cannot be irrigated with brackish groundwater, while about 14,260 acres of lower fields would be irrigated with a mixture of surface water and brackish groundwater.

If more water were available, then crop acreage would be increased and pasture acreage decreased, and vice versa. Crop farming provides more employment and other economic benefits per acre than does pasture land.

Regarding the Community Farm, 1-, 5- and 10-acre fields are planned to be offered to local farmers at below-market rents. Also, farmers will have access to Mahi Pono's equipment, management, budgeting and marketing services.

Regarding green energy, it is assumed that this will take the form of a solar farm with storage batteries located on lower-quality agricultural land. Sheep may be grazed among the solar panels to control vegetation.

Mahi Pono would lease about 2,050 acres to other farmers, plus about 250 acres leased for green energy.

Over one-third of the land scheduled for crop farming is being prepared or will soon be prepared for farming (see Figure 23). Near-term crops and estimated acreages include the following:

|  | <u>Acres</u> |
|--|--------------|
| — Community Farm                               | 250          |
| — Citrus                                       |              |
| • Lemons                                       | 125          |
| • Limes  | 800          |
| • Mandarins                                    | 400          |
| • Oranges                                      | 350          |
| — Other orchard                                |              |
| • Avocados                                     | 275          |
| • Coffee                                       | 350          |
| • Macadamia nuts                               | 1,000        |
| — Tropical fruits                              |              |
| • Dragon fruit                                 | 25           |
| • guava  | 20           |
| • Lilikoi                                      | 35           |
| • Papaya                                       | 15           |
| • White pineapple                              | 3            |
| — Sweet potatoes                               | 470          |
| — Row crops (finger-link potatoes and peppers) | 430          |
| — Cover crops (sunflower and Sudan grass)      | 400          |
| — <u>Nursery</u>                               | <u>510</u>   |
| — Total  | 5,458        |

The nursery will be used to grow crops to implement the Mahi Pono Farm Plan, and not for growing plants for commercial sales. In addition to the above, pasture lands are being prepared for grazing cattle.

No Water Lease Alternative, Diversified Agriculture (Year 2030)

Mahi Pono has developed a scaled-down Farm Plan consistent with the No Water Lease Alternative. As before, this initial Plan will evolve over time. For the Central Maui fields, planned estimated acreages are as follows (see Table 2, Section 2.a):

|  |               |
|--|---------------|
| — Crops  |               |
| • Community Farm (vegetables, melons, etc.)  | 300           |
| • Orchards (lemons, limes, mandarins, oranges, macadamia nuts, coffee, avocados, etc.) | 4,180         |
| • Tropical fruits (dragon fruit, guava, lilikoi, papaya, white pineapple, etc.)        | 200           |
| • Row crops and annual crops (potatoes, etc.)  | 400           |
| • <u>Energy crops</u>  | <u>200</u>    |
| • Total Crops  | 5,280         |
| — Pasture  |               |
| • Irrigated  | 3,800         |
| • <u>Unirrigated</u>   | <u>20,670</u> |
| • Total Pasture  | 24,470        |
| — <u>Green energy (solar farms)</u>  | <u>250</u>    |
| — Total Acreage  | 30,000        |

About 2,720 acres of upper fields would be irrigated with surface water only, while about 6,360 acres of lower fields would be irrigated with a mixture of surface water and brackish groundwater.

Mahi Pono would lease about 1,250 acres to other farmers, plus about 250 acres leased for green energy.

**b. Upcountry Maui**

Post Sugar (Year 2017)

The EMI System supplies water to the MDWS for its Upcountry Water System Service Area, which covers approximately 61,500 acres. Approximately 32,500 acres are identified as being in agricultural use according to the County of Maui Real Property Tax records or State of Hawai'i Office of Planning. The estimated acreages by use are as follows:



- Diversified crops: 2,823 acres
- Pineapple: 1,447 acres
- Pasture, unirrigated: about 28,230 acres

The land in diversified crops includes the Kula Ag Park, which is managed by the County of Maui, Office of Economic Development to promote the development of diversified agriculture on the island of Maui. The Ag Park consists of 31 farm lots ranging from 10 to 30 acres, and totaling 447 acres. The lots are leased to 26 farmers who grow a variety of crops, including vegetables, turf grass, landscape nursery products, flowers, bananas, and dryland taro.

In recent years, water provided by the EMI System to the MDWS was used to irrigate crops at the Kula Ag Park, plus about 800 additional acres of farmland in Upcountry Maui. The 800 acres is based on (1) water use of about 2.7 mgd, and (2) about 3,375 gallons per acre per day (**gad**) (800 acres x 3,375 gad = 2.7 mgd). The 2.7 mgd for other Upcountry farms is derived in Section 9.b., and Table 3, Section 3.b. In 2017, however, water from sources other than the EMI System was used to irrigate farms in Upcountry Maui (see Section 9.b).

The total farmland irrigated with water from the EMI System is about 1,250 acres (447 acres for Kula Ag Park plus about 800 acres for other farms = 1,247 acres)—see Table 2, Section 2.b).

#### Water Lease Limited to CWRM D&O Alternative (Year 2030)

For the Water Lease Limited to CWRM D&O Alternative, the EMI System would continue to supply water to the MDWS for Upcountry Maui, but the supply would remain at the current level and would not increase to accommodate future growth in the region.

A&B agreed to supply water for the planned 262-acre expansion of Kula Ag Park. As indicated earlier, the water will come from infrastructure improvements to the reservoir and pumps that serve the Ag Park—improvements that will save water. Thus no increase in deliveries by A&B to the Kula Ag Park is required.

In addition, the County plans to expand Kula Ag Park by an additional 610 acres. However, it is assumed that this second expansion will not occur because of (1) insufficient water, and (2) better agronomic conditions in Central Maui, including cheaper rents and cheaper water.

Thus, the Kula Ag Park would grow to 709 acres (447 existing acres + 262 acres recently added).

Other than the Kula Ag Park, no significant increase of commercial agriculture is expected to occur in Upcountry Maui for the reasons given in Section 6.b: Central Maui offers an abundant supply of high-quality farmland, higher solar radiation, flatter terrain, a location closer to markets and shipping terminals, and potentially far better access to water at

a lower water rate. However, some residents of Upcountry Maui may engage in limited semi-commercial agriculture because they are attracted to the farming lifestyle.

Thus, farmlands in Upcountry Maui that are irrigated with water from the EMI System is expected to increase from about 1,250 acres in 2017 to about 1,510 acres by 2030 (see Table 2, Section 2.b). The increase would be due to the 262-acre expansion of the Kula Ag Park.

#### No Water Lease Alternative (Year 2030)

As mentioned in Section 6.b, water deliveries by the EMI System to the MDWS would drop to zero for the No Water Lease Alternative, and several years would be required to develop groundwater wells to fill the shortfall in supply. In the meantime, the commercial farms in Upcountry Maui that depend on water from the EMI System are likely to close or relocate. Once gone, they are unlikely to return to Upcountry Maui given the better agro-nomic conditions, cheaper rents, and cheaper water in Central Maui.

Thus, for this alternative, farmlands in Upcountry Maui that have been irrigated with water from the EMI System would drop to zero (see Table 2, Section 2.b).

#### **c. East Maui**

As mentioned in Section 6.c, farmers in East Maui have reported that past surface-water diversions for Central Maui left insufficient water in the streams to take full advantage of the agricultural potential in East Maui. However, the D&O will result in ample stream water to irrigate taro lo‘i and the small farms that rely on East Maui streams.

According to the CWRM D&O, the usable acreage of the farms in East Maui that have water rights to the streams subject to the IIFS are as follows:

|               | Taro Lo‘i<br>( <u>acres</u> ) | Other Ag<br>( <u>acres</u> ) |
|---------------|-------------------------------|------------------------------|
| — Area        |                               |                              |
| • Keanae      | 12.13                         | 7.00                         |
| • Wailuā      | 7.22                          | 11.86                        |
| • Wailuā      | 8.30                          | 11.23                        |
| • Wailuā      | 11.63                         | 5.00                         |
| • Honopou     | <u>5.55</u>                   | <u>.</u>                     |
| — Total acres | 44.83                         | 35.09                        |

This accounting only includes known farms and future farms per the CWRM D&O.

Thus, stream restoration could result in about 44.83 acres planted in taro in East Maui, and 35.09 acres in other crops (see Table 2, Section 2.c). These estimated acreages would be the same for all water-lease alternatives.

## 9. AGRICULTURAL WATER USE

Irrigation water requirements for crops and pastures are shown in Table 3.

### a. Central Maui

#### Typical Sugar (2006 Crop)

After system losses, the volume of water used to irrigate the 2006 sugarcane crop was about 143 mgd, or about 4,866 gad (see Table 3, Section 3.a). About 112 mgd (78.3%) was surface water and 31 mgd (21.7%) was brackish groundwater. The upper fields used about 62 mgd of surface water, while the lower fields used a 81-mgd mix of surface water (61.5%) and brackish groundwater (38.5%).

Gross water requirements (before system losses) were about 185 mgd—about 145 mgd of surface water and 40 mgd of brackish groundwater.

#### Recent Sugar (Years 2006 to 2013)

For the 2006-to-2013 period, water used to irrigate the sugarcane crop declined to 132 mgd (a decrease of 11 mgd from the 2006 crop), and the per-acre usage declined to 4,368 gad (a decrease of 498 gad)—see Table 3, Section 3.a. About 81 mgd (61.3%) was surface water and 51 mgd (38.7%) was brackish groundwater. The upper fields used about 56 mgd of surface water, while the lower fields used a 77-mgd mix of surface water (33.4%) and brackish groundwater (66.6%). The high amount of brackish groundwater decreased sugar yields, but maintained high levels of biomass for energy production.

Gross water requirements (before system losses) were about 172 mgd (a decline of 13 mgd from the 2006 crop), including about 106 mgd of surface water (a decline of 39 mgd) and about 67 mgd of brackish groundwater (an increase of 26 mgd).

#### Post Sugar (Year 2017)

In 2017, less than 1 mgd was used to irrigate an energy crop.

#### Water Lease Limited to CWRM D&O Alternative, Diversified Agriculture (Year 2030)

Future water requirements will evolve over time based on the available supply, which crops are planted, per-acre water requirements of the crops, etc.

For the Water Lease Limited to CWRM D&O Alternative, full development of the Mahi Pono Farm Plan (Section 8.a) would require an estimated 82 mgd of irrigation water after system losses, or about 3,987 gad (see Table 3, Section 3.a). About 66 mgd (80%) would be surface water and 16 mgd (20%) brackish groundwater. Upper fields would use about 28 mgd of surface water, while the lower fields would use a 55-mgd mix of surface

water (70%) and brackish groundwater (30%). This mix is consistent with safe use of brackish groundwater on diversified crops (see Section 5.a).

Gross water requirements (before system losses) would be about 107 mgd (a decline of 79 mgd from the 2006 sugarcane crop), including about 85 mgd of surface water (a decline of 60 mgd) and about 21 mgd of brackish groundwater (a decline of 19 mgd).

#### No Water Lease Alternative, Diversified Agriculture (Year 2030)

For the No Water Lease Alternative, about 30 mgd of irrigation water would be required for the scaled-down Mahi Pono Farm Plan, or about 3,259 gad (see Table 3, Section 3.a). About 24 mgd (80%) would be surface water and 6 mgd (20%) would be brackish groundwater. Upper fields would use about 10 mgd of surface water, while the lower fields use a 20-mgd mix of surface water (70%) and brackish groundwater (30%).

Gross water requirements (before system losses) would be about 38 mgd (a decline of 147 mgd from the 2006 sugarcane crop), including about 31 mgd of surface water (a decline of 114 mgd) and about 8 mgd of brackish groundwater (a decline of 33 mgd).

### **b. Upcountry Maui**

#### Post Sugar (Year 2017)

In 2017, the EMI System supplied about 2.86 mgd to the MDWS for Upcountry Maui, which is well below the long-term average of 7.1 mgd. MDWS use of surface water from the EMI System was low in 2017 because heavy rainfall increased supplies from other County sources that depend on rainfall.

Combined with other water sources and after system losses, the MDWS delivered about 7.93 mgd to residents, farms, businesses and others. An estimated 3.16 mgd (40% of the the historic average of 7.9 mgd) were used for agriculture.

About 0.46 mgd were for crops at the Kula Ag Park, however, 1.5 mgd had to be supplied by the EMI System to the County's Kula Ag Park water system to produce the 0.46 mgd used by the farmers. About 2.7 mgd were used for crops elsewhere in Upcountry Maui (agricultural use of 3.16 mgd less 0.46 mgd used at the Kula Ag Park). For this report, it is assumed that, in a normal year, about 2.7 mgd delivered by the MDWS to Upcountry farms originates from the EMI System. As mentioned in Section 8.b, 2.7 mgd are sufficient to irrigate about 800 acres of farmland.

Pineapple in Upcountry Maui relies on groundwater pumped from a Maui Land and Pine well on private land. A&B has allowed groundwater to be transported through the EMI System and withdrawn from a downstream location, but the water for Upcountry Maui pineapple is not sourced from the surface waters diverted by the EMI System. The pastures in Upcountry Maui are not irrigated.

Other farmers in Upcountry Maui rely on rainfall to water their crops.

Water Lease Limited to CWRM D&O Alternative (Year 2030)

For the Water Lease Limited to CWRM D&O Alternative, future water deliveries by the EMI System for agriculture in Upcountry Maui are expected to remain the same, notwithstanding the expansion of the Kula Ag Park, whose water needs will be provided through water savings achieved through infrastructure improvements to the reservoir and pumps that serve the Kula Ag Park. Future water requirements will remain about the same elsewhere in the district (see Table 3, Section 3.a).

No Water Lease Alternative (Year 2030)

For the No Water Lease Alternative, the supply of water delivered by the EMI System to the MDWS is presumed to drop to zero because the agreements with County provide that the delivery of water is contingent upon the Lease being issued (see Table 3, Section 3.b).

Any shortfall in supply is likely to be met by the MDWS developing new groundwater wells. However, several years would be required to prepare engineering designs; conduct environmental studies and write environmental reports; obtain approvals from various State and County agencies; dig, case, and test exploratory wells; dig and case permanent wells; connect the new wells to the MDWS delivery system; etc.

In the meantime, the commercial farms in Upcountry Maui that depend on water from the EMI System are likely to close or relocate as mentioned in Section 6.b. Once gone, they are unlikely to return to Upcountry Maui given the better agronomic conditions, cheaper rents, and cheaper water in Central Maui.

**c. East Maui**

Wetland taro requires very large volumes of water flowing through the lo'i, partly to control the water temperature, thereby preventing taro rot. After flowing through the lo'i, the large volume of excess water can be used to irrigate other crops.

For this analysis, it is assumed that the gross and net water requirements of taro are 140,000 and 30,000 gad, respectively. Other crops are assumed to require about 5,000 gad.

With these assumptions, the gross and net water requirements for the East Maui farms are about 6.3 mgd and 1.5 mgd, respectively (see Table 3, Section 3.c). These requirements would be the same for all water-lease alternatives.

**10.AGRICULTURAL DEVELOPMENT AND OPERATIONS**

Table 4 provides information on agricultural development and operations, with an emphasis on expenditures and sales. All dollar amounts are expressed in terms of 2018 purchasing power.



**a. Central Maui**Typical Sugar, Operations (2006 Crop)

For the 2006 sugar crop, HC&S produced about 145,200 tons of raw sugar, and sold sugar and energy to generate about \$101 million in direct sales (see Table 4, Section 4.a). These figure are for the former plantation lands east of Maui Veterans Highway, and not the entire plantation.

The purchase of goods and services by HC&S and the families of HC&S employees generated indirect sales and, in turn, these suppliers generated more indirect sales by their purchases of goods and services. The indirect sales are estimated at about \$91 million.

Total direct-plus-indirect sales were about \$191 million, of which about \$160 million was on Maui and about \$32 million on O`ahu.

About \$46 million of consumption expenditures were subject to the excise tax on final sales, and about \$67 million subject to the excise tax on intermediate sales.

About \$140,000 per year was paid to the State to lease fields in Central Maui.

Profits from sugar operations and indirect economic sales were an estimated \$19 million.

Recent Sugar, Operations (Years 2008 to 2013)

For the 2008-to-2013 period, HC&S produced an average of about 136,300 tons of raw sugar per year (a decrease of 8.9 tons from 2006), and sold sugar and energy to generate average annual revenues of about \$116 million in direct sales (an increase of about \$15 million)—see Table 4, Section 4.a. Total direct-plus-indirect sales averaged nearly \$220 million per year, of which about \$183 million was on Maui and \$36 million on O`ahu.

About \$37 million of consumption expenditures were subject to the excise tax on final sales, and about \$103 million subject to the excise tax on intermediate sales.

About \$140,000 per year was paid to the State to lease fields in Central Maui.

Profits from sugar operations and indirect sales were an estimated \$22 million.

Post Sugar, Operations (Year 2017)

By 2017, A&B had replaced sugar operations with limited cattle grazing and Pongamia. Both operations were under development, producing negligible revenues in 2017.

Diversified Ag, Development Activity*Water Lease Limited to CWRM D&O Alternative*

For the Water Diversions Limited to the CWRM D&O Alternative, the Mahi Pono Farm plan would require converting former sugarcane lands to about 15,950 acres of cropland, 4,700 acres of irrigated pasture, and 9,100 acres of unirrigated pasture. The conversion would require removing remaining sugarcane plants, adding amendments,

planting windbreaks around fields, modifying field irrigation systems, installing fencing, planting crops, etc. The total cost for this conversion is estimated at about \$89 million (see Table 4, Section 4.a).

Also, the Plan would require an estimated 319,000 square feet of building space for washing and packing areas, storage, offices, etc. Construction is estimated at about \$31.9 million.

Based on recently built or approved solar farms, the 250 acres for green energy are sufficient space for a 37.5 MW solar farm with storage batteries costing about \$93.8 million.

The total development expenditure would be about \$214.7 million, or an average expenditure of about \$21.5 million per year assuming a 10-year development period. Excluding imported construction materials (e.g., solar panels), the annual expenditures would be about \$8.9 million for field preparations and about \$12.6 million per year for building structures. These figures are used to estimate indirect sales.

Development activities will generate indirect sales associated with supplying goods and services to the companies involved with the development, and to the families of those who work for these companies. In turn, the companies supplying goods and services, and the families of their employees, will purchase goods and services from other companies, and so on. These indirect sales will include sales by companies supplying agricultural goods (soil amendments, fencing, irrigation systems, etc.); rental of farm equipment; equipment repair; warehousing services; shipping and trucking services; etc. Indirect sales also include sales by grocery stores, drug stores, restaurants, service stations, beauty salons, medical providers, accountants, attorneys, insurance agents, etc.

Based on State economic multipliers, these indirect sales are expected to average about \$18.5 million per year.

Thus, development expenditures plus indirect sales are expected to average about \$39.9 million per year, of which about \$33.5 million would be on Maui and about \$6.5 on O‘ahu. About \$29.4 million of development and consumption expenditures would be subject to the excise tax on final sales, and about \$10.5 million subject to the excise tax on intermediate sales.

Profits on development activity and indirect sales would be about \$4 million per year.

As indicated above, the above economic activity is expected to last about 10 years, and will vary from year to year.

#### *No Water Lease Alternative*

For the No Water Lease Alternative, the scaled-down Mahi Pono Farm plan would require converting former sugarcane lands to about 5,280 acres of cropland, 3,800 acres of irrigated pasture, and 20,670 acres of unirrigated pasture. The total cost for this conversion is estimated at about \$40.5 million (see Table 4, Section 4.a).

Also, the Plan would require an estimated 105,600 square feet of building space costing about \$10.6 million.

As before, the 250 acres for green energy are sufficient space for a 37.5 MW solar farm with storage batteries costing about \$93.8 million.

The total development expenditure would be about \$144.8 million, or an average of about \$24.1 million per year assuming a 6-year development period for this scaled-down Farm Plan. Indirect sales are expected to average about \$18.8 million per year.

Thus, development expenditures plus indirect sales are expected to average about \$42.9 million per year, of which about \$36.3 million would be on Maui and \$6.6 on O‘ahu. About \$31.4 million of development and consumption expenditures would be subject to the excise tax on final sales, and about \$4.3 million subject to the excise tax on intermediate sales.

Profits on development activity and indirect sales would be about \$4.3 million per year.

#### Diversified Agriculture, Operations (Year 2030)

##### *Water Lease Limited to CWRM D&O Alternative*

For the Water Diversions Limited to the CWRM D&O Alternative, full development of the Mahi Pono Farm Plan would result in a substantial amount of crop production, including about 8 million pounds per year from the Community Farm, 321 million pounds per year from orchards, and 9 million pounds per year of tropical fruits, plus production from row crops, annual crops, and energy crops (see Table 4, Section 4.a). Annual sales are expected to reach about \$155.9 million.

The pastures would support a cattle herd of about 7,300 cow-and-calf animal units (**au**), produce over 4,300 calves per year, and generate revenues of about \$4.8 million per year.

Thus, total farm sales would be about \$160.7 million per year, of which an estimated \$104.4 million (65%) would be Hawai‘i sales and \$56.2 million export sales (35%).

Based on recently built or approved solar farms, the solar farm would generate about 82,100 MW of electricity per year, with revenues of about \$8.2 million per year paid by Maui Electric Company (MECO) to the solar-farm operator.

Combined farm and energy revenues would reach about \$168.9 million per year in direct sales, which would exceed the 2006 revenues from sugar production of \$101 million, and the \$116 million average for the 2008-to-2013 period.

Purchases of goods and services by farmers and the families of employees would generate indirect sales and, in turn, these suppliers would generate more indirect sales by their purchase of goods and services. The indirect sales are estimated at about \$160.7 million per year.

Total direct-plus-indirect sales would be about \$329.5 million, of which about \$273.8 million would be on Maui and about \$56.2 million on O‘ahu.

About \$24.9 million of consumption expenditures would be subject to the excise tax on final sales, and about \$248.2 million subject to the excise tax on intermediate sales.

Rental income from leasing land to other farmers and to an energy company would be about \$1 million per year.

Profits from farm operations, energy operations, and indirect sales would be about \$33 million. Mahi Pono's portion of the profits would be their return on their very substantial investment in agriculture in Central Maui.

#### *No Water Lease Alternative*

For the No Water Lease Alternative, the scaled-down Mahi Pono Farm Plan would result in about one-third as much crop production as the full Plan: about 3 million pounds per year from the Community Farm, 104.5 million pounds per year from orchards, and 3 million pounds per year of tropical fruits, plus production from row crops, annual crops, and energy crops (see Table 4, Section 4.a). Annual sales are expected to reach about \$51.3 million.

The pastures would support a cattle herd of about 9,700 cow-and-calf animal units, produce nearly 5,800 calves per year, and generate revenues of about \$6.3 million per year.

Thus, total farm sales would be about \$57.7 million per year, of which an estimated \$46.1 million (80%) would be Hawai'i sales and \$11.5 million export sales (20%).

The solar farm would generate about 82,100 MW of electricity per year, with revenues of about \$8.2 million per year paid by MECO to the solar-farm operator.

Combined farm and energy revenues would reach about \$65.9 million per year in direct sales, and \$57.7 million in indirect sales.

Total direct-plus-indirect sales would be about \$123.5 million, of which about \$103.4 million would be on Maui and \$20.2 million on O'ahu.

About \$8.6 million of consumption expenditures would be subject to the excise tax on final sales, and about \$103.4 million subject to the excise tax on intermediate sales.

Rental income from leasing land to other farmers and to an energy company would be about \$800,000 per year.

Profits from farm operations, energy operations, and indirect sales would be about \$12.4 million.

### **b. Upcountry Maui**

#### Development Activity

##### *Water Diversions Limited to the CWRM D&O Alternative*

For the Water Diversions Limited to the CWRM D&O Alternative, the 262 additional acres at the Kula Ag Park would have to be converted from fallow sugarcane fields to productive fields for diversified crops. The cost of this conversion is estimated at about \$1.3

million, or an average of about \$260,000 per year assuming a 5-year development period (see Table 4, Section 4.b).

Indirect sales are expected to average about \$320,000 per year.

Thus, expenditures plus indirect sales are expected to average about \$600,000 per year.

#### *No Water Lease Alternative*

For the Water Lease Alternative, improvements to the 262 acres are unlikely to occur due to the lack of water for farming.

#### Post Sugar, Diversified Ag Operations (Year 2017)

In 2017, farmers at the Kula Ag Park and other farmers in Upcountry Maui who relied on water from the EMI System produced an estimated 12.5 million pounds of crops per year (see Table 4, Section 4.b).

Annual farm sales were about \$12.5 million, and indirect sales were about \$13.8 million. Total direct-plus-indirect sales were about \$26.3 million per year, of which about \$21.5 million were on Maui and about \$4.8 million on O‘ahu.

About \$2.7 million of consumption expenditures were subject to the excise tax on final sales, and about \$23.7 million subject to the excise tax on intermediate sales.

Rents paid to the County totaled about \$500,000 per year

Profits from farm operations and indirect sales were an estimated \$2.6 million per year.

#### Diversified Ag Operations (Year 2030)

##### *Water Diversions Limited to the CWRM D&O Alternative*

For the Water Diversions Limited to the CWRM D&O Alternative, farm activity in Upcountry Maui is expected to increase due to the 262-acre expansion of the Kula Ag Park. The farmers at the Kula Ag Park and other farmers in Upcountry Maui who will rely on water from the EMI System are projected to produce an estimated 15.1 million pounds of crops per year (see Table 4, Section 4.b).

Annual farm sales are expected to reach about \$15.1 million, and indirect sales about \$13.4 million. Total direct-plus-indirect sales will be about \$15.5 million per year, of which about \$26 million will be on Maui and about \$5.9 million on O‘ahu.

About \$3.2 million of consumption expenditures would be subject to the excise tax on final sales, and about \$28.6 million subject to the excise tax on intermediate sales.

Rents paid to the County would totaled about \$900,000 per year

Profits from farm operations and indirect sales are expected to reach about \$3.2 million per year.



*No Water Lease Alternative*

For the No Water Diversions Alternative, farming activity and economic impacts are expected to be near zero for the farms that depended on water from the EMI System in 2017 (see Table 4, Section 4.b). For these farms, water to irrigate crops is not expected to be available for several years, and once farming ends, significant farming is not expected to return to the area because of better farming conditions in Central Maui.

**c. East Maui**

For all water-lease alternatives, the taro farms and other farms in East Maui that depend on stream flows would produce at full development about 1 million pounds per year of taro, and about 400,000 pounds per year of other crops (see Table 4, Section 4.3).

The resulting direct sales would be about \$1.4 million per year. Indirect sales generated by the purchase of goods and services would be about \$1.5 million per year. Thus, total direct-and-indirect sales would be about \$2.9 million per year (with rounding), of which about \$3 million would be on Maui and \$700,000 on O‘ahu. About \$500,000 of consumption expenditures would be subject to the excise tax on final sales, and \$2.4 million subject to the excise tax on intermediate sales.

Profits from farm operations and indirect sales would be about \$300,000, or possibly less.

**11. EMPLOYMENT, PAYROLL AND POPULATION SUPPORTED**

Table 5 provides information on agricultural and related employment, payroll, and the number of people supported by the agricultural activity.

**a. Central Maui**Typical Sugar, Operations (2006 Crop)

For the 2006 sugar crop, HC&S employed about 630 workers, including planters, irrigation workers, harvesters, truck drivers, mill workers, office workers, supervisors, etc. (see Table 5, Section 5.a). This employment figure is for the former plantation lands east of Maui Veterans Highway, and not the entire plantation.

As with indirect sales, sugar operations generated indirect jobs associated with the purchase of goods and services by HC&S, and by the families of HC&S employees. In turn, the companies supplying goods and services, and the families of their employees, supported additional indirect jobs by their purchases of goods and services, and so on. Indirect jobs included those at companies providing agricultural supplies and equipment, office supplies and equipment, repair services, etc. Other indirect jobs included those involved with supplying goods and services to families, including grocery workers, store clerks, restaurant

workers, service-station workers, beauticians, barbers, bankers, pharmacists, veterinarians, computer technicians, medical workers, accountants, attorneys, etc. The jobs ranged over a variety of skill levels, including entry-level, semi-skilled, skilled, and management.

Based on State employment multipliers, sugar operations generated about 710 indirect jobs in 2006.

Thus, direct-plus-indirect employment totaled about 1,300 jobs, of which about 1,100 jobs were on Maui.

The payroll was about \$48.5 million for the direct jobs and \$82.7 million for all direct and indirect jobs.

The direct and indirect jobs provided by sugar operations supported an estimated 3,000 residents living in about 1,260 homes, of which about 2,460 residents and 1,080 homes were on Maui.

#### Recent Sugar, Operations (Years 2008 to 2013)

For the 2008-to-2013 period, average employment and payroll was slightly less than that given above for the 2006 sugarcane crop (see Table 5, Section 5.a).

#### Post Sugar, Operations (Year 2017)

In 2017, most of the former sugarcane fields were fallow, but some land was used for an energy crop and for pasture. These activities generated an estimated 10 direct-plus-indirect jobs (see Table 4, Section 4.a).

#### Diversified Ag, Development Activity

##### *Water Lease Limited to CWRM D&O Alternative*

For the Water Diversions Limited to the CWRM D&O Alternative, an average of 210 workers would be needed over the assumed 10-year development period to: (1) convert former sugarcane fields to fields for diversified crops and pasture, (2) construct buildings, and (2) install a solar farm (see Table 5, Section 5.a). Jobs would include equipment operators, soil specialists, irrigation specialists, planters, truck drivers, construction workers, supervisors, etc. Also, the various jobs would range over a variety of skill levels, including entry-level, semi-skilled, skilled, management, and professional positions. Most of these temporary jobs are expected to be filled by residents of Maui and other the islands.

In addition to the direct jobs, about 120 indirect jobs would be generated by purchases of goods and services. Indirect jobs will include those at companies supplying farming equipment, irrigation systems, fencing, chemicals, building materials, repair services, etc. Other indirect jobs would include those involved with supplying goods and services to families, and would range over a variety of skill levels.

Thus, direct-plus-indirect employment during the development period would average about 330 jobs, of which about 290 jobs would be on Maui and 40 jobs on O‘ahu. Actual employment would vary over time.

The payroll during development would average about \$8.8 million for the direct jobs and \$14.5 million for all direct and indirect jobs.

During the development period, the direct and indirect jobs would support an estimated 730 residents living in about 310 homes, of which about 640 residents and 280 homes would be on Maui.

#### *No Water Lease Alternative*

For the No Water Lease Alternative, development activity would be less than that given above, but it would still be substantial and would last for a shorter period (6 years vs 10 years). During the development period, an average of about 176 direct jobs would be provided, plus about 116 indirect jobs, for a total of about 290 direct and indirect jobs. About 250 jobs would be on Maui and 50 jobs on O‘ahu. Actual employment would vary over time.

The payroll during development would average about \$7.7 million per year for the direct jobs and \$13.3 million for all direct and indirect jobs.

During the development period, the direct and indirect jobs would support an estimated 650 residents living in about 280 homes, with about 570 residents and 250 homes on Maui.

#### Diversified Agriculture, Operations (Year 2030)

##### *Water Lease Limited to CWRM D&O Alternative*

The Water Lease Limited to CWRM D&O Alternative would allow full development of the Mahi Pono Farm Plan, with farm employment expected to reach about 790 jobs, or about 160 more jobs than provided by sugar operations in 2006 (see Table 5, Section 5.a). The jobs would be typical of those provided by diversified-crop farming and ranching—managing soils and pests, operating and maintaining irrigation systems, planting crops, pruning trees, harvesting crops, sorting and washing crops, packing crops, trucking crops to markets and shipping terminals, moving cattle among pastures, maintaining fences, marketing, accounting, etc.

The increase in employment would be gradual, with most jobs filled by former sugarcane workers, skilled workers from Maui and other islands, recent graduates of agricultural programs at Hawai‘i high-schools and colleges, and unskilled workers who would receive on-the-job training.

The purchase of goods and services by farmers and ranchers, and by the families of their employees, would generate an estimated 350 indirect jobs. Indirect jobs would include those at companies providing agricultural supplies and equipment, office supplies and

equipment, repair services, trucking services, veterinarian services, etc. Other indirect jobs would include those involved with supplying goods and services to employees and their families.

Thus, direct-plus-indirect employment would totaled about 1,140 jobs, with about 1,000 jobs on Maui. Both the direct and indirect jobs would range over a variety of skill levels, including entry-level, semi-skilled, skilled, and management positions.

The payroll would be about \$28.5 million for the direct jobs and \$45.3 million for all direct and indirect jobs.

The direct and indirect jobs would support an estimated 2,550 residents living in about 1,100 homes, with about 2,290 residents and 1,010 homes on Maui.

#### *No Water Lease Alternative*

For the No Water Lease Alternative, the scaled-down Mahi Pono Farm Plan would result in about one-third as much employment as with the full Plan: about 270 direct jobs, 120 indirect jobs, and 390 total jobs (see Table 5, Section 5.a).

The payroll would be about \$9.9 million for the direct jobs and \$15.6 million for all direct and indirect jobs.

The direct and indirect jobs would support an estimated 880 residents living in about 380 homes, with about 790 residents and 350 homes on Maui.

### **b. Upcountry Maui**

#### Post Sugar, Diversified Ag Operations (Year 2017)

In 2017, farmers at the Kula Ag Park and other farms in Upcountry Maui who relied on water from the EMI System provided about 80 jobs and generated about 40 indirect jobs, for a total of about 120 jobs (see Table 5, Section 5.b).

The payroll was about \$2.9 million for the direct jobs and \$4.8 million for all direct and indirect jobs.

The direct and indirect jobs would support an estimated 275 residents living in about 120 homes, with about 245 residents and 110 homes on Maui.

#### Development Activity

##### *Water Diversions Limited to the CWRM D&O Alternative*

For the Water Diversions Limited to the CWRM D&O Alternative, the 262-acre expansion of the Kula Ag Park would provide an average of about 7.5 direct-plus-indirect jobs during the assumed 5-year development period (see Table 5, Section 5.b). The payroll for these jobs would average about \$300,000 per year.

*No Water Lease Alternative*

For the No Water Lease Alternative, improvements to the 262 acres are unlikely to occur due to a lack of water for farming. Thus, there would be no development activity (see Table 5, Section 5.b).

Diversified Ag Operations (Year 2030)*Water Diversions Limited to the CWRM D&O Alternative*

For the Water Diversions Limited to the CWRM D&O Alternative, employment will increase due to the 262-acre expansion of the Kula Ag Park. By 2030, farmers at the Kula Ag Park and other farms in Upcountry Maui who relied on water from the EMI System are expected to provide about 100 jobs and generate about 50 indirect jobs, for a total of about 150 jobs (see Table 5, Section 5.b).

The payroll is expected to reach about \$3.5 million for the direct jobs and \$5.8 million for all direct and indirect jobs.

The direct and indirect jobs provided will support an estimated 330 residents living in about 140 homes, with about 300 residents and 130 homes on Maui.

*No Water Lease Alternative*

For the No Water Diversions Alternative, farming activity and employment are expected to be near zero for the farms that depended on water from the EMI System in 2017 (see Table 5, Section 5.b). For these farms, water to irrigate crops is not expected to be available for several years as mentioned previously. Once farming ends, significant farming is not expected to return to the area because better farming conditions exist in Central Maui.

**c. East Maui**

For all water-lease alternatives, full development of the taro farms and other farms in East Maui that depend on stream flows would result in about 14 jobs and generate about 7 indirect jobs, for a total of about 21 jobs (see Table 5, Section 5.c).

The payroll is expected to reach about \$500,000 for the direct jobs and \$800,000 for all direct and indirect jobs.

The direct and indirect jobs provided will support an estimated 47 residents living in about 20 homes, most of whom would be on Maui.



## 12. STATE AND COUNTY REVENUES

### a. Overview

Table 6 provides information on State and County revenues generated by agricultural development and operations. For the State, the major sources of revenue are the 4% excise tax on final sales, the 0.5% excise tax on intermediate sales, corporate income taxes, individual income taxes, and land rents paid to the State. For Maui County, the major sources of revenue are property taxes, and land rents paid to the County. The City and County of Honolulu derives tax revenues from economic activity on Maui because some of the indirect sales occur on O‘ahu. A portion of the sales on O‘ahu are subject to a 0.5% excise-tax surcharge which went into effect in 2007.

Farmers pay their fair shares of State and County taxes. However, most agricultural operations pay lower taxes than do most other sectors of the economy. Exported crops are exempt from the State excise tax. Crops sold for local consumption are usually taxed at the intermediate excise-tax rate of 0.5%. Crops that displace imports cause little change in final sales and little change in State excise tax revenues. At the County level, agricultural land values are lower than urban land values. Furthermore, agricultural lands are assessed at a fraction of their market values, so the property taxes are low compared to lands assessed at market values.

Sugar employees were paid higher-than-average wages, so on average their families paid more taxes than did most other families on Maui. However, the opposite is true for most workers on farms that grow diversified crops.

No major State or County expenditures are anticipated to support the planned agricultural development and operations. However, the developer of the solar farm would benefit from substantial State subsidizes.

State and County expenditures on services for families of agricultural workers are similar in magnitude to expenditures to support other families on Maui. Expenditures on services include, but are not limited to, education, libraries, social services, health services, security, fire protection, watershed management, park maintenance, road maintenance, water, waste disposal, etc.

However, State and County expenditures on services for the families of farm workers generally exceed the taxes paid by these families and their employers—a situation which also pertains to most families on Maui. Services to residents are, in effect, subsidized by tax revenues derived from visitors, resorts, commercial activities, and construction activities. Most visitors spend at a high daily rate for their rooms, meals, travel, activities, and purchases. In turn, these expenditures generate a high amount of excise taxes for the State. In addition, visitors are subject to the Transient Accommodation Tax (hotel room tax), which is shared between the State and the counties. Visitors do not require State expenditures on education, social services, and many other items. Construction activity also generates a high amount of excise taxes for the State because new homes and buildings are expensive.

For the County, much of the revenue required to subsidize services to residents are derived from a combination of high property tax assessments and high property-tax rates on resorts, time-share properties, second homes, commercial properties, and industrial properties. Operators of many of these properties provide their own security, waste removal, etc.

The focus of the material which follows is on the major State and County tax revenues generated by agricultural development and operations.

## **b. Central Maui**

### Typical Sugar (2006 Crop)

In 2006, sugar operations generated about \$5.9 million in State tax revenues and rental payments to the State (see Table 6, Section 6.a). Most of the revenues were derived from (1) excise taxes on consumption expenditures by families supported by the direct and indirect jobs that were provided, and (2) personal income taxes paid by these same families (see Table 6, Section 6.a). Revenues were low because the sale of the exported sugar was exempt from the excise taxes.

Property taxes paid by HC&S to the County of Maui were about \$50,000 per year.

In 2006, the City and County of Honolulu derived no revenue from the excise-tax surcharge because it was not in effect that year.

### Recent Sugar (Years 2008 to 2013)

For the 2008-to-2013 period, sugar operations generated an average of about \$5.1 million in State tax revenues and rental payments to the State (see Table 6, Section 6.a). Property taxes paid by HC&S to the County of Maui were about \$70,000 per year. The increase from 2006 was due to a higher tax rate.

The City and County of Honolulu derived about \$40,000 per year from the excise-tax surcharge.

### Post Sugar (Year 2017)

In 2017, diversified agriculture operations in Central Maui generated about \$30,000 in tax revenues (see Table 6, Section 6.a). Property taxes paid by HC&S to the County of Maui were about \$20,000 per year. Property taxes decreased because of the land was assessed at a lower value following the closure of sugar operations.

The City and County of Honolulu derived negligible revenues from the excise-tax surcharge.

Diversified Ag, Development Activity*Water Lease Limited to CWRM D&O Alternative*

For the Water Lease Limited to CWRM D&O Alternative, converting Central Maui farmlands from sugarcane to diversified agriculture and green energy would generate an average of about \$1.9 million per year in State taxes, for a 10-year cumulative total of about \$18.6 million (see Table 6, Section 6.a). However, developers of solar farms receive a State subsidy of \$500,000 per 1 MW of generating capacity. For the planned green energy (solar farm), the State subsidy would average about \$1.9 million per year, for a 10-year cumulative total of about \$18.8 million.

Thus, State tax revenues from development minus the energy subsidy would result in a cumulative loss of about \$100,000 (with rounding).

Given the nature of Hawai'i's tax system, the County of Maui would derive negligible tax revenues from the anticipated development activity.

Over the 10-year development period, the City and County of Honolulu would derive cumulative excise-tax surcharges of about \$60,000.

*No Water Lease Alternative*

For the No Water Lease Alternative, converting Central Maui farmlands from sugarcane to diversified agriculture and green energy would generate an average of about \$1.9 million per year in State taxes, for a 6-year cumulative total of about \$11.4 million (see Table 6, Section 6.a).

For the planned green energy (solar farm), the State subsidy would average about \$3.1 million per year, for a 6-year cumulative total of about \$18.8 million.

Thus, State tax revenues minus the energy subsidy would average a negative \$1.2 million per year, for a 6-year cumulative total of a negative \$7.3 million.

Again, the County would derive negligible tax revenues from the anticipated development activity, while the City and County of Honolulu would derive cumulative excise-tax surcharges of about \$40,000.

Diversified Agriculture, Operations (Year 2030)*Water Lease Limited to CWRM D&O Alternative*

For the Water Lease Limited to CWRM D&O Alternative, diversified-agriculture operations would generate an estimated \$7.5 million in State tax revenues by 2030 (see Table 6, Section 6.a).

Property taxes paid to the County would be about \$800,000 per year.

The City and County of Honolulu would derive about \$140,000 per year from the excise-tax surcharge.

*No Water Lease Alternative*

For the No Water Lease Alternative, State tax revenues would be about half those of the previous alternative: about \$3.8 million per year (see Table 6, Section 6.a).

Property taxes paid to the County would be about \$650,000 per year. This decrease from the previous alternative is due to more land being used for pasture, which is assessed at a lower value than cropland.

The City and County of Honolulu will derive about \$50,000 per year from the excise-tax surcharge.

**c. Upcountry Maui**Post Sugar (Year 2017).

In 2017, the farms at Kula Ag Park and other farms in Upcountry Maui that rely on water from the EMI System would generate about \$45,000 per year in State taxes (see Table 6, Section 6.b).

For the County, property taxes plus rents paid to the County by farmers at the Kula Ag Park totaled less than \$54,000 per year.

The City and County of Honolulu will derive about \$2,000 per year from the excise-tax surcharge.

Diversified Ag, Development Activity*Water Lease Limited to CWRM D&O Alternative*

For the Water Lease Limited to CWRM D&O Alternative, expansion of the Kula Ag Park will result in cumulative State tax revenues of about \$200,000 (see Table 6, Section 6.b).

The County would derive negligible tax revenues from the development activity.

*No Water Lease Alternative*

For the No Water Lease Alternative, expansion of the Kula Ag Park is not anticipated. As a result, there would be no development activity and no tax revenues.

Diversified Ag, Operations (Year 2030).*Water Lease Limited to CWRM D&O Alternative*

For the Water Lease Limited to CWRM D&O Alternative, the farms at the Kula Ag Park and other farms in Upcountry Maui that rely on water from the EMI System would generate about \$54,000 per year in State taxes (see Table 6, Section 6.b).

For the County, property taxes plus rents paid to the County by farmers at the Kula Ag Park would total about \$85,000 per year. Most of the increase from 2017 would be due to the additional rental income from the 262-acre expansion of Kula Ag Park.

The City and County of Honolulu would derive about \$2,000 per year from the excise-tax surcharge.

#### *No Water Lease Alternative*

For the No Water Diversions Alternative, farming activity and State taxes generated are expected to be near zero for the farms that depended on water from the EMI System in 2017 (see Table 6, Section 6.b). For these farms, water to irrigate crops is not expected to be available for several years as mentioned previously. Once farming ends, significant farming is not expected to return to the area because of better farming conditions in Central Maui.

The County would lose rents from the Kula Ag Park, and property taxes would be lower, assuming that the lands would be assessed at pasture values.

#### **d. East Maui**

For all water-lease alternatives, the taro farms and other farms in East Maui that depend on stream flows will generate less than \$70,000 per year in State taxes at full development (see Table 6, Section 6.b).

For the County, property taxes will total about \$100 per year.

The City and County of Honolulu will derive about \$300 per year from the excise-tax surcharge.

### **13. SUMMARY OF ECONOMIC IMPACTS AND BENEFITS**

#### **a. Major Impacts and Benefits**

Table ES-1 summarizes the major impacts and benefits for the past baseline conditions and two of the three alternatives for the future. The table is divided into 6 parts: (1) Water Supply and Allocation, (2) Agricultural Land Use, (3) Agricultural Water Use, (4) Agricultural Development and Operations, (5) Employment and Payroll, and (6) State and County Revenues. Mahi Pono's current Farm Plan assumes full development by about 2030. Also, all dollar amounts are expressed in 2018 purchasing power.

#### Water Supply and Allocation

The supply of East Maui surface water that is available for Central and Upcountry Maui is projected to decline significantly: from about 156.54 mgd for Typical Sugar, to 92.32 mgd for the Water Lease Limited to CWRM D&O Alternative, and to 30.76 mgd for the No



Water Lease Alternative. For the No Water Lease Alternative, all of the water would come from private lands.

The total water supply (surface water plus groundwater) would decline from about 199.04 mgd for Typical Sugar to 113.63 for the Water Lease Limited to CWRM D&O Alternative and 38.44 mgd for No Water Lease Alternative. The use of groundwater is limited in order to keep salinity below about 30‰ when applied to lower fields in Central Maui.

For the Water Lease Limited to CWRM D&O Alternative, about 106.53 mgd would be allocated to Central Maui for agricultural use, and 7.1 to MDWS for Upcountry Maui.<sup>5</sup> For the No Water Lease Alternative, all of the water would be allocated to Central Maui for agricultural use.

### Agricultural Land Use

#### *Central Maui*

For the Water Lease Limited to CWRM D&O Alternative, about 15,950 acres would be used for growing crops, including 12,850 acres for orchard crops and 3,100 acres for other crops. About 13,800 acres would be used for pasture, of which about 4,700 acres would be irrigated. About 250 acres would be used for green energy, such as a solar farm.

For the No Water Lease Alternative, the reduced supply of water would require a major reallocation of land from growing crops to unirrigated pasture. About 5,250 acres would be used for growing crops, including 4,180 acres for orchard crops and 1,100 acres for other crops. About 24,470 acres would be used for pasture, of which about 3,800 acres would be irrigated. Land for green energy would remain at 250 acres.

#### *Upcountry Maui*

For the Water Lease Limited to CWRM D&O Alternative, about 1,520 acres of farmland would be irrigated with water from the EMI System.

For the No Water Lease Alternative, farmlands in Upcountry Maui that have been irrigated with water from the EMI System are expected to drop to zero acreage for the reasons given in Section 6.b.

#### *East Maui*

As indicated in the CWRM D&O, stream restoration could result in 44.83 acres planted in taro in East Maui, and 35.09 acres in other crops. These estimated acreages are the same for all alternatives.

---

5. 7.1 mgd was the long-term average presented in the CWRM D&O.

### Agricultural Water Use

#### *Central Maui*

Agricultural water use in Central Maui is projected to decline from about 143.19 mgd for Typical Sugar to 82.34 mgd for the Water Lease Limited to CWRM D&O Alternative and 29.72 mgd for No Water Lease Alternative.

#### *Upcountry Maui*

For the Water Lease Limited to CWRM D&O Alternative, about 4.16 mgd would be used to irrigate farms supplied with water from the EMI System.

For the No Water Lease Alternative, it is assumed that no water would be delivered from the EMI System.

#### *East Maui*

For all water-lease alternatives, gross and net water requirements would be about 6.28 and 1.52 mgd, respectively (derived from the CWRM D&O acreage estimates for the affected farms in East Maui). The high gross water requirement reflects the fact that nearly 80% of the water used for growing taro is diverted from streams, passes through lo'i, and is then returned to the streams.

### Agricultural Development and Operations

#### *Central Maui*

For the Water Lease Limited to CWRM D&O Alternative, converting Central Maui from sugarcane to diversified agriculture would entail a capital investment of about \$214.7 million for land preparation and improvements, with expenditures spread out over approximately 10 years. During this period, expenditures and indirect sales would average about \$39.9 million per year. Corresponding figures for the No Water Lease alternative are \$144.8 million invested over about 6 years, with expenditures and indirect sales averaging about \$42.9 million per year.

At full operations, and assuming the Water Lease Limited to CWRM D&O Alternative, farm sales would total about \$160.7 million per year, of which about \$104.4 million would be Hawai'i sales and \$56.2 million would be export sales. Adding energy sales of about \$8.2 million results in total direct sales of about \$168.9 million per year. Direct and indirect sales would total about \$329.5 million per year.

The direct sales of about \$160.7 million per year exceeds sales during sugar operations: about \$100.7 million per year for Typical Sugar, and about \$115.6 million for Recent Sugar. The HC&S revenues figures are for the former plantation lands east of Maui Veterans Highway, and not the entire plantation.

For the No Water Lease Alternative, operations would generate much lower farm sales: about \$57.7 million per year in farm sales, of which about \$46.1 million would be Hawai'i sales and \$11.5 million would be export sales. Adding energy sales results in total direct sales of about \$65.9 million per year. Direct and indirect sales would total about \$123.5 million per year.

#### *Upcountry Maui*

For the Water Lease Limited to CWRM D&O Alternative, the farms that depend on water from the EMI System would generate direct sales of about \$14.1 million per year. Direct and indirect sales would total about \$31.8 million per year.

For the No Water Lease Alternative, these figures would drop to zero.

#### *East Maui*

For all water-lease alternatives, the farms in East Maui that depend on stream water would generate about \$1.4 million per year in direct sales, and about \$2.9 million per year in direct and indirect sales.

### Employment and Payroll

#### *Central Maui*

For the Water Lease Limited to CWRM D&O Alternative, converting Central Maui from sugarcane to diversified agriculture would employ an average of about 210 workers over a period of about 10 years. Corresponding figures for the No Water Lease Alternative are an average of about 175 workers over about 6 years.

At full operations of farming operations in Central Maui, and assuming the Water Lease Limited to CWRM D&O Alternative, employment would reach about 790 direct jobs with a payroll of about \$28.5 million per year, and 1,140 direct and indirect jobs with a payroll of \$45.3 million. The direct employment of 790 jobs would exceed the 630 direct jobs formerly provided by HC&S for Typical Sugar. The HC&S employment figure is for the former plantation lands east of Maui Veterans Highway, and not the entire plantation.

For the No Water Lease Alternative, full operations would provide about 270 direct jobs with a payroll of about \$9.9 million per year, and 390 direct and indirect jobs with a payroll of \$15.6 million.

#### *Upcountry Maui*

For the Water Lease Limited to CWRM D&O Alternative, the farms that depend on water from the EMI System would provide about 100 jobs with a payroll of about \$3.5

million per year, and would generate about 150 direct and indirect jobs having a payroll of \$5.8 million.

For the No Water Lease Alternative, these figures would drop to zero.

#### *East Maui*

For all water-lease alternatives, the farms in East Maui that depend on stream water would provide about 14 jobs with a payroll of about \$500,000 per year, and generate about 21 direct and indirect jobs having a payroll of about \$800,000.

### State and County Revenues

#### *Central Maui*

For the Water Lease Limited to CWRM D&O Alternative, the expenditures on land preparation and capital improvements needed to convert Central Maui from sugarcane to diversified agriculture would generate State tax revenues of about \$18.62 million over the assumed 10-year development period, but this would be offset by energy subsidies of \$18.75 million, for net loss of about \$130,000. State revenues would come from excise taxes, corporate income taxes, and personal income taxes. The County derives negligible tax revenues from development activity: there are no major County taxes on expenditures for land preparation and improvements, profits generated, or the payroll of those involved with the development activity. However, once the improvements are completed, the County will benefit from an increase in property-tax revenues due to the increased property values.

For the No Water Lease Alternative, the conversion would generate State tax revenues of about \$11.41 million over the assumed 6-year development period, but this would be offset by energy subsidies of \$18.75 million, for a net loss of about \$7.34 million.

At full operations of farming operations in Central Maui, and assuming the Water Lease Limited to CWRM D&O Alternative, State tax revenues would be about \$4.46 million per year, and County property taxes would be about \$800,000 per year. Property taxes for the County are low because agricultural land is assessed at agricultural values, not at market values.

For the No Water Lease Alternative, full operations would generate State tax revenues of about \$1.66 million per year, and County tax revenues of about \$650,000. Tax revenues for the State are less because crop production and sales would be less. Property taxes are lower because more of the land would be used for pasture, which has a lower assessed value than cropland.

#### *Upcountry Maui*

For the Water Lease Limited to CWRM D&O Alternative, the farms that depend on water from the EMI System would generate annual State taxes of about \$540,000, and

County revenues of about \$850,000. The County revenues include property taxes and rents from the Kula Ag Park.

For the No Water Lease Alternative, most of these figures would drop to zero or near zero because of the loss of farms and farm production. The County would lose rents from the Kula Ag Park, and property tax revenues would be lower, assuming the agricultural lands would be assessed at pasture values.

### *East Maui*

For all water-lease alternatives, the East Maui farms would generate about \$67,000 per year in State taxes and about \$100 in County property taxes.

## **b. Water Lease Limited to CWRM D&O Alternative vs the No Water Lease Alternative**

### Central Maui

For Central Maui, the Water Lease Limited to CWRM D&O Alternative would provide far more economic activity and benefits than would the No Water Lease Alternative. The difference between the two alternatives would be as follows:

- About 11,570 acres more green open space in the form of farms and irrigated pastures (20,650 acres vs 9,080 acres).
- About three times as much food production, including greater food self-sufficiency and more exports.
- About \$206 million per year more in direct and indirect sales (\$329.5 million vs \$123.5 million).
- About 750 more direct and indirect jobs (1,140 jobs vs 390 jobs).
- About \$29.7 million per year more in total payroll (\$45.3 million vs \$15.6 million).
- Development activity (land preparation and capital improvements) lasting about 4 years longer (10 years vs 6 years), with similar magnitudes of sales and employment (about \$40 million per year direct and indirect sales, and about 300 direct and indirect jobs).
- About \$2.9 million per year more in State and County tax revenues (\$4.6 million vs \$1.7 million).

### Upcountry Maui

For Upcountry Maui, the Water Lease Limited to CWRM D&O Alternative would allow farming to continue and expand at the Kula Ag Park, and continue at other farms that irrigate crops with water originating from the EMI System. In total, about 1,510 acres would



be farmed in 2030, generating about \$31.8 million per year in direct and indirect sales, about 150 direct and indirect jobs, and about \$5.8 million in payroll for these jobs.

For the No Water Diversions Alternative, farming activity is expected to be near zero for the farms that depended on water from the EMI System in 2017. For these farms, water to irrigate crops is not expected to be available for several years, and once farming ends, significant farming is not expected to return to the area because of better farming conditions in Central Maui.

### East Maui

All alternatives would result in the same agricultural activity and benefits for East Maui (see Table 7., Section 7c).

#### **c. Water Lease with Less than CWRM D&O Alternative**

For the Water Lease with Less than CWRM D&O Alternative, the State would allow water to be diverted from East Maui to Central Maui in an amount falling between (1) the 92.32-mgd flow estimated for the Water Lease Limited to CWRM D&O Alternative, and (2) the 30.76-mgd flow estimated for the No Water Lease Alternative. To demonstrate the impacts of such an intermediate alternative, the following table provides (1) the impacts of the Water Lease Limited to CWRM D&O Alternative at full operations of the Mahi Pono Farm plan, and (2) the incremental changes in these impacts (in red) caused by each mgd-reduction in surface water from the 92.32-mgd flow estimated for the Water Lease Limited to CWRM D&O Alternative.

|                             | <u>Central<br/>Maui</u> | <u>Upcountry<br/>Maui</u> | <u>Units</u> |
|-----------------------------|-------------------------|---------------------------|--------------|
| — Land use                  |                         |                           |              |
| • Crops                     | 15,950                  | 1,509                     | acres        |
| Decrease per 1 mgd          | 173.31                  | 24.51                     | acres        |
| • Irrigated pasture         | 4,700                   |                           | acres        |
| Decrease per 1 mgd          | 14.62                   |                           | acres        |
| • Unirrigated pasture       | 9,100                   |                           | acres        |
| Increase per 1 mgd          | 187.93                  |                           | acres        |
| — Sales, Ag operations      |                         |                           |              |
| • Direct sales              | \$168.9                 | \$15.1                    | million/yr   |
| Decrease per 1 mgd          | \$1.673                 | \$0.245                   | million/yr   |
| • Direct and indirect sales | \$329.5                 | \$31.8                    | million/yr   |
| Decrease per 1 mgd          | \$3.346                 | \$0.517                   | million/yr   |

|                               |          |          |            |
|-------------------------------|----------|----------|------------|
| — Employment                  |          |          |            |
| • Direct                      | 793      | 101      | jobs       |
| Decrease per 1 mgd            | 8.447    | 1.634    | jobs       |
| • Direct and indirect         | 1,142    | 149      | jobs       |
| Decrease per 1 mgd            | 12.164   | 2.418    | jobs       |
| — Payroll                     |          |          |            |
| • Direct payroll              | \$28.5   | \$3.5    | million/yr |
| Decrease per 1 mgd            | \$0.303  | \$0.057  | million/yr |
| • Direct and indirect payroll | \$45.3   | \$5.8    | million/yr |
| Decrease per 1 mgd            | \$0.481  | \$0.095  | million/yr |
| — State Revenues              | \$4.46   | \$0.54   | million/yr |
| Decrease per 1 mgd            | \$0.0456 | \$0.0088 | million/yr |

Thus, each 1-mgd reduction of surface water from the Water Lease Limited to CWRM D&O Alternative would result in the following changes for Central Maui (first column of the above table): a reduction by about 173 acres of land in crops, a reduction by about 15 acres of land in irrigated pasture, an increase of about 188 acres of land in unirrigated pasture, a reduction in direct sales on Maui of about \$1.7 million per year, a reduction in direct-and-indirect sales on Maui and O‘ahu of about \$3.3 million per year, about 8.5 fewer direct jobs on Maui having a payroll of about \$300,000 per year, about 12 fewer direct-and-indirect jobs on Maui and O‘ahu having a payroll of about \$500,000 per year, and a reduction in State revenues of about \$50,000 per year. Significant but smaller changes would occur for Upcountry Maui (second column of the above table).

For illustration of a line-item calculation, if the EMI System were to supply 70 mgd of surface water under an intermediate alternative, then direct employment in Central Maui would be about 604 jobs calculated as follows:

- Reduction in surface-water supply: 22.32 mgd (92.32 mgd – 70 mgd).
- Reduction in direct employment: 189 jobs (22.32 mgd decrease in surface-water supply × 8.447 direct jobs/mgd from the above table).
- Resulting direct employment: 604 jobs (793 jobs under the Water Lease Limited to CWRM D&O Alternative – 189 fewer jobs because of less water)

## 14. CONSISTENCY WITH STATE AND COUNTY AGRICULTURAL POLICIES

The *Hawai‘i State Constitution*, the *Hawai‘i State Plan*, the *State Agriculture Functional Plan*, Hawai‘i Revised Statute for Important Agricultural lands (Chapter 205), the *County of Maui 2030 General Plan*, and the County’s *Maui Island Plan* call directly or implicitly for preserving the economic viability of plantation agriculture and promoting the growth of diversified agriculture, some specifically targeting agriculture in Central Maui (see Ap-

pendix). To accomplish this, an adequate supply of agriculturally suitable lands and water must be assured and protected.

With regard to plantation agriculture, HC&S was the last sugarcane plantation in Hawai‘i. The Hali‘imaile Pineapple Company in Upcountry Maui irrigates its fields with groundwater, not surface water from East Maui.

The Mahi Pono Farm Plan will conserve the about 30,000 acres of high-quality agricultural land in Central Maui, and these lands will be used for diversified crops and ranching. Furthermore, the IAL designation of about 23,000 acres will help conserve this valuable farmland. However, the amount of usable farmland in Central Maui will depend on how much water the State allows to be diverted from East Maui to Central Maui under the Water Lease.

The Water Lease Limited to CWRM D&O Alternative would maintain the viability of diversified farms in Upcountry Maui that depend on water from the EMI System. But these farms could be lost under the No Water Lease Alternative due to a lack of waters. Even after new wells are developed to fill the shortfall in the supply, significant farming is not expected to return to the area because of better farming conditions in Central Maui. For the Water Lease with Less than CWRM D&O Alternative, the loss of farming activity in Upcountry Maui would be proportional to the reduced water availability from the EMI System.

For all water-lease alternatives, farming in East Maui is expected to increase because CWRM D&O has restored full flow of the taro streams.

Of the three alternatives, the Water Lease Limited to CWRM D&O Alternative is the most compatible with State and County agricultural policies. This alternative would (1) preserve and protect the most agricultural land and water, and (2) promote the most agricultural activity.

## 15. REFERENCES

Act 25, S.B. No. 1158, April 15, 1993.

Agribusiness Development Corporation. 2019.

Akinaka & Associates (A&A). 2019.

Alexander & Baldwin, Inc.. 2018 and 2019.

Chris Hart & Partners, Inc. *Maui County General Plan 2030, Maui Island Plan, Agricultural Resources Technical Issue Paper*. September 2007.

City and County of Honolulu, Real Property Assessment Division. “Real Property Tax Rates in Hawai‘i. Annual.

Commission on Water Resource Management, State of Hawai‘i. “Findings of Fact, Conclusions of Law, & Decision and Order.” June 20, 2018. (CWRM D&O).

- Commission on Water Resource Management, State of Hawai‘i. “Hearing Officer’s Proposed Findings of Fact, Conclusions of Law, & Decision and Order.” August 2, 2017. (CWRM 2017)
- County of Maui Planning Department, Long Range Division. *County of Maui 2030 General Plan, Countywide Policy Plan*. Adopted by Ordinance No. 3732, effective on March 24, 2010.
- County of Maui, Department of Water Supply. “Fiscal Year 2018 Annual Report.”
- County of Maui, Department of Water Supply. “Maui Island Water Use and Development Plan Draft, Part III Regional Plan, Central Aquifer Sector Area.” November 2018.
- County of Maui, Office of Economic Development. *Maui County Data Book*. Annual.
- County of Maui, Planning Department, Long Range Division. Maui Island Plan, General Plan 2030. Ordinance No. 4004. December 28, 2012.
- County of Maui, Planning Department, Long Range Division. Regional maps with Development Projects and Directed Growth Boundaries. February 15, 2011.
- County of Maui, Planning Department. “Socio-Economic Forecast: The Economic Projections for the Maui County General Plan 2030.” June 2006.
- County of Maui, Real Property Assessment Division. Tax records. 2018 and 2019.
- Envionics Analytics, Business-Facts Summary, 2017.
- Giambelluca TW, Chen Q, Frazier AG, Price JP, Chen Y-L, Chu P-S, Eischeid J., and Delparte D. “The Rainfall Atlas of Hawai‘i.” 2018.
- Government of Western Australia, Department of Agriculture and Food. “Water salinity and plant irrigation. October 17, 2016.
- Harold L. Baker. *Agricultural Lands of Importance in the State of Hawai‘i*. University of Hawai‘i College of Tropical Agriculture and Human Resources, Honolulu, Hawai‘i. 1977.
- Hawai‘i Agricultural Statistics Service. *Statistics of Hawaiian Agriculture*. Honolulu, Hawai‘i. Annual.
- Hawai‘i Department of Agriculture. Information on State leases. 2018.
- Hawai‘i Department of Business, Economic Development & Tourism, State of Hawai‘i. *The Hawai‘i State Input-Output Study: 2012 Benchmark Report*. March 2016.
- Hawai‘i Department of Business, Economic Development and Tourism, Hawai‘i State Energy Office. 2019.
- Hawai‘i Department of Business, Economic Development and Tourism. *The State of Hawai‘i Data Book*. Honolulu, Hawai‘i. Annual.
- Hawai‘i Department of Taxation. Tax rates. 2019.

Hawai‘i Revised Statutes, Chapters 165, 205 and 226.

Hawaii Department of Agriculture. *The Hawaii State Plan: Agriculture, State Functional Plan*. 1991.

Institute on Taxation and Economic Policy. 2019.

Mahi Pono. 2019.

Munekiyo & Hiraga, Inc. Figures and acreage calculations. 2018.

State of Hawai‘i, Department of Business and Economic Development. Maui Solar Radiation Map. Undated.

State of Hawaii, Office of State Planning, Office of the Governor. *The Hawaii State Plan, 1991*. 1991.

U.S. Census Bureau. Annual.

U.S. Department of Agriculture, Soil Conservation Service in cooperation with The University of Hawai‘i Agricultural Experiment Station. *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawai‘i*. Washington, D.C.

University of Hawai‘i, Land Study Bureau. *Detailed Land Classification – Islands of Maui, Moloka‘i and Lāna‘i*. Honolulu, Hawai‘i. 1967.

Wikipedia. “Salt tolerance of crops.” webpage accessed December 2018.

Wilcox, Carol. *Sugar Water*. University of Hawai‘i Press. Honolulu, Hawai‘i. 1996.

Wilson Okamoto Corporation. “Proposed Lease (Water Lease) for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas, Environmental Impact Statement Preparation Notice.” February 2017.



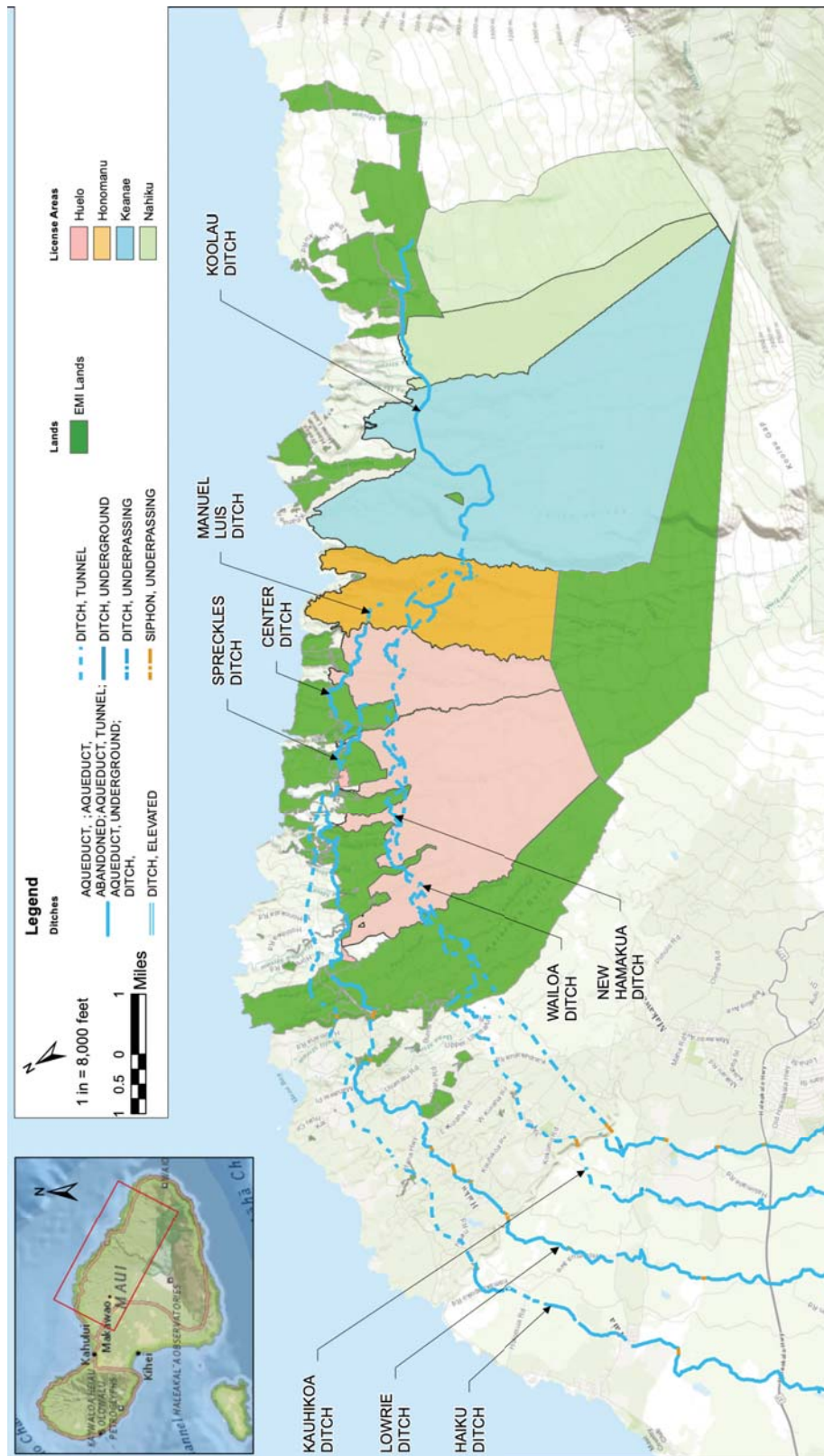


Figure 1. EMI Aqueduct System





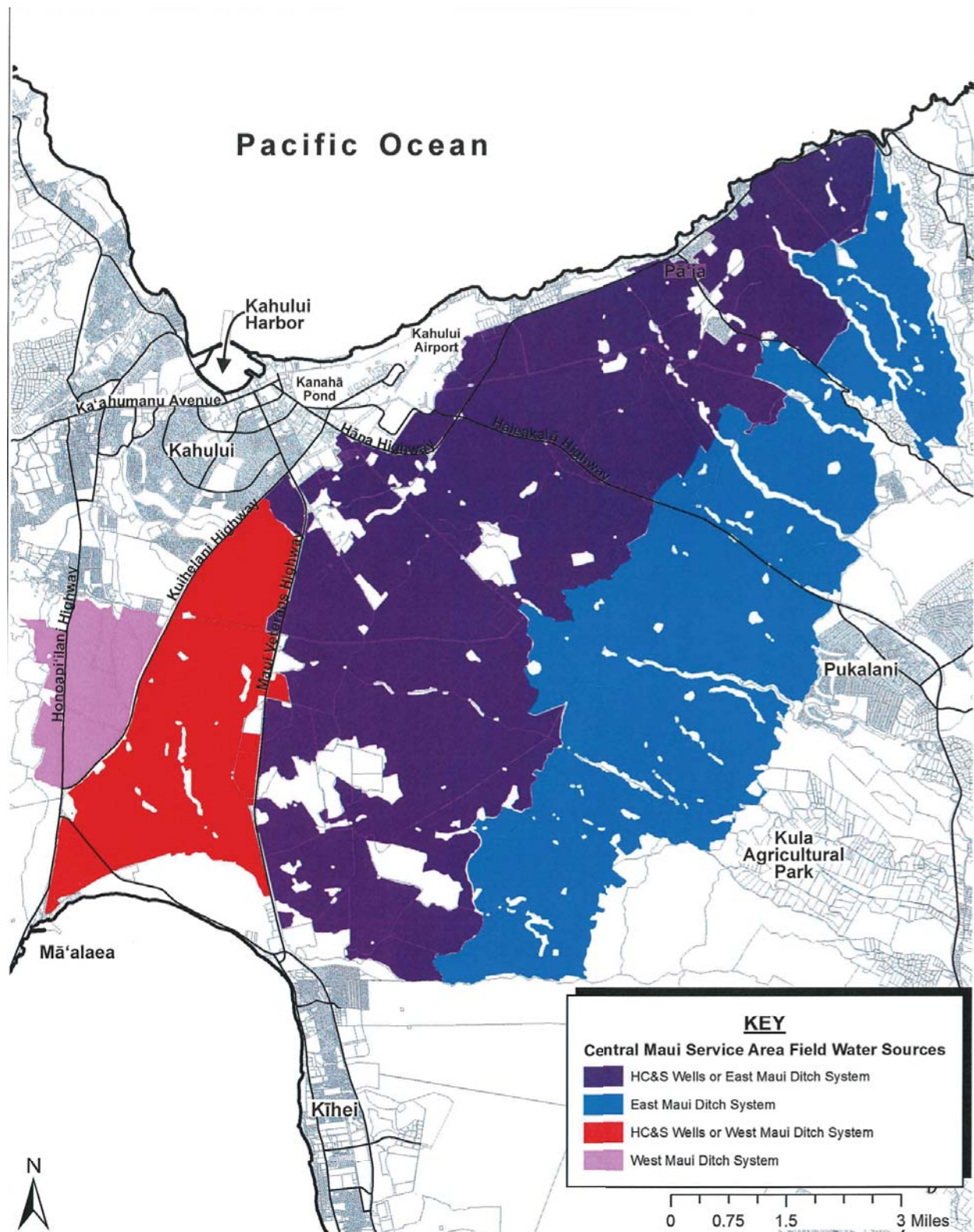


Figure 3. Central Maui Ag Lands and Water-Service Areas

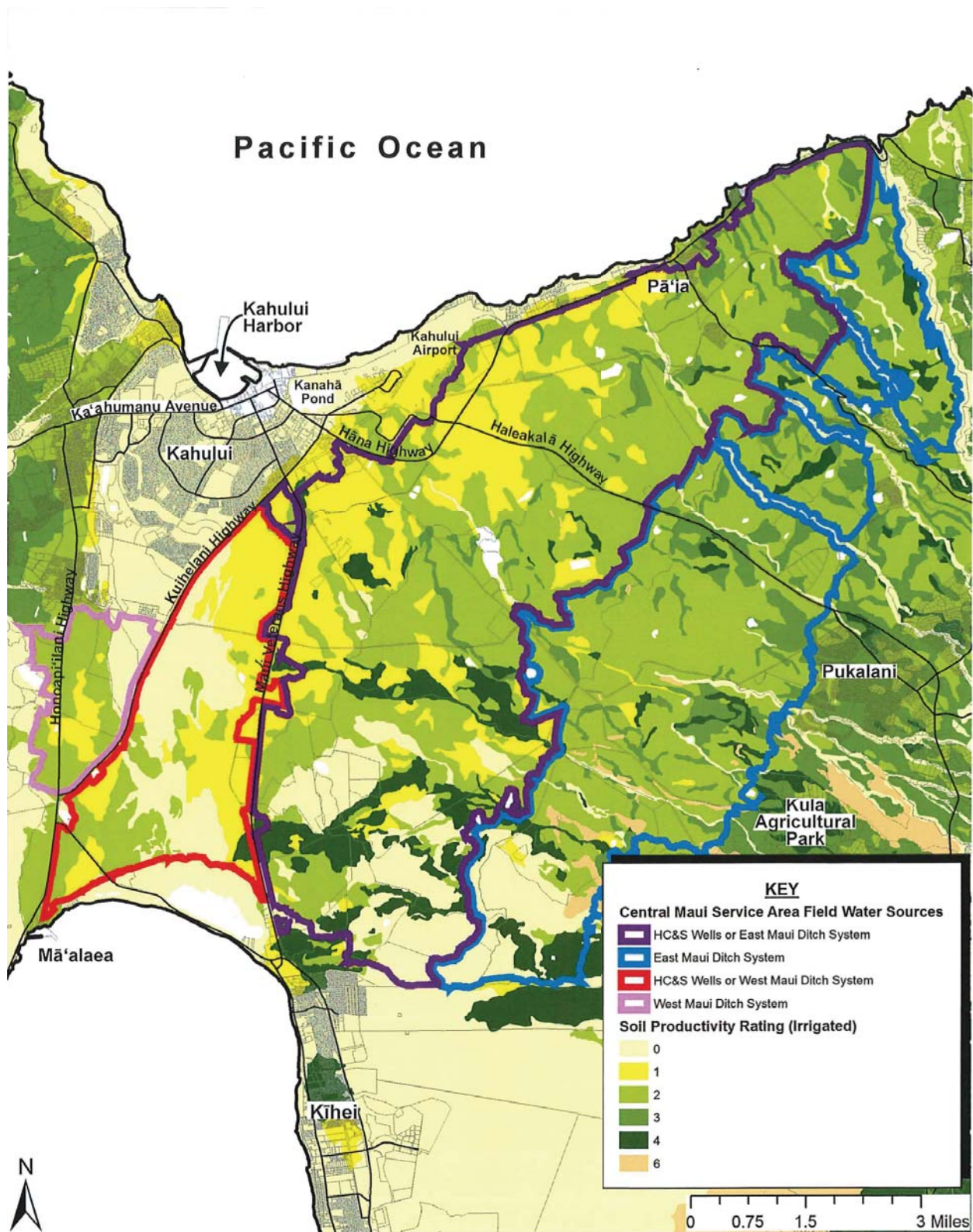


Figure 4. Central Maui, NRCS Soil Ratings, Irrigated



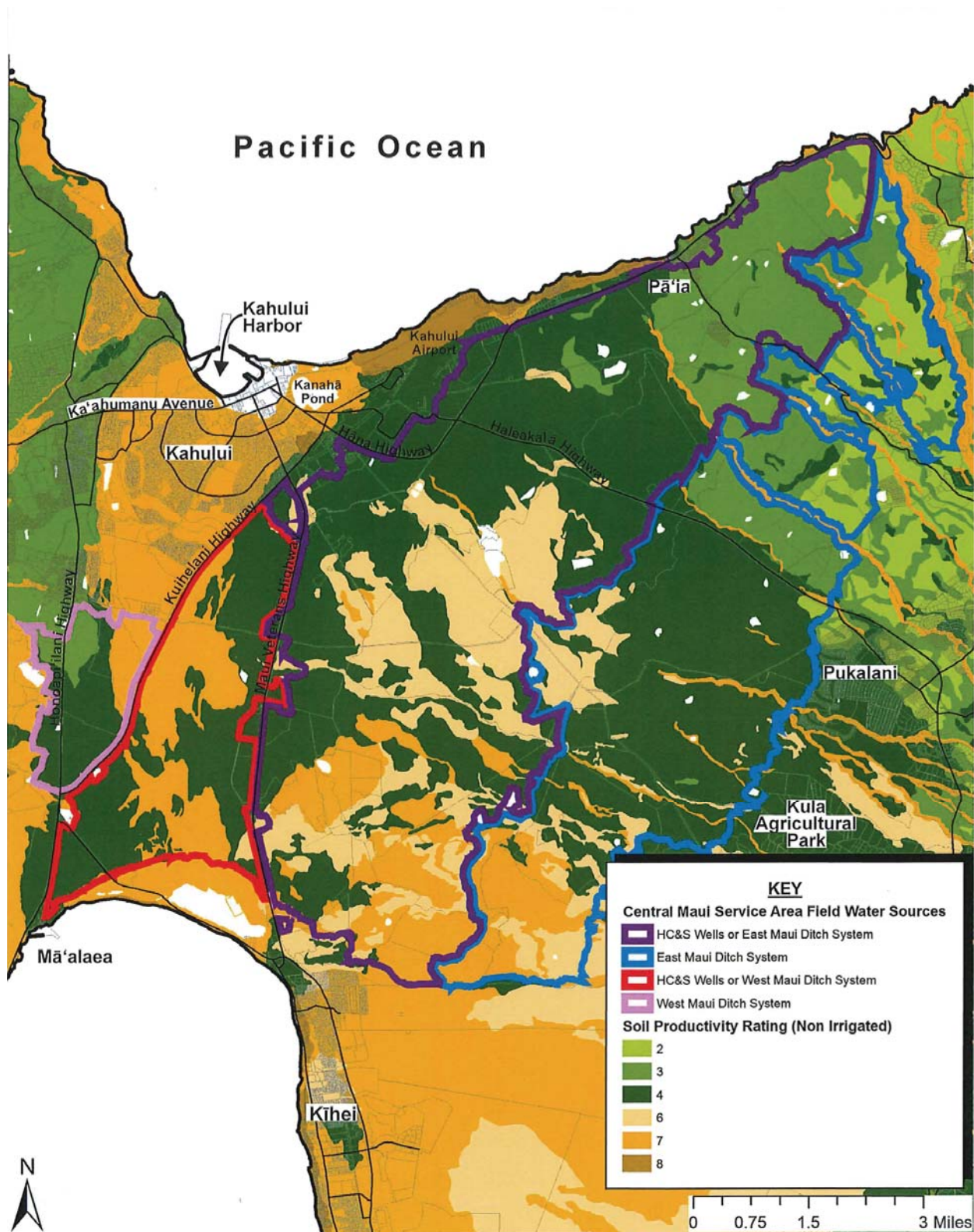


Figure 5. Central Maui, NRCS Soil Ratings, Non Irrigated



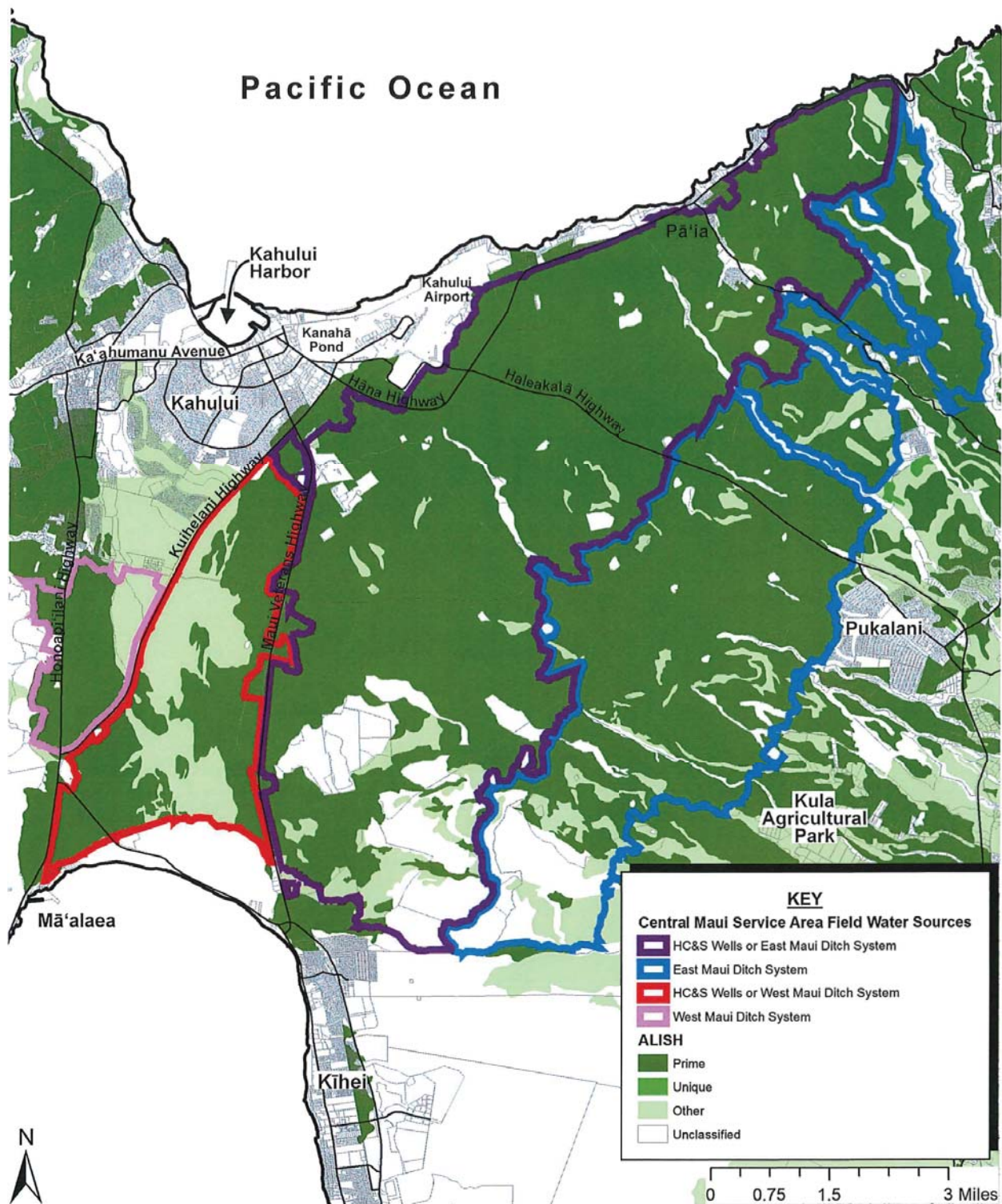


Figure 6. Central Maui, ALISH Soil Ratings

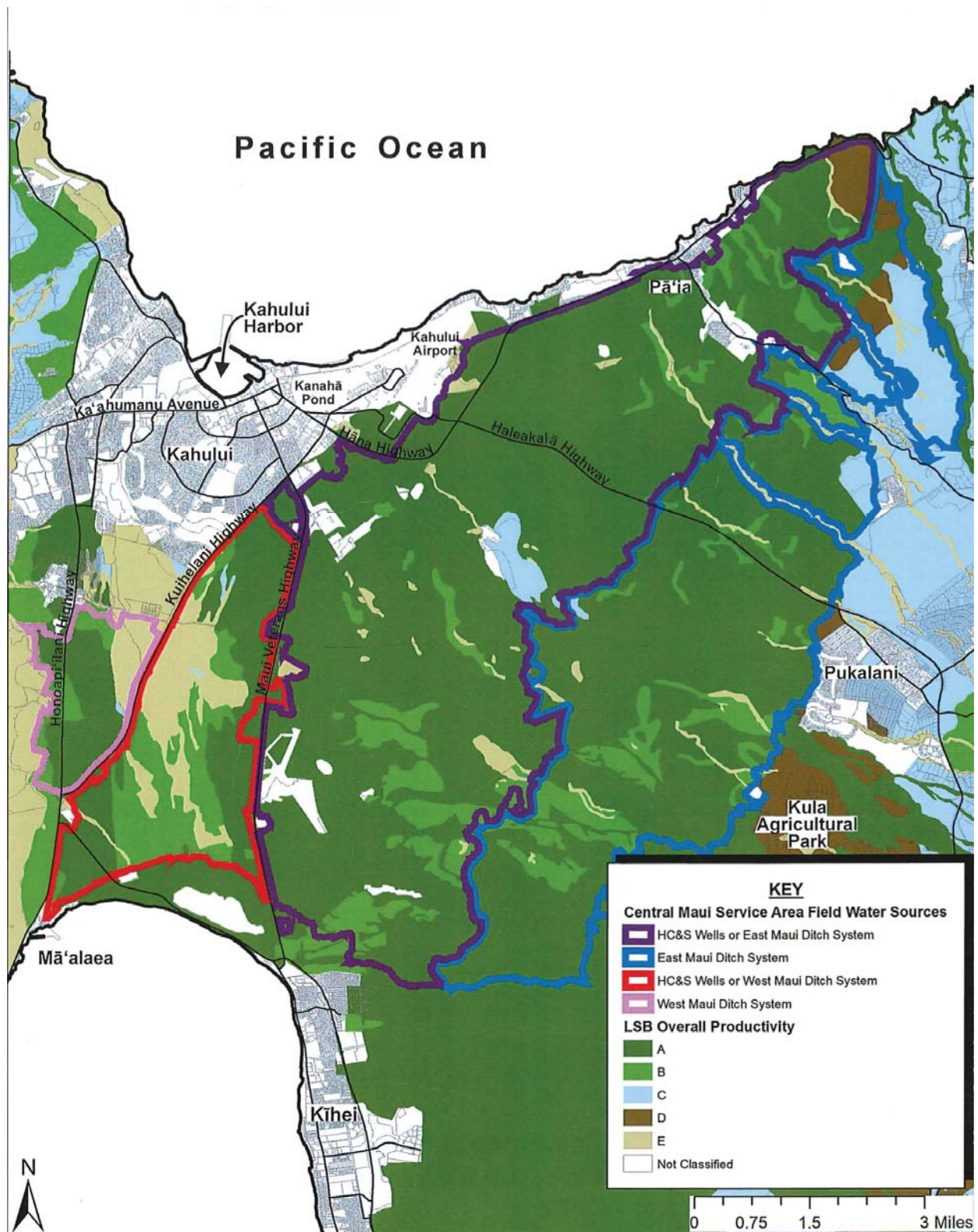


Figure 7. Central Maui, LSB Soil Ratings



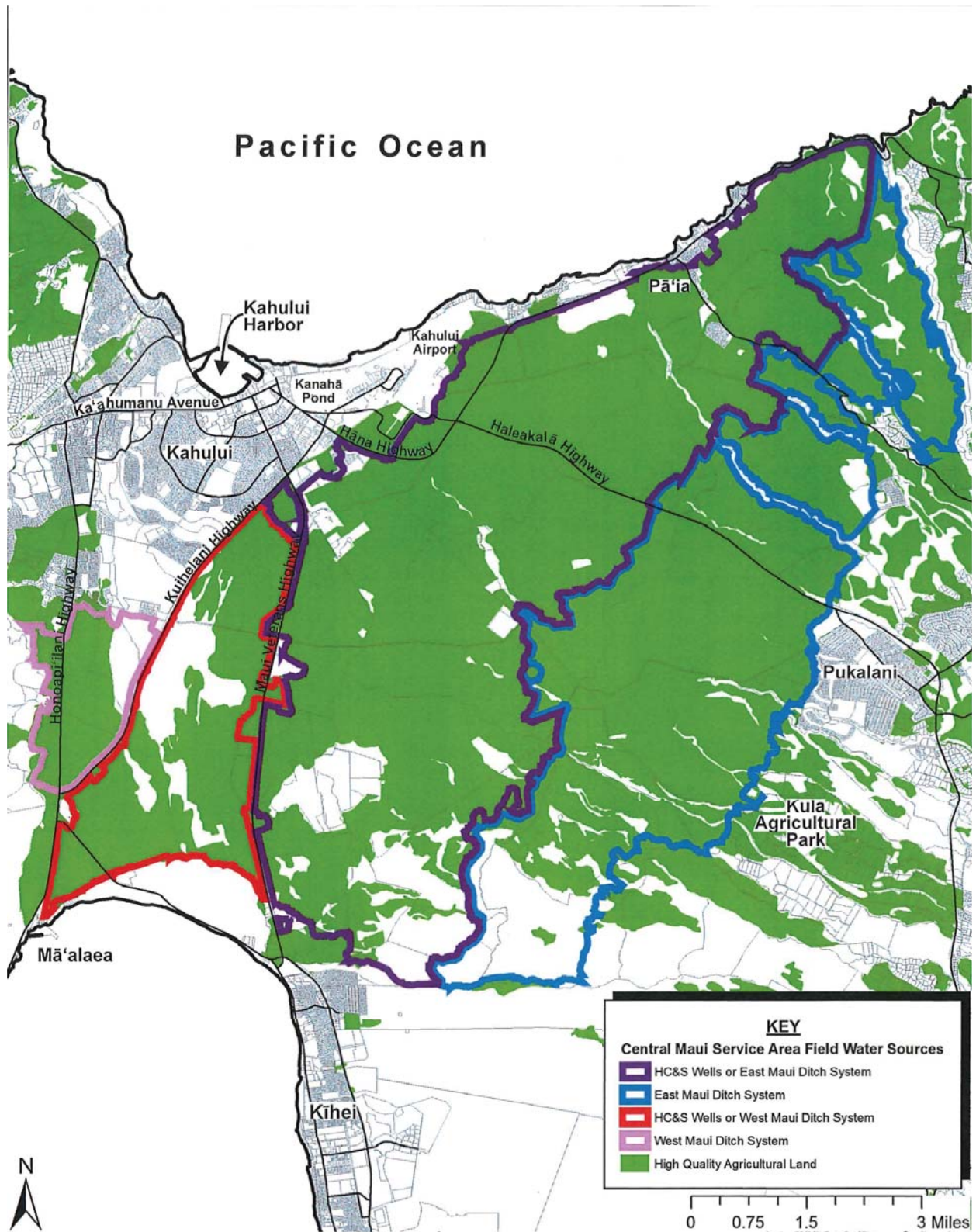


Figure 8. Central Maui, High-Quality Farmland

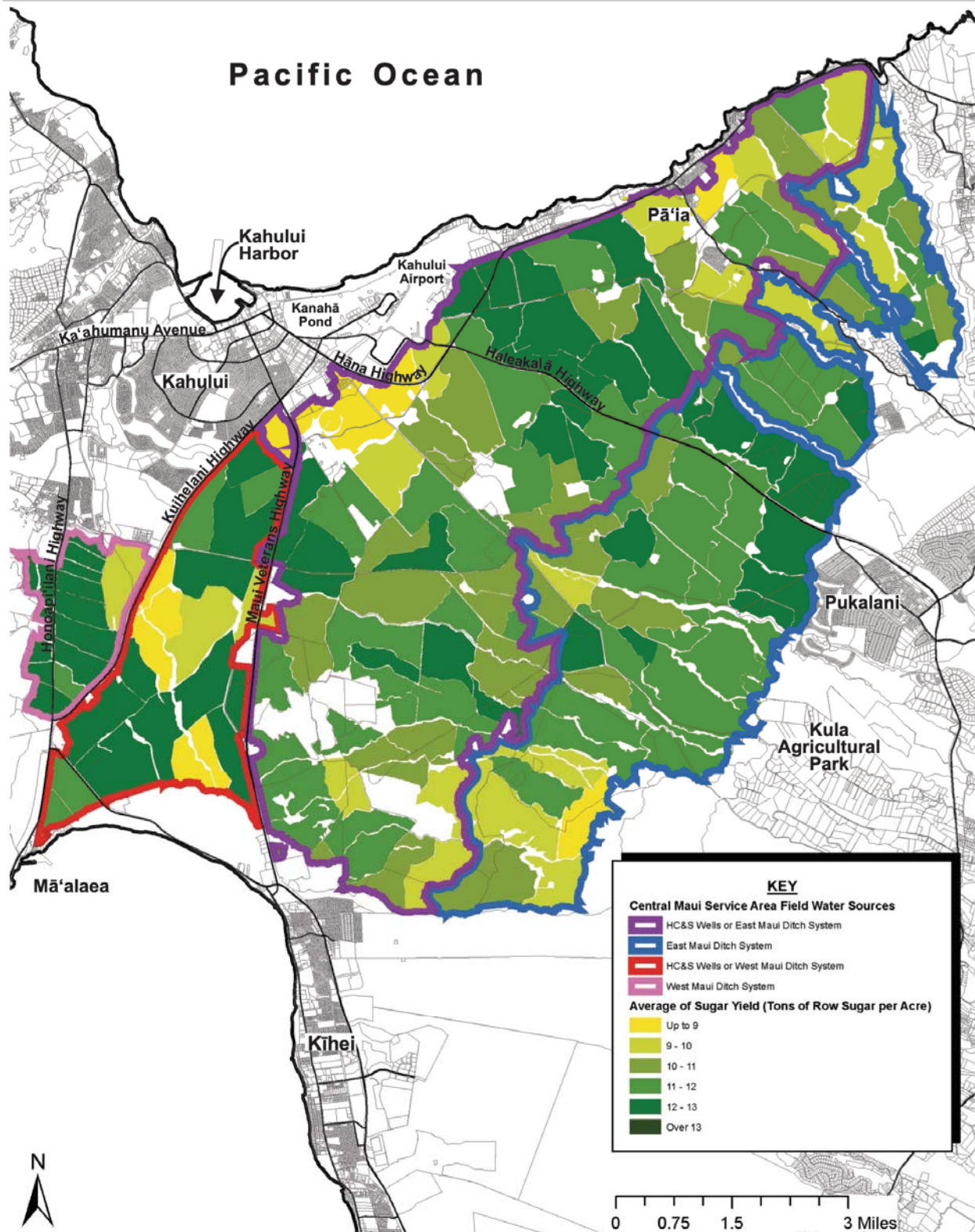


Figure 9. Central Maui, Sugar Yields



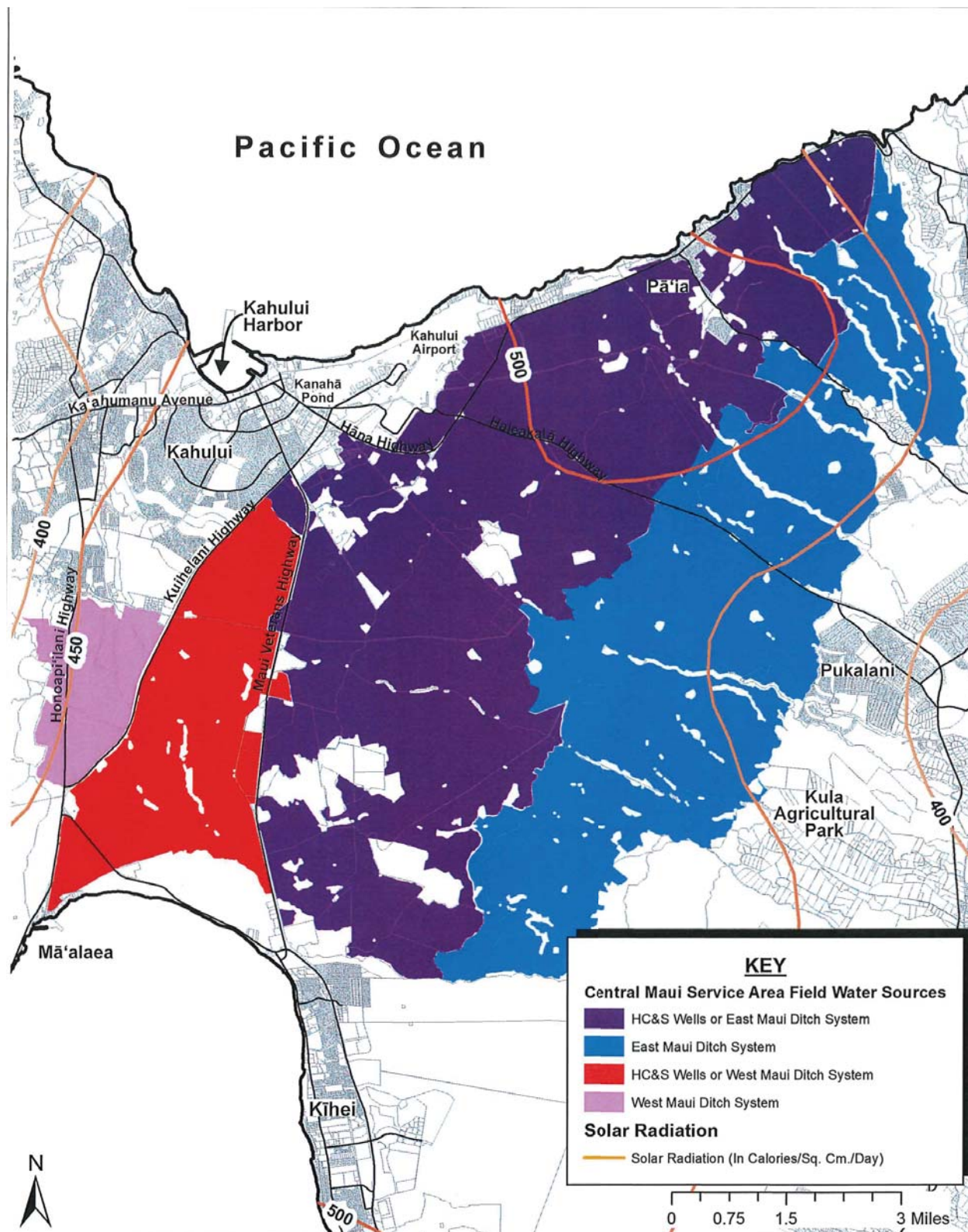


Figure 10. Central Maui, Solar Radiation



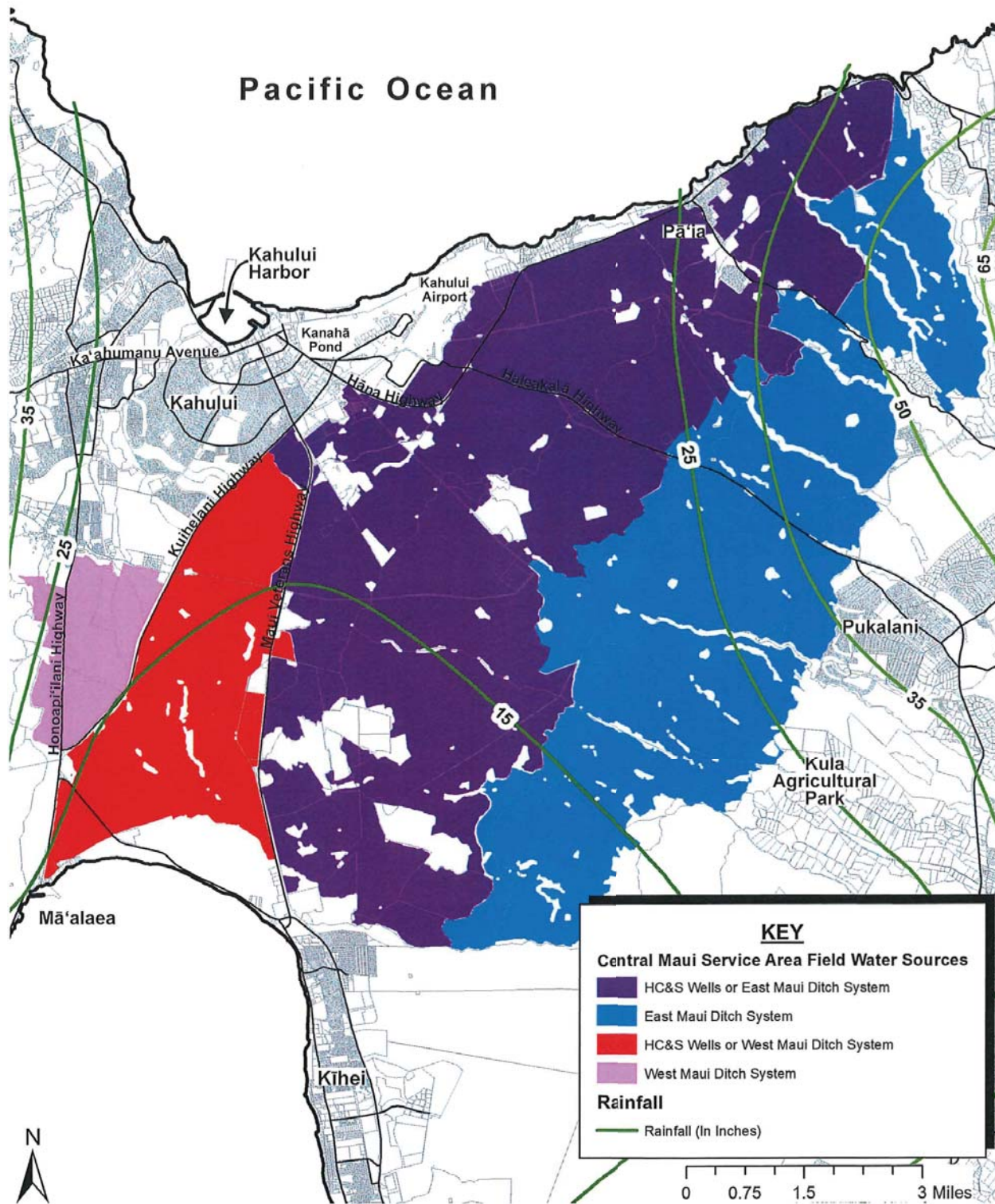


Figure 11. Central Maui, Rainfall

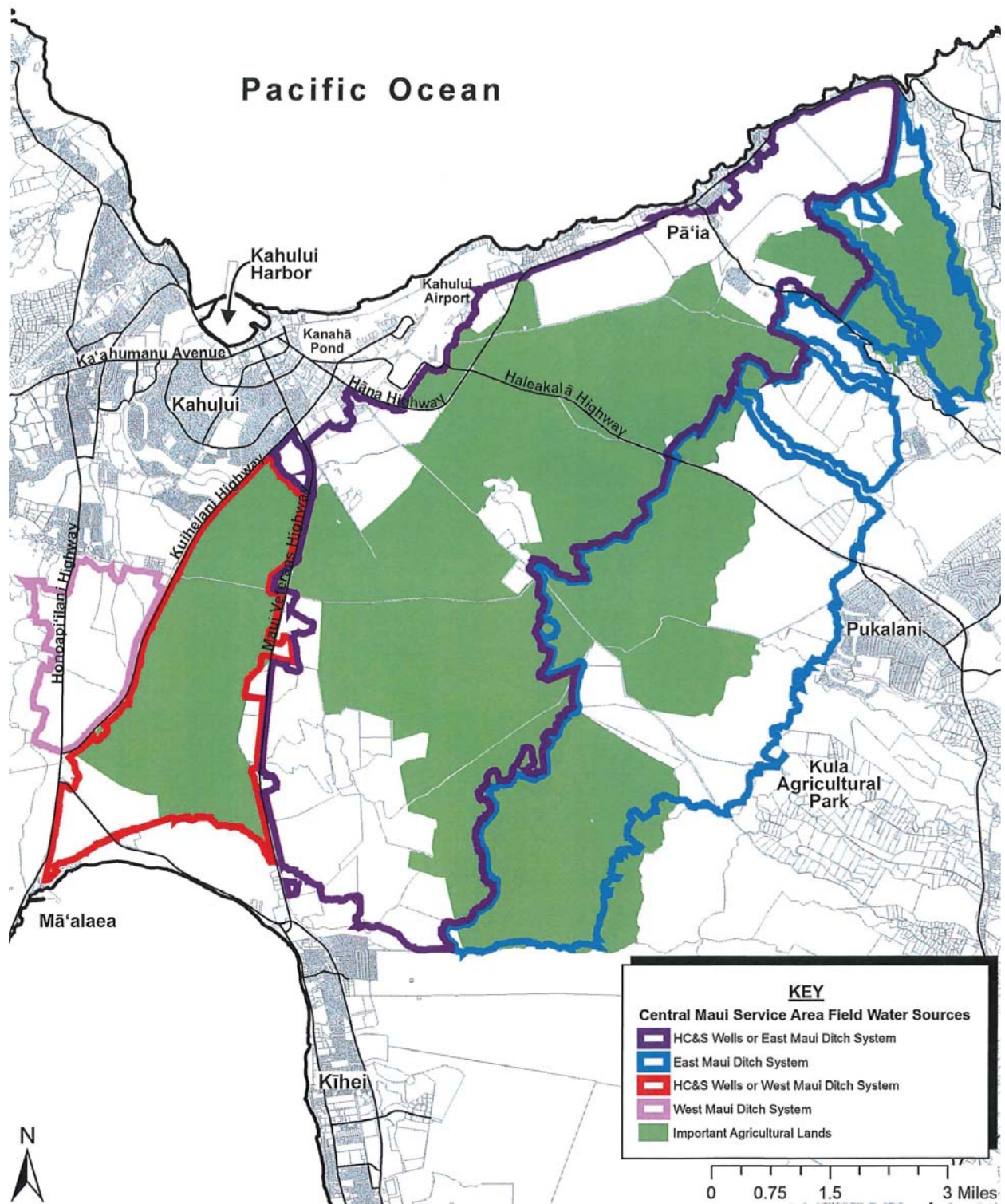


Figure 12. Central Maui, Important Agricultural Lands (IAL)



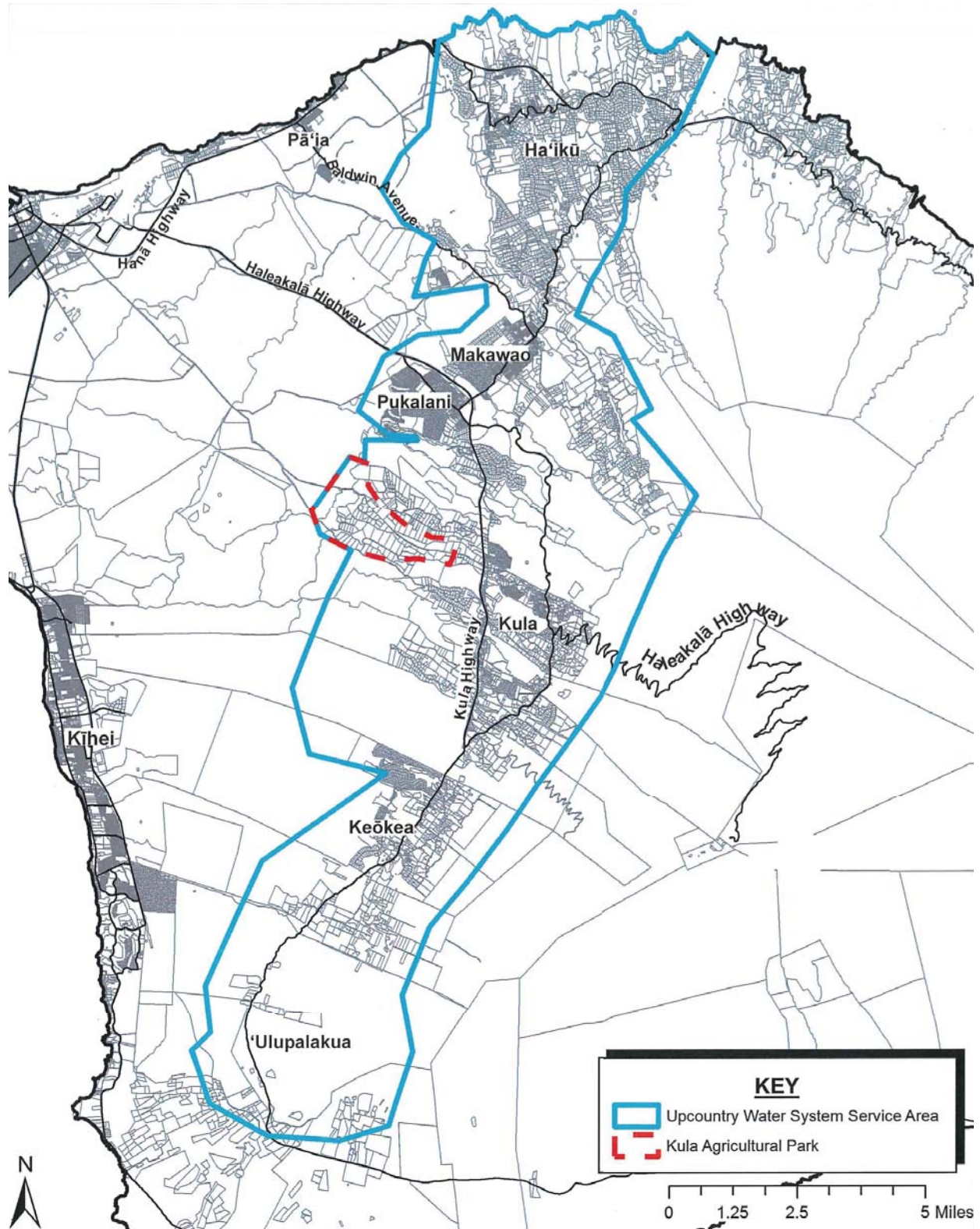


Figure 13. Upcountry Maui, Water System Service Area

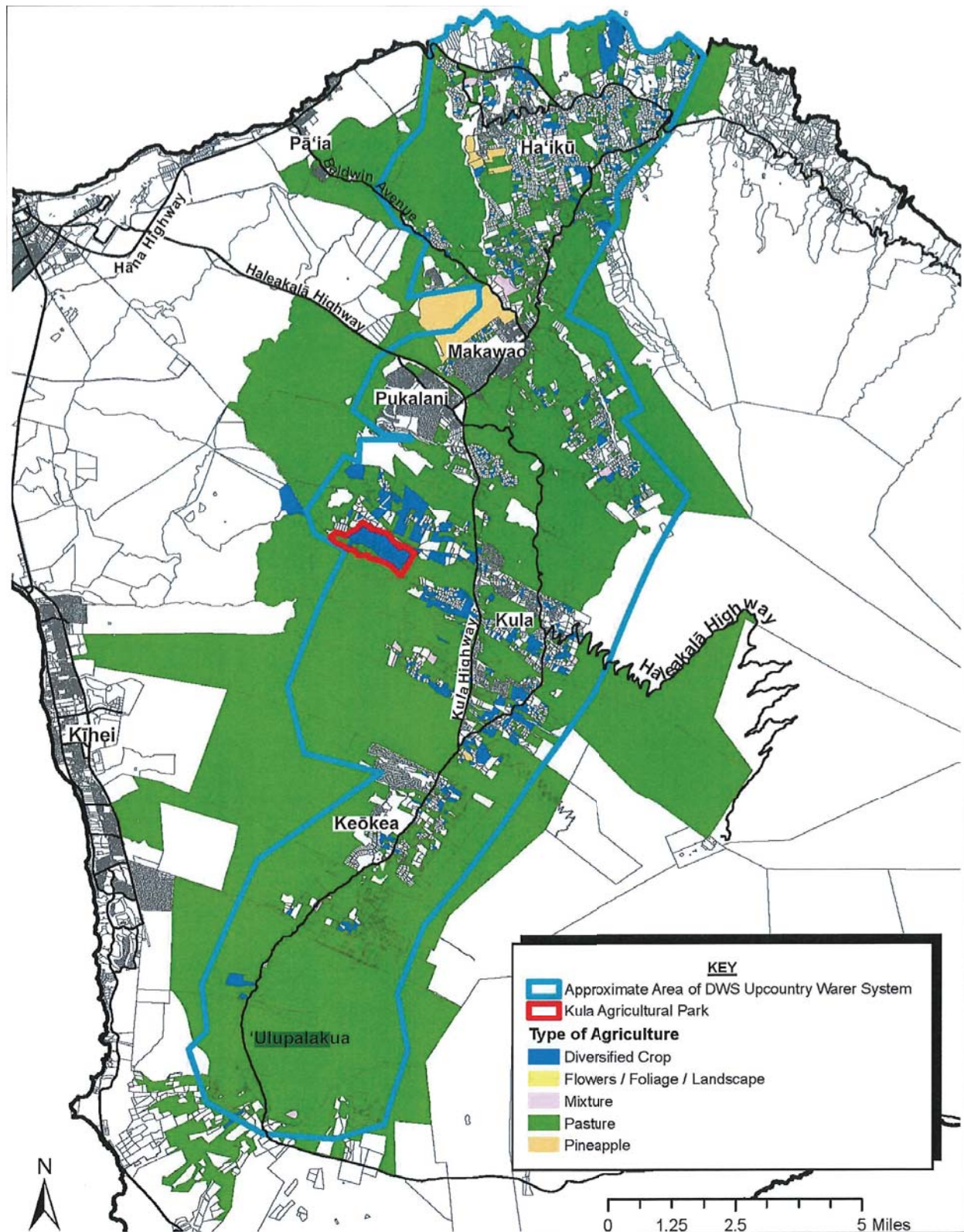


Figure 14. Upcountry Maui, Ag Lands and Activities



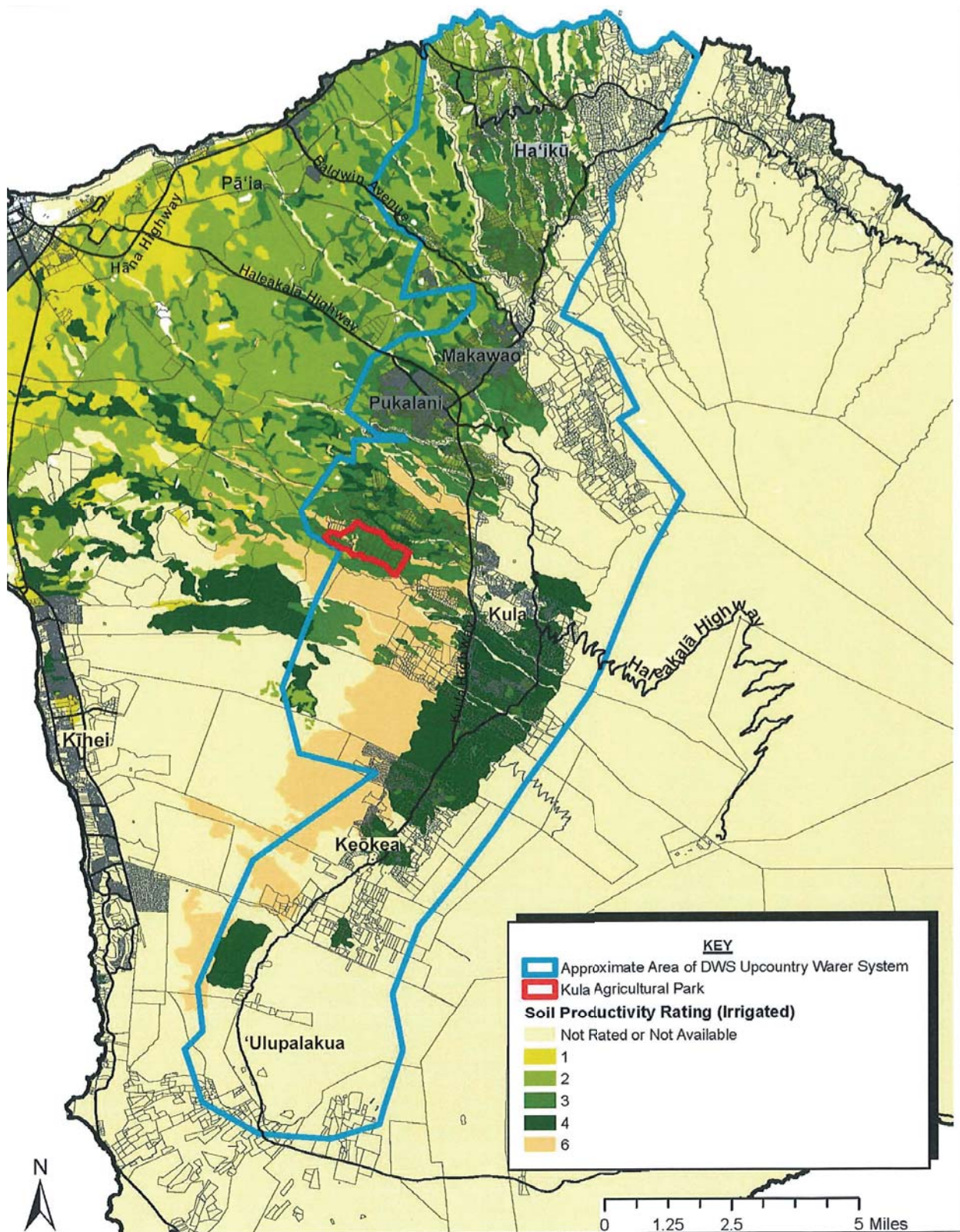


Figure 15. Upcountry Maui, NRCS Soil Ratings, Irrigated



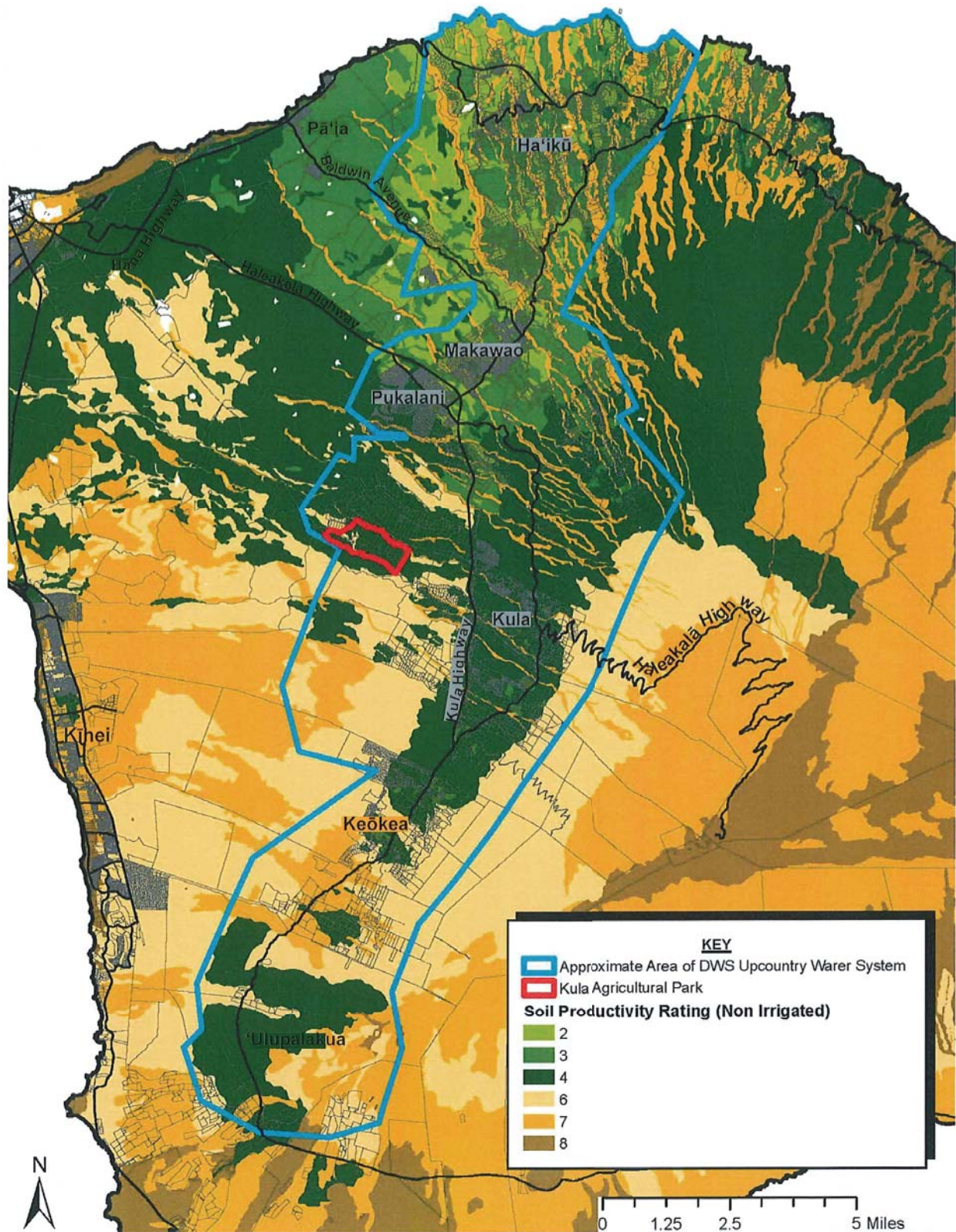


Figure 16. Upcountry Maui, NRCS Soil Ratings, Non Irrigated



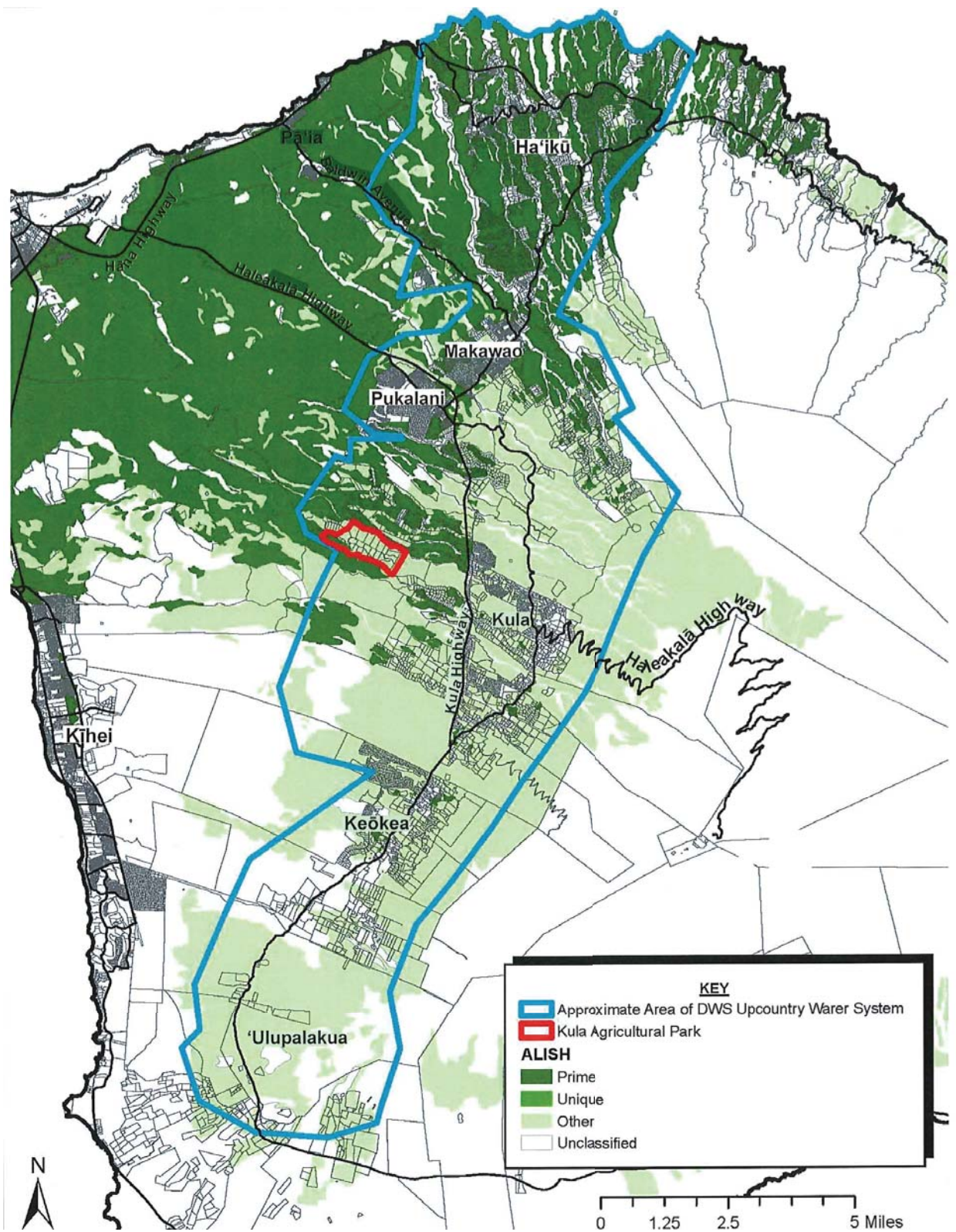


Figure 17. Upcountry Maui, ALISH Soil Ratings



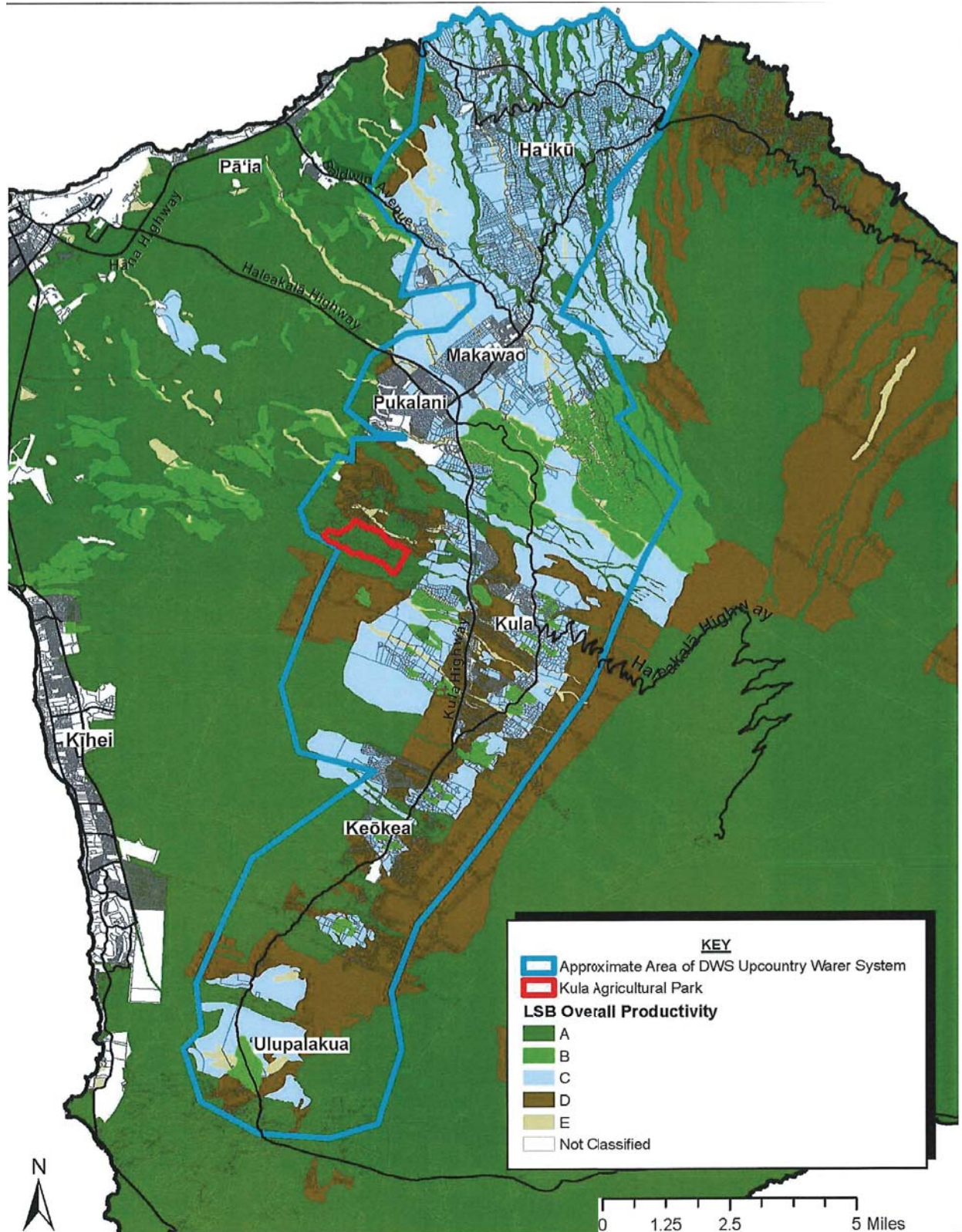


Figure 18. Upcountry Maui, LSB Soil Ratings



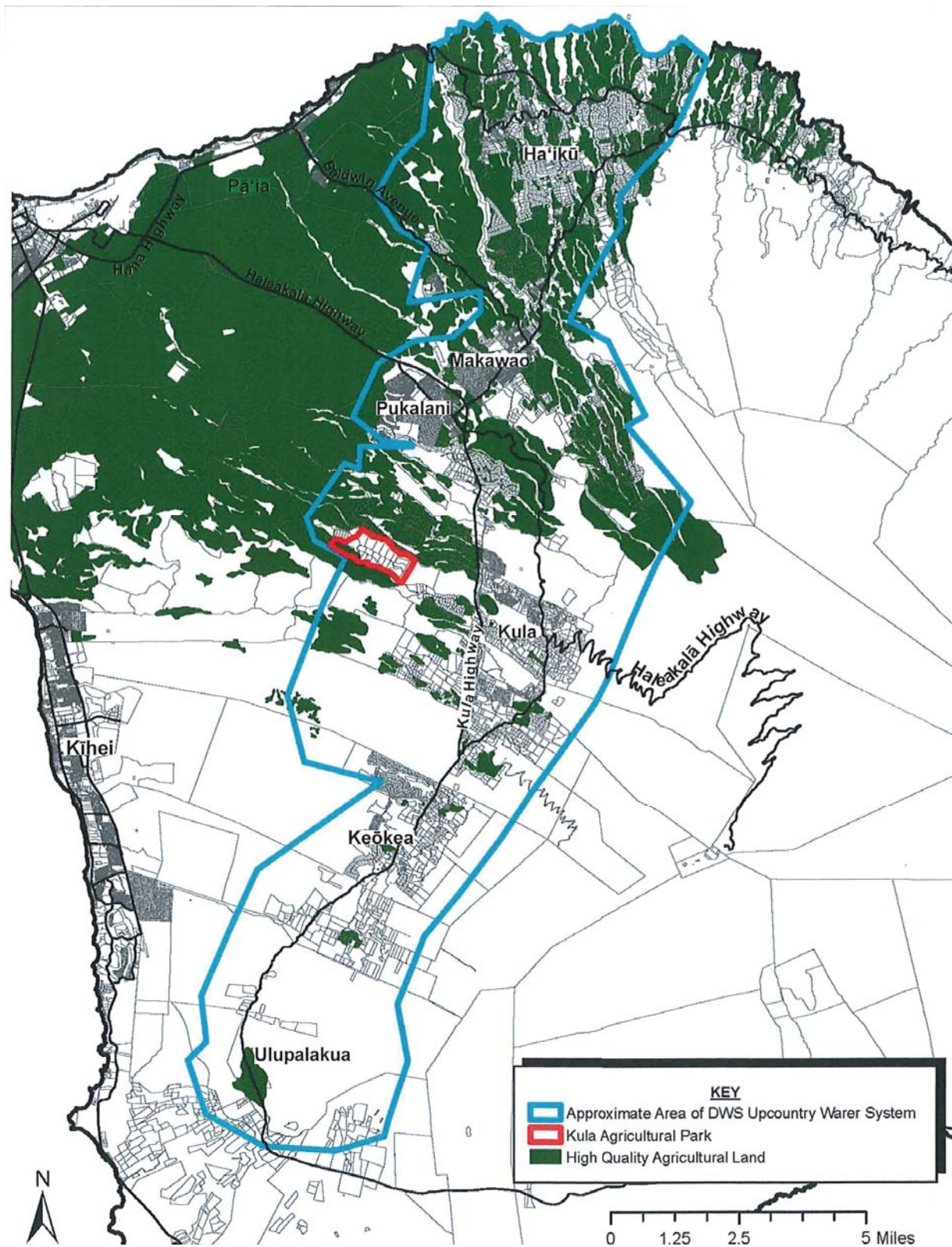


Figure 19. Upcountry Maui, High-Quality Farmland



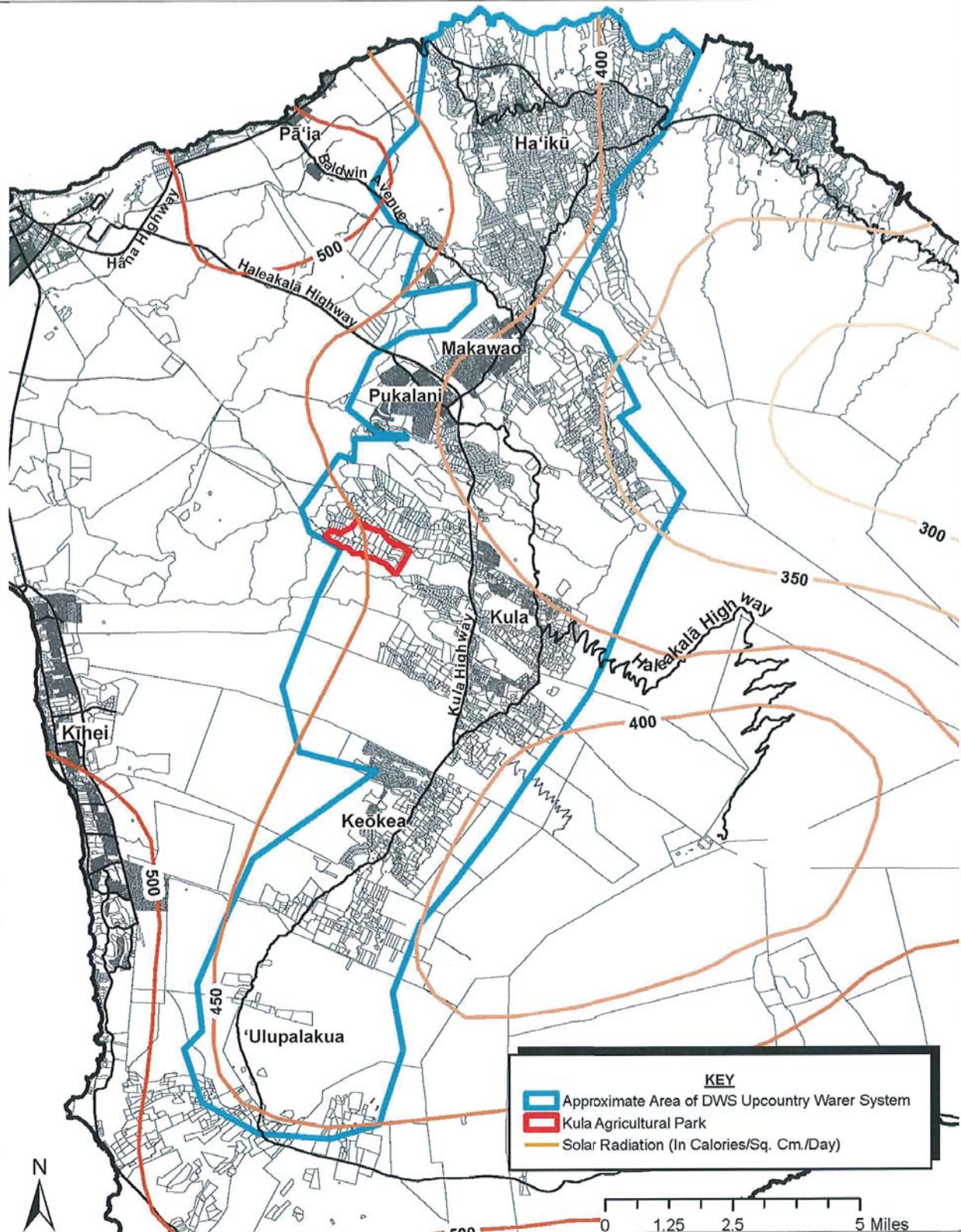


Figure 20. Upcountry Maui, Solar Radiation



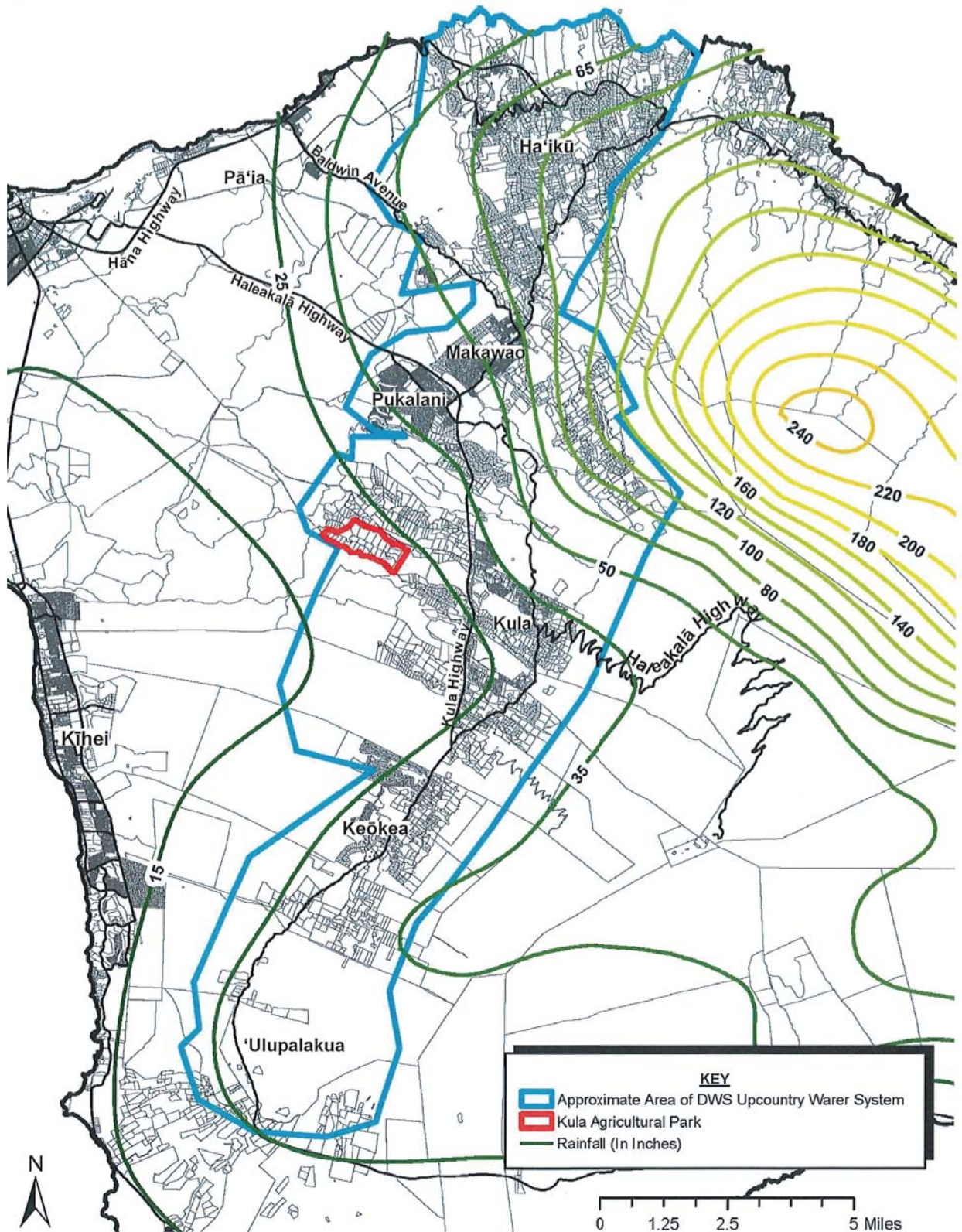


Figure 21. Upcountry Maui, Rainfall

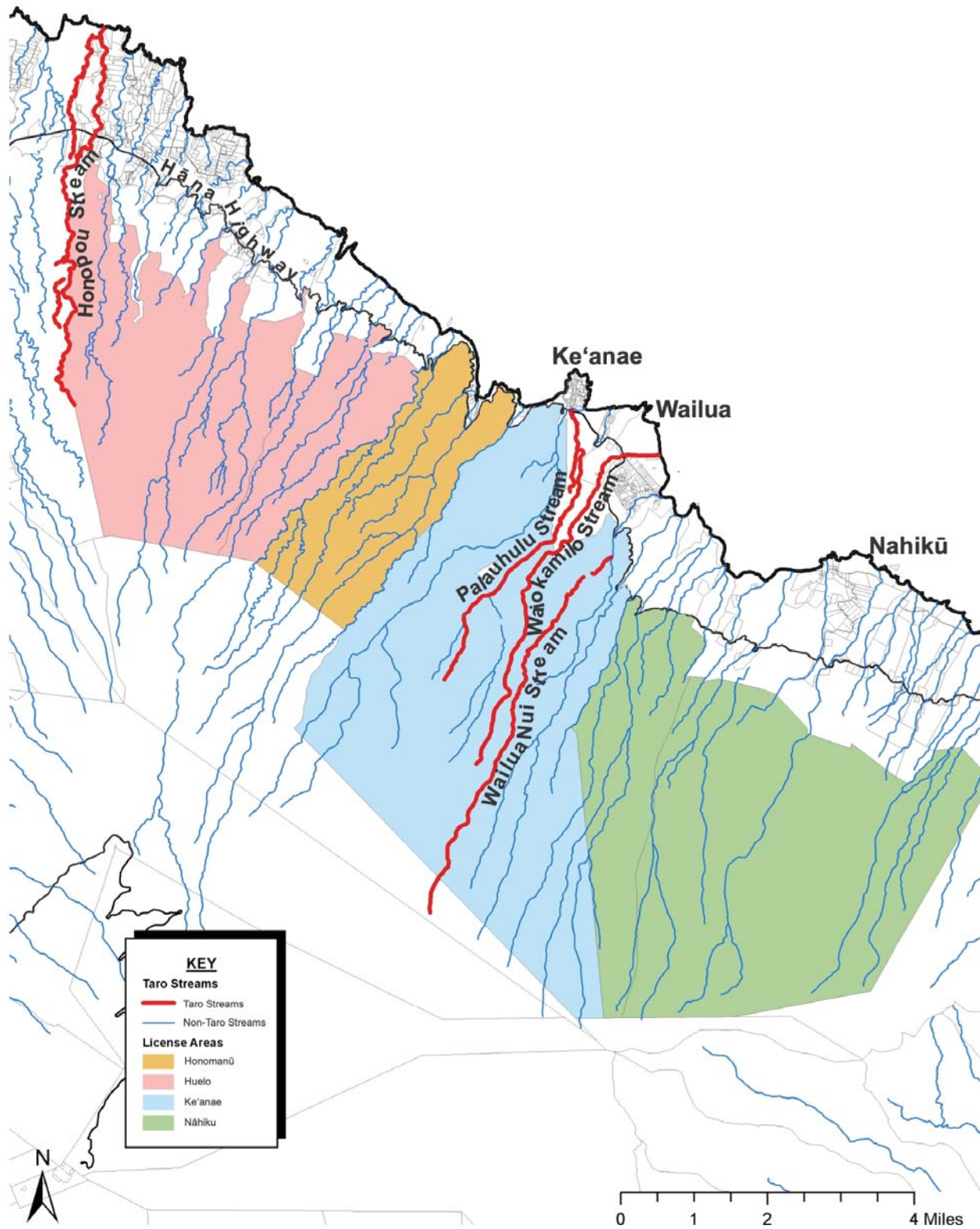


Figure 22. East Maui Taro Streams





Table 1. Water Supply, Allocation, and Costs

| Item   | Multiplier<br>or Source                    | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units       |
|--|--|------------------|-----------------|---------------|------------------------------------|-------------|-------------|
|  |  | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |             |
| <b>1.a. SURFACE AND BRACKISH WATER SUPPLY</b>      |  |                  |                 |               |                                    |             |             |
| Surface water from the EMI System                  |  |                  |                 |               |                                    |             |             |
| East of Honopou Stream                             |  |                  |                 |               |                                    |             |             |
| State lands  | 70%  | n.e.             | n.e.            | n.e.          | 61.57                              | -           | mgd         |
| Private lands                                      | 30%  | n.e.             | n.e.            | n.e.          | 26.39                              | 26.39       | mgd         |
| Total, east of Honopou Stream                      |  | n.e.             | n.e.            | 23.99         | 87.95                              | 26.39       | mgd         |
| Honopou Stream to Maliko Gulch, private lands      | D&O & A&A                                  | n.e.             | n.e.            | 4.37          | 4.37                               | 4.37        | mgd         |
| Total surface water supply                         | A&B or D&O                                 | 156.54           | 113.71          | 28.36         | 92.32                              | 30.76       | mgd         |
| Brackish groundwater                               | A&B, D&O, or PEP                           | 42.50            | 69.90           | -             | 21.31                              | 7.69        | mgd         |
| Total water supply                                 |  | 199.04           | 183.61          | 28.36         | 113.63                             | 38.44       | mgd         |
| Reduction in supply of surface water               |  |                  |                 |               |                                    |             |             |
| From typical sugar flow of 156.69 mgd              |  | -                | 42.83           | n.e.          | 64.22                              | 125.79      | mgd         |
| From recent sugar flow of 113.71 mgd               |  |                  | -               | n.e.          | 21.39                              | 82.96       | mgd         |
| <b>1.b. WATER ALLOCATION</b>                       |  |                  |                 |               |                                    |             |             |
| MDWS, surface water from EMI                       | D&O  | 3.23             | 7.10            | 2.86          | 7.10                               | -           | mgd         |
| Ag and related uses                                |  |                  |                 |               |                                    |             |             |
| Sugarcane  | D&O  | 143.19           | 132.45          |               |                                    |             | mgd         |
| Pineapple  | HC&S                                       | 0.25             |                 |               |                                    |             | mgd         |
| HC&S, industrial activities                        | D&O  | 7.98             | 6.25            | 1.00          |                                    |             | mgd         |
| Diversified Ag                                     | A&B or Total<br>less losses                |                  |                 | 4.00          | 82.34                              | 29.72       | mgd         |
| Maintenance of reservoirs for fire protection      | D&O  |                  |                 | n.e.          |                                    |             | mgd         |
| Other  | D&O  |                  | 0.41            |               |                                    |             | mgd         |
| System losses (excludes water for pineapple)       | 22.7% losses<br>or D&O                     | 44.39            | 41.67           | n.e.          | 24.18                              | 8.73        | mgd         |
| Total Ag uses                                      | Supply less MDWS                           | 195.81           | 180.78          | n.e.          | 106.53                             | 38.44       | mgd         |
| System losses, Ag use and system losses            |  | 22.7%            | 23.05%          | n.e.          | 22.7%                              | 22.7%       |             |
| Ag Uses, after system losses (excluding pineapple) |  |                  |                 |               |                                    |             |             |
| Irrigation Use                                     | Residual                                   | 143.19           | 132.45          | n.e.          | 82.34                              | 29.72       | mgd         |
| Non-irrigation Use                                 | Above                                      | 7.98             | 6.66            | n.e.          | -                                  | -           | mgd         |
| Total Ag uses, after system losses                 |  | 151.17           | 139.11          | n.e.          | 82.34                              | 29.72       | mgd         |
| Split  |  |                  |                 |               |                                    |             |             |
| Irrigation use                                     |  | 94.72%           | 95.21%          | n.e.          | 100.0%                             | 100.0%      |             |
| Non-irrigation use                                 |  | 5.28%            | 4.79%           | n.e.          | 0.0%                               | 0.0%        |             |
| Irrigation use, after system losses                |  |                  |                 |               |                                    |             |             |
| Surface water                                      | Residual                                   | 112.07           | 81.24           | n.e.          | 65.88                              | 23.77       | mgd         |
| Brackish groundwater                               | Groundwater – % loss<br>x % irrigation use | 31.12            | 51.21           | n.e.          | 16.47                              | 5.94        | mgd         |
| Total Ag use (excluding pineapple)                 | from above                                 | 143.19           | 132.45          | 4.00          | 82.34                              | 29.72       | mgd         |
| Split  |  |                  |                 |               |                                    |             |             |
| Surface water                                      |  | 78.3%            | 61.3%           | n.e.          | 80.0%                              | 80.0%       |             |
| Brackish groundwater                               |  | 21.7%            | 38.7%           | n.e.          | 20.0%                              | 20.0%       |             |
| Adjustment   |  |                  | (4.27)          |               |                                    |             | mgd         |
| Total water use                                    |  | 199.04           | 183.61          | n.e.          | 113.63                             | 38.44       | mgd         |
| <b>1.c. WATER DELIVERY COSTS</b>                   |  |                  |                 |               |                                    |             |             |
| Surface water from EMI                             | MHI  | 3.5              | 3.9             | 16.2          | 6.8                                | 12.9        | ¢/1,000 gal |
| Brackish groundwater                               | A&B/EMI                                    | n.e.             | 52.0            | 52.0          | 52.0                               | 52.0        | ¢/1,000 gal |

Table 2. Agricultural Land Use

| Item   | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units |
|--|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|-------|
|  |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |       |
| <b>2.a. CENTRAL MAUI</b>                               |                         |                  |                 |               |                                    |             |       |
| <b>Sugar operations</b>                                |                         |                  |                 |               |                                    |             |       |
| Fields serviced by EMI System and groundwater          |                         |                  |                 |               |                                    |             |       |
| Upper fields (surface water only)                      | HC&S                    | 12,800           | 12,729          |               |                                    |             | acres |
| Lower fields (surface and brackish water)              | HC&S                    | 16,627           | 17,591          |               |                                    |             | acres |
| Total sugarcane  |                         | 29,427           | 30,320          |               |                                    |             | acres |
| Fields serviced by W Maui Ditch System and groundwater |                         | 5,750            | 5,856           |               |                                    |             | acres |
| Total plantation                                       | HC&S                    | 35,177           | 36,176          |               |                                    |             |       |
| Acreage split  |                         |                  |                 |               |                                    |             |       |
| Upper fields (surface water only)                      |                         | 43.5%            | 42.0%           |               |                                    |             |       |
| Lower fields (surface and brackish water)              |                         | 56.5%            | 58.0%           |               |                                    |             |       |
| Land leased from State                                 | HC&S                    | 1,447            | 1,447           |               |                                    |             | acres |
| <b>Diversified Ag</b>                                  |                         |                  |                 |               |                                    |             |       |
| By Activity  |                         |                  |                 |               |                                    |             |       |
| Crops  |                         |                  |                 |               |                                    |             |       |
| Community Farm   | Mahi Pono/PEP           |                  |                 |               | 800                                | 300         | acres |
| Orchards (citrus, mac nuts, beverage crops)            | Mahi Pono/PEP           |                  |                 |               | 12,850                             | 4,180       | acres |
| Tropical fruits  | Mahi Pono/PEP           |                  |                 |               | 600                                | 200         | acres |
| Row and annual crops                                   | Mahi Pono/PEP           |                  |                 |               | 1,200                              | 400         | acres |
| Energy crops   | A&B/Mahi Pono/PEP       |                  |                 | 200           | 500                                | 200         | acres |
| Total crop farms                                       |                         |                  |                 | 200           | 15,950                             | 5,280       | acres |
| Pasture  |                         |                  |                 |               |                                    |             |       |
| Irrigated  | A&B/Mahi Pono/PEP       |                  |                 |               | 4,700                              | 3,800       | acres |
| Unirrigated  | A&B/Mahi Pono/PEP       |                  |                 | 500           | 9,100                              | 20,670      | acres |
| Total Pasture  |                         |                  |                 | 500           | 13,800                             | 24,470      | acres |
| Green energy (solar), unirrigated                      | Mahi Pono/PEP           |                  |                 | -             | 250                                | 250         | acres |
| Fallow   |                         |                  |                 | 29,300        |                                    |             |       |
| Total  |                         |                  |                 | 30,000        | 30,000                             | 30,000      | acres |
| Upper fields, Irrigated (surface water only)           |                         |                  |                 |               |                                    |             |       |
| Community Farm   | Mahi Pono/PEP           |                  |                 |               | -                                  | -           | acres |
| Orchards (citrus, mac nuts, beverage crops)            | Mahi Pono/PEP           |                  |                 |               | 4,990                              | 1,620       | acres |
| Tropical fruits  | Mahi Pono/PEP           |                  |                 |               | -                                  | -           | acres |
| Row and annual crops                                   | Mahi Pono/PEP           |                  |                 |               | 300                                | 200         | acres |
| Energy crops   | Mahi Pono/PEP           |                  |                 | 200           | -                                  | -           | acres |
| Pasture, irrigated                                     | Mahi Pono/PEP           |                  |                 |               | 1,100                              | 900         |       |
| Total upper fields, Irrigated                          |                         |                  |                 |               | 6,390                              | 2,720       | acres |
| Lower fields, Irrigated (surface and brackish water)   |                         |                  |                 |               |                                    |             |       |
| Community Farm   | Mahi Pono/PEP           |                  |                 |               | 800                                | 300         | acres |
| Orchards (citrus, mac nuts, beverage crops)            | Mahi Pono/PEP           |                  |                 |               | 7,860                              | 2,560       | acres |
| Tropical fruits  | Mahi Pono/PEP           |                  |                 |               | 600                                | 200         | acres |
| Row and annual crops                                   | Mahi Pono/PEP           |                  |                 |               | 900                                | 200         | acres |
| Energy crops   | Mahi Pono/PEP           |                  |                 | 200           | 500                                | 200         | acres |
| Pasture, irrigated                                     | Mahi Pono/PEP           |                  |                 |               | 3,600                              | 2,900       | acres |
| Total lower fields, Irrigated                          |                         |                  |                 |               | 14,260                             | 6,360       | acres |
| Unirrigated  |                         |                  |                 |               |                                    |             |       |
| Pasture, unirrigated                                   |                         |                  |                 | 500           | 9,100                              | 20,670      | acres |
| Green energy, unirrigated                              |                         |                  |                 |               | 250                                | 250         | acres |
| Total unirrigated                                      |                         |                  |                 |               | 9,350                              | 20,920      | acres |
| By irrigation  |                         |                  |                 |               |                                    |             |       |
| Irrigated  |                         |                  |                 | 200           | 20,650                             | 9,080       | acres |
| Unirrigated  |                         |                  |                 | 500           | 9,350                              | 20,920      | acres |



**Table 2. Agricultural Land Use**  
(Continued)

| Item   | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units |
|--|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|-------|
|  |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |       |
| Land leased to others  |                         |                  |                 |               |                                    |             |       |
| Community Farm   | Mahi Pono/PEP           |                  |                 |               | 800                                | 300         | acres |
| Energy crops   | Mahi Pono/PEP           |                  |                 |               | 500                                | 200         | acres |
| Other crops  | Mahi Pono/PEP           |                  |                 |               | 750                                | 750         | acres |
| Green energy   | Mahi Pono/PEP           |                  |                 |               | 250                                | 250         | acres |
| Total land leased  |                         |                  |                 |               | 2,300                              | 1,500       | acres |
| <b>2.b. Upcountry MAUI (farms supplied with water from EMI)</b>    |                         |                  |                 |               |                                    |             |       |
| Kula Ag Park   | County of Maui          | n.e.             | n.e.            | 447           | 709                                | -           | acres |
| Other farms  | PEP                     | n.e.             | n.e.            | 800           | 800                                | -           | acres |
| Total  |                         |                  | n.e.            | 1,247         | 1,509                              | -           | acres |
| <b>2.c. EAST MAUI (farms with appurtenant and riparian rights)</b> |                         |                  |                 |               |                                    |             |       |
| Taro farms   | D&O                     | n.e.             | n.e.            | n.e.          | 44.83                              | 44.83       | acres |
| Other farms  | D&O                     | n.e.             | n.e.            | n.e.          | 35.09                              | 35.09       | acres |
| Total farmland   |                         |                  |                 |               | 79.92                              | 79.92       | acres |

Table 3. Agricultural Water Use

| Item   | Multiplier<br>or Source   | Baselines        |                 |               | Alternative Future<br>Water Leases |              | Units |
|--|---------------------------|------------------|-----------------|---------------|------------------------------------|--------------|-------|
|  |                           | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease  |       |
| <b>3.a. CENTRAL MAUI</b>                             |                           |                  |                 |               |                                    |              |       |
| <b>Sugar operations</b>                              |                           |                  |                 |               |                                    |              |       |
| Applied water use (after system losses)              |                           |                  |                 |               |                                    |              |       |
| Upper fields (surface water only)                    | Share based on            | 62.28            | 55.61           |               |                                    |              | mgd   |
| Lower fields (surface and brackish water)            | Acreage Split             | 80.90            | 76.84           |               |                                    |              | mgd   |
| Total water use, sugarcane                           | Table 1. Section 1.b      | <b>143.19</b>    | <b>132.45</b>   |               |                                    |              | mgd   |
| Per acre   |                           | 4,866            | 4,368           |               |                                    |              | gad   |
| Surface water  | Table 1. Section 1.b      | 112.07           | 81.24           |               |                                    |              | mgd   |
| Upper fields   | From above                | 62.28            | 55.61           |               |                                    |              | mgd   |
| Lower fields   | Residual                  | 49.79            | 25.63           |               |                                    |              | mgd   |
| Brackish water, lower fields                         | Table 1. Section 1.b      | 31.12            | 51.21           |               |                                    |              | mgd   |
| Share of Total water use                             |                           | 21.7%            | 38.7%           |               |                                    |              |       |
| Share of water use, lower fields                     |                           | 38.5%            | 66.6%           |               |                                    |              |       |
| Gross Water Use (before system losses)               |                           |                  |                 |               |                                    |              |       |
| Surface  | Percentage losses         | 144.98           | 105.57          |               |                                    |              | mgd   |
| Brackish   | from Table 1, Section 1.b | 40.26            | 66.55           |               |                                    |              | mgd   |
| Total water requirements                             |                           | 185.24           | 172.13          |               |                                    |              | mgd   |
| <b>Diversified Ag</b>                                |                           |                  |                 |               |                                    |              |       |
| Applied water use (after system losses)              |                           |                  |                 |               |                                    |              |       |
| Upper fields, irrigated (surface water only)         |                           |                  |                 |               |                                    |              |       |
| Community Farm                                       | 3,392 gad                 |                  |                 |               | -                                  | -            | mgd   |
| Orchards (citrus, mac nuts, beverage crops)          | 5,089 gad                 |                  |                 |               | 25.39                              | 8.24         | mgd   |
| Tropical fruits                                      | 4,999 gad                 |                  |                 |               | -                                  | -            | mgd   |
| Row and annual crops                                 | 3,392 gad                 |                  |                 |               | 1.02                               | 0.68         | mgd   |
| Energy crops   | 3,392 gad                 |                  |                 |               | -                                  | -            | mgd   |
| Pasture, irrigated                                   | 1,161 gad                 |                  |                 |               | 1.28                               | 1.04         | mgd   |
| Total, upper fields, irrigated                       |                           |                  |                 |               | 27.69                              | 9.97         | mgd   |
| Average per acre                                     |                           |                  |                 |               | 4,333                              | 3,665        | gad   |
| Lower fields, Irrigated (surface and brackish water) |                           |                  |                 |               |                                    |              |       |
| Community Farm                                       | 3,392 gad                 |                  |                 |               | 2.71                               | 1.02         | mgd   |
| Orchards (citrus, mac nuts, beverage crops)          | 5,089 gad                 |                  |                 |               | 40.00                              | 13.03        | mgd   |
| Tropical fruits                                      | 4,999 gad                 |                  |                 |               | 3.00                               | 1.00         | mgd   |
| Row and annual crops                                 | 3,392 gad                 |                  |                 |               | 3.05                               | 0.68         | mgd   |
| Energy crops   | 3,392 gad                 |                  |                 | 0.68          | 1.70                               | 0.68         | mgd   |
| Pasture, irrigated                                   | 1,161 gad                 |                  |                 |               | 4.18                               | 3.37         | mgd   |
| Adjustment   |                           |                  |                 |               | 0.01                               | (0.02)       | mgd   |
| Total, lower fields, irrigated                       |                           |                  |                 | 0.68          | 54.65                              | 19.75        | mgd   |
| Average Per acre                                     |                           |                  |                 |               | 3,832                              | 3,105        | gad   |
| Total diversified Ag                                 |                           |                  |                 | 0.68          | <b>82.34</b>                       | <b>29.72</b> | mgd   |
| Average per acre                                     |                           |                  |                 |               | 3,987                              | 3,273        | gad   |
| Water use, by source                                 |                           |                  |                 |               |                                    |              |       |
| Surface water  | Residual                  |                  |                 |               | 65.87                              | 23.77        | mgd   |
| Upper fields   |                           |                  |                 |               | 27.69                              | 9.97         | mgd   |
| Lower fields   |                           |                  |                 |               | 38.18                              | 13.81        | mgd   |
| Brackish water, lower fields                         | 20.0% of Total            |                  |                 |               | 16.47                              | 5.94         | mgd   |
| Share of Total                                       |                           |                  |                 |               | 20.0%                              | 20.0%        |       |
| Share of lower fields                                |                           |                  |                 |               | 30.1%                              | 30.1%        |       |
| Gross water use (before system losses)               |                           |                  |                 |               |                                    |              |       |
| Surface  | 22.7% losses              |                  |                 |               | 85.22                              | 30.75        | mgd   |
| Brackish   | 22.7% losses              |                  |                 |               | 21.30                              | 7.69         | mgd   |
| Total gross water requirements                       |                           |                  |                 | ne.           | <b>106.52</b>                      | <b>38.44</b> | mgd   |

**Table 3. Agricultural Water Use**

(Continued)

| Item   | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units |
|--|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|-------|
|  |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |       |
| <b>3.b. Upcountry MAUI (farms supplied with water from EMI)</b>    |                         |                  |                 |               |                                    |             |       |
| <b>Ag use of water supplied by EMI to MDWS</b>                     |                         |                  |                 |               |                                    |             |       |
| Kula Ag Park, diversified crops                                    | A&B                     |                  |                 | 0.46          | 1.46                               | -           | mgd   |
| Other farms  | A&B                     |                  |                 | 1.36          | 2.70                               | -           | mgd   |
| Total Ag use of water from EMI                                     |                         |                  |                 | 1.82          | 4.16                               | -           | mgd   |
| Non Ag use of water from EMI + system losses                       | Residual                |                  |                 | 1.04          | 2.94                               | -           | mgd   |
| Total use of water supplied by EMI to MDWS                         | CORM D&O/MDWS           |                  |                 | 2.86          | 7.10                               | -           | mgd   |
| <b>3.c. EAST MAUI (farms with appurtenant and riparian rights)</b> |                         |                  |                 |               |                                    |             |       |
| <b>Gross water use (includes water returned to streams)</b>        |                         |                  |                 |               |                                    |             |       |
| Taro farms   | 140,000 gad             |                  |                 |               | 6.28                               | 6.28        | mgd   |
| Other farms  |                         |                  |                 |               | (included with water for taro)     |             |       |
| <b>Net water use</b>   |                         |                  |                 |               |                                    |             |       |
| Taro farms   | 30,000 gad              |                  |                 |               | 1.34                               | 1.34        | mgd   |
| Other farms  | 5,000 gad               |                  |                 |               | 0.18                               | 0.18        | mgd   |
| Total water use  |                         |                  |                 |               | 1.52                               | 1.52        | mgd   |

Table 4. Agricultural Development and Operations

| Item   | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units      |
|--|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|------------|
|  |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |            |
| <b>4.a. CENTRAL MAUI</b>                       |                         |                  |                 |               |                                    |             |            |
| <b>Sugar operations</b>                        |                         |                  |                 |               |                                    |             |            |
| Production                                     |                         |                  |                 |               |                                    |             |            |
| Raw sugar                                      | HC&S                    | 145,182          | 136,324         |               |                                    |             | tons/yr    |
| Per acre farmed (not harvested acres)          |                         | 4.93             | 4.50            |               |                                    |             | tons/yr    |
| Turbinado sugar                                |                         | n.e.             | n.e.            |               |                                    |             |            |
| Energy   |                         | n.e.             | n.e.            |               |                                    |             |            |
| Sales  |                         |                  |                 |               |                                    |             |            |
| Direct sales                                   |                         |                  |                 |               |                                    |             |            |
| Sugar and molasses                             | HC&S                    | \$ 78.9          | \$ 96.4         |               |                                    |             | million/yr |
| Energy   | HC&S                    | \$ 21.8          | \$ 19.2         |               |                                    |             | million/yr |
| Total direct sales                             | A&B/HC&S                | \$ 100.7         | \$ 115.6        |               |                                    |             | million/yr |
| Per ton of raw sugar                           |                         | \$ 694           | \$ 848          |               |                                    |             | million/yr |
| Per acre                                       |                         | \$ 3,423         | \$ 3,813        |               |                                    |             | million/yr |
| Indirect sales                                 | 90% of dir. sales       | \$ 90.7          | \$ 104.1        |               |                                    |             | million/yr |
| Maui   | 65%                     | \$ 58.9          | \$ 67.6         |               |                                    |             | million/yr |
| Oahu   | 35%                     | \$ 31.7          | \$ 36.4         |               |                                    |             | million/yr |
| Total direct and indirect sales                |                         | \$ 191.4         | \$ 219.7        |               |                                    |             | million/yr |
| Maui   |                         | \$ 159.7         | \$ 183.3        |               |                                    |             | million/yr |
| Oahu   |                         | \$ 31.7          | \$ 36.4         |               |                                    |             | million/yr |
| Sales by excise-tax category                   |                         |                  |                 |               |                                    |             |            |
| Exempted export sales (sugar and molasses)     | from above              | \$ 78.9          | \$ 96.4         |               |                                    |             | million/yr |
| Final sales/consumption (taxed at 4%)          | 55% of payroll          | \$ 45.5          | \$ 37.4         |               |                                    |             | million/yr |
| Maui   | Residual                | n.e.             | \$ 30.3         |               |                                    |             | million/yr |
| Oahu   | 55% of payroll          | n.e.             | \$ 7.1          |               |                                    |             | million/yr |
| Intermediate sales (taxed at 0.5%)             | Residual                | \$ 67.0          | \$ 85.9         |               |                                    |             | million/yr |
| Rent paid to the State                         | \$ 100 per acre         | \$ 0.1           | \$ 0.1          |               |                                    |             | million/yr |
| Profits on direct and indirect sales           | 10% of sales            | \$ 19.1          | \$ 22.0         |               |                                    |             | million/yr |
| <b>Diversified Ag. development activity</b>    |                         |                  |                 |               |                                    |             |            |
| Development period                             |                         |                  |                 |               | 10                                 | 6           | years      |
| Field preparations                             |                         |                  |                 |               |                                    |             |            |
| Cropland                                       | Table 2, Section 2.a    |                  |                 |               | 15,950                             | 5,280       | acres      |
| Pastures, irrigated                            | Table 2, Section 2.a    |                  |                 |               | 4,700                              | 3,800       | acres      |
| Pastures, unirrigated                          | Table 2, Section 2.a    |                  |                 |               | 9,100                              | 20,670      | acres      |
| Building space                                 | 20 sf/crop-acre         |                  |                 |               | 319,000                            | 105,600     | sf         |
| Green energy capacity (solar)                  | 0.15 MW/acre            |                  |                 |               | 37.5                               | 37.5        | MW         |
| Expenditures and sales                         |                         |                  |                 |               |                                    |             |            |
| Development expenditures                       |                         |                  |                 |               |                                    |             |            |
| Field preparations                             |                         |                  |                 |               |                                    |             |            |
| Cropland                                       | \$ 5,000 per acre       |                  |                 |               | \$ 79.8                            | \$ 26.4     | million    |
| Pastures, irrigated                            | \$ 1,000 per acre       |                  |                 |               | \$ 4.7                             | \$ 3.8      | million    |
| Pastures, unirrigated                          | \$ 500 per acre         |                  |                 |               | \$ 4.6                             | \$ 10.3     | million    |
| Total field preparations                       |                         |                  |                 |               | \$ 89.0                            | \$ 40.5     | million    |
| Construction                                   |                         |                  |                 |               |                                    |             |            |
| Buildings (processing, storage, offices, etc.) | \$ 100 per sf           |                  |                 |               | \$ 31.9                            | \$ 10.6     | million    |
| Green energy (solar)                           | \$ 2.5 million/MW       |                  |                 |               | \$ 93.8                            | \$ 93.8     | million    |
| Total cost of structures                       |                         |                  |                 |               | \$ 125.7                           | \$ 104.3    | million    |
| Total development expenditures                 |                         |                  |                 |               | \$ 214.7                           | \$ 144.8    | million    |

**Table 4. Agricultural Development and Operations**

(Continued)

| Item  | Multiplier<br>or Source              | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units      |
|---|--------------------------------------|------------------|-----------------|---------------|------------------------------------|-------------|------------|
|   |                                      | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |            |
| Average annual development expenditures   |                                      |                  |                 |               |                                    |             |            |
| Field preparations  |                                      |                  |                 |               | \$ 8.9                             | \$ 6.8      | million/yr |
| Structures  |                                      |                  |                 |               | \$ 12.6                            | \$ 17.4     | million/yr |
| Total average annual development expenditures   |                                      |                  |                 |               | \$ 21.5                            | \$ 24.1     | million/yr |
| Hawaii activity, average annual development expenditures (excludes imported material) |                                      |                  |                 |               |                                    |             |            |
| Field preparations  | 100%                                 |                  |                 |               | \$ 8.9                             | \$ 6.8      | million/yr |
| Structures  | 55%                                  |                  |                 |               | \$ 6.9                             | \$ 9.6      | million/yr |
| Indirect sales  |                                      |                  |                 |               |                                    |             |            |
| Field preparations  | 122% of H activity                   |                  |                 |               | \$ 10.9                            | \$ 8.2      | million/yr |
| Construction  | 110% of H activity                   |                  |                 |               | \$ 7.6                             | \$ 10.5     | million/yr |
| Total indirect sales  |                                      |                  |                 |               | \$ 18.5                            | \$ 18.8     | million/yr |
| Maui  | 65%                                  |                  |                 |               | \$ 12.0                            | \$ 12.2     | million/yr |
| Oahu  | 35%                                  |                  |                 |               | \$ 6.5                             | \$ 6.6      | million/yr |
| Total expenditures and indirect sales   |                                      |                  |                 |               | \$ 39.9                            | \$ 42.9     | million/yr |
| Maui  |                                      |                  |                 |               | \$ 33.5                            | \$ 36.3     | million/yr |
| Oahu  |                                      |                  |                 |               | \$ 6.5                             | \$ 6.6      | million/yr |
| Sales by excise-tax category  |                                      |                  |                 |               |                                    |             |            |
| Final sales/consumption (taxed at 4%)   | development cost +<br>55% of payroll |                  |                 |               | \$ 29.4                            | \$ 31.4     | million/yr |
| Maui  | Residual                             |                  |                 |               | \$ 28.2                            | \$ 30.3     | million/yr |
| Oahu  | 55% of payroll                       |                  |                 |               | \$ 1.2                             | \$ 1.2      | million/yr |
| Intermediate sales (taxed at 0.5%)  | Residual                             |                  |                 |               | \$ 10.5                            | \$ 11.5     | million/yr |
| Profits on direct and indirect sales  | 10% of sales                         |                  |                 |               | \$ 4.0                             | \$ 4.3      | million/yr |
| <b>Diversified Ag. operations</b>   |                                      |                  |                 |               |                                    |             |            |
| Beef cattle (cow and calf units)  |                                      |                  |                 |               |                                    |             |            |
| Pasture, irrigated  | 1.00 acre/unit                       |                  |                 | -             | 4,700                              | 3,800       | units      |
| Pasture, unirrigated  | 3.50 acres/unit                      |                  |                 | 143           | 2,600                              | 5,906       | units      |
| Total animal units  |                                      |                  |                 | 143           | 7,300                              | 9,706       | units      |
| Ag production   |                                      |                  |                 |               |                                    |             |            |
| Community Farm  | 10,000 lbs/acre                      |                  |                 | -             | 8.0                                | 3.0         | m lbs/yr   |
| Orchards  | 25,000 per acre                      |                  |                 | -             | 321.3                              | 104.5       | m lbs/yr   |
| Tropical Fruits   | 15,000 lbs/acre                      |                  |                 | -             | 9.0                                | 3.0         | m lbs/yr   |
| Row and annual crops  |                                      |                  |                 |               | n.e.                               | n.e.        |            |
| Energy crops  |                                      |                  |                 |               | n.e.                               | n.e.        |            |
| Calves  | 0.80 calves/unit<br>16.2 months/calf |                  |                 | 85            | 4,326                              | 5,752       | calves/yr  |
| Energy production   | 25% of capacity                      |                  |                 | n.e.          | 82,125                             | 82,125      | MWh/yr     |
| Sales   |                                      |                  |                 |               |                                    |             |            |
| Direct sales  |                                      |                  |                 |               |                                    |             |            |
| Farm sales  |                                      |                  |                 |               |                                    |             |            |
| Crop sales  |                                      |                  |                 |               |                                    |             |            |
| Community Farm  | \$ 1.00 per lb                       |                  |                 |               | \$ 8.0                             | \$ 3.0      | million/yr |
| Orchards  | \$ 0.40 per lb                       |                  |                 |               | \$ 128.5                           | \$ 41.8     | million/yr |
| Tropical Fruits   | \$ 1.50 per lb                       |                  |                 |               | \$ 13.5                            | \$ 4.5      | million/yr |
| Row and annual crops  | \$ 4,000 per acre                    |                  |                 |               | \$ 4.8                             | \$ 1.6      | million/yr |
| Energy crops  | \$ 2,200 per acre                    |                  |                 | \$ 0.4        | \$ 1.1                             | \$ 0.4      | million/yr |
| Total crop sales  |                                      |                  |                 | \$ 0.4        | \$ 155.9                           | \$ 51.3     | million/yr |
| Calves (hot carcass)  | \$ 1,100 per calf                    |                  |                 | \$ 0.1        | \$ 4.8                             | \$ 6.3      | million/yr |
| Total farm sales  |                                      |                  |                 | \$ 0.5        | \$ 160.7                           | \$ 57.7     | million/yr |
| Hawaii sales  | Residual                             |                  |                 |               | \$ 104.4                           | \$ 46.1     | million/yr |
| Export sales  | From below                           |                  |                 |               | \$ 56.2                            | \$ 11.5     | million/yr |
| Energy sales  | \$ 0.10 per kWhr                     |                  |                 |               | \$ 8.2                             | \$ 8.2      | million/yr |
| Total direct sales  |                                      |                  |                 | \$ 0.5        | \$ 168.9                           | \$ 65.9     | million/yr |



**Table 4. Agricultural Development and Operations**

(Continued)

| Item  | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units      |
|---|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|------------|
|   |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |            |
| Indirect sales  | 100% of farm sales      |                  |                 | \$ 0.5        | \$ 160.7                           | \$ 57.7     | million/yr |
| Maui  | 65%                     |                  |                 | \$ 0.3        | \$ 104.4                           | \$ 37.5     | million/yr |
| Oahu  | 35%                     |                  |                 | \$ 0.2        | \$ 56.2                            | \$ 20.2     | million/yr |
| Total direct and indirect sales                                 |                         |                  |                 | \$ 1.1        | \$ 329.5                           | \$ 123.5    | million/yr |
| Maui  |                         |                  |                 | \$ 0.9        | \$ 273.3                           | \$ 103.4    | million/yr |
| Oahu  |                         |                  |                 | \$ 0.2        | \$ 56.2                            | \$ 20.2     | million/yr |
| Sales by excise-tax category                                    |                         |                  |                 |               |                                    |             |            |
| Exempted export sales   | 35% of farm sales       |                  |                 | -             | \$ 56.2                            |             | million/yr |
|   | 20% of farm sales       |                  |                 |               |                                    | \$ 11.5     | million/yr |
| Final sales/consumption (taxed at 4%)                           | 55% of payroll          |                  |                 | \$ 0.3        | \$ 24.9                            | \$ 8.6      | million/yr |
| Maui  | Residual                |                  |                 | \$ 0.2        | \$ 21.4                            | \$ 7.4      | million/yr |
| Oahu  | 55% of payroll          |                  |                 | \$ 0.0        | \$ 3.6                             | \$ 1.2      | million/yr |
| Intermediate sales (taxed at 0.5%)                              | Residual                |                  |                 | \$ 0.8        | \$ 248.4                           | \$ 103.4    | million/yr |
| Rental income   |                         |                  |                 |               |                                    |             |            |
| Community Farm  | \$ 150 per acre         |                  |                 |               | \$ 0.12                            | \$ 0.05     | million/yr |
| Energy crops  | \$ 500 per acre         |                  |                 |               | \$ 0.25                            | \$ 0.10     | million/yr |
| Other crops   | \$ 150 per acre         |                  |                 |               | \$ 0.11                            | \$ 0.11     | million/yr |
| Green energy  | \$ 2,000 per acre       |                  |                 |               | \$ 0.50                            | \$ 0.50     | million/yr |
| Total rental income   |                         |                  |                 |               | \$ 1.0                             | \$ 0.8      | million/yr |
| Profits on direct and indirect sales                            | 10% of sales            |                  |                 | \$ 0.1        | \$ 33.0                            | \$ 12.4     | million/yr |
| <b>4.b. Upcountry MAUI (farms supplied with water from EMI)</b> |                         |                  |                 |               |                                    |             |            |
| <b>Development activity, Kula Ag Park</b>                       |                         |                  |                 |               |                                    |             |            |
| Increase in acreage   |                         |                  |                 |               | 262                                | -           | acres      |
| Development period  |                         |                  |                 |               | 5                                  | -           | years      |
| Expenditures on field preparations                              | \$ 5,000 per acre       |                  |                 |               | \$ 1.3                             | \$ -        | million    |
| Annual average expenditures and sales                           |                         |                  |                 |               |                                    |             |            |
| Expenditures on field preparations                              |                         |                  |                 |               | \$ 0.26                            | \$ -        | million/yr |
| Indirect sales  | 122% of exp             |                  |                 |               | \$ 0.32                            | \$ -        | million/yr |
| Total expenditures and indirect sales                           |                         |                  |                 |               | \$ 0.6                             | \$ -        | million/yr |
| <b>Operations, Kula Ag Park and other farms</b>                 |                         |                  |                 |               |                                    |             |            |
| <b>Production</b>   |                         |                  |                 |               |                                    |             |            |
| Kula Ag Park  | 10,000 lbs/acre         | n.e.             | n.e.            | 4.5           | 7.1                                | -           | m lbs/yr   |
| Other farms   | 10,000 lbs/acre         | n.e.             | n.e.            | 8.0           | 8.0                                | -           | m lbs/yr   |
| Total production  |                         |                  |                 | 12.5          | 15.1                               | -           | m lbs/yr   |
| <b>Sales</b>  |                         |                  |                 |               |                                    |             |            |
| <b>Direct sales</b>   |                         |                  |                 |               |                                    |             |            |
| Kula Ag Park  | \$ 1.00 per lb          | n.e.             | n.e.            | \$ 4.5        | \$ 7.1                             | \$ -        | million/yr |
| Other farms   | \$ 1.00 per lb          | n.e.             | n.e.            | \$ 8.0        | \$ 8.0                             | \$ -        | million/yr |
| Total direct sales  |                         | n.e.             | n.e.            | \$ 12.5       | \$ 15.1                            | \$ -        | million/yr |
| <b>Indirect sales</b>   |                         |                  |                 |               |                                    |             |            |
| Maui  | 1.11 x direct sales     | n.e.             | n.e.            | \$ 13.8       | \$ 16.7                            | \$ -        | million/yr |
| Maui  | 65%                     | n.e.             | n.e.            | \$ 9.0        | \$ 10.9                            | \$ -        | million/yr |
| Oahu  | 35%                     | n.e.             | n.e.            | \$ 4.8        | \$ 5.9                             | \$ -        | million/yr |
| Total direct and indirect sales                                 |                         | n.e.             | n.e.            | \$ 26.3       | \$ 31.8                            | \$ -        | million/yr |
| Maui  |                         | n.e.             | n.e.            | \$ 21.5       | \$ 26.0                            | \$ -        | million/yr |
| Oahu  |                         | n.e.             | n.e.            | \$ 4.8        | \$ 5.9                             | \$ -        | million/yr |
| Sales by excise-tax category                                    |                         |                  |                 |               |                                    |             |            |
| Final sales/consumption (taxed at 4%)                           | 55% of payroll          | n.e.             | n.e.            | \$ 2.7        | \$ 3.2                             | \$ -        | million/yr |
| Maui  | Residual                | n.e.             | n.e.            | \$ 2.2        | \$ 2.7                             | \$ -        | million/yr |
| Oahu  | 55% of payroll          | n.e.             | n.e.            | \$ 0.4        | \$ 0.5                             | \$ -        | million/yr |
| Intermediate sales (taxed at 0.5%)                              | Residual                | n.e.             | n.e.            | \$ 23.7       | \$ 28.6                            | \$ -        | million/yr |
| Rent, Kula Ag Park  | \$ 1,200 per acre       |                  |                 | \$ 0.5        | \$ 0.9                             | \$ -        | million/yr |
| Profits on direct and indirect sales                            | 10% of sales            | n.e.             | n.e.            | \$ 2.6        | \$ 3.2                             | \$ -        | million/yr |

**Table 4. Agricultural Development and Operations**

(Continued)

| Item  | Multiplier<br>or Source               | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units      |
|---|---------------------------------------|------------------|-----------------|---------------|------------------------------------|-------------|------------|
|   |                                       | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |            |
| 4.c. EAST MAUI (farms with appurtenant and riparian rights) |                                       |                  |                 |               |                                    |             |            |
| Production  |                                       |                  |                 |               |                                    |             |            |
| Taro farms  | 30,000 lbs/har acre<br>16 months/crop |                  | n.e.            | n.e.          | 1.0                                | 1.0         | m lbs/yr   |
| Other farms   | 10,000 lbs/acre                       |                  | n.e.            | n.e.          | 0.4                                | 0.4         | m lbs/yr   |
| Sales   |                                       |                  |                 |               |                                    |             |            |
| Direct sales  |                                       |                  |                 |               |                                    |             |            |
| Taro farms  | \$ 1.00 per lb                        |                  | n.e.            | n.e.          | \$ 1.0                             | \$ 1.0      | million/yr |
| Other farms   | \$ 1.00 per lb                        |                  | n.e.            | n.e.          | \$ 0.4                             | \$ 0.4      | million/yr |
| Total direct sales  |                                       |                  | n.e.            | n.e.          | \$ 1.4                             | \$ 1.4      | million/yr |
| Indirect sales  | 1.11 of dir. sales                    |                  | n.e.            | n.e.          | \$ 1.5                             | \$ 1.5      | million/yr |
| Maui  | 65%                                   |                  | n.e.            | n.e.          | \$ 1.0                             | \$ 1.0      | million/yr |
| Oahu  | 35%                                   |                  | n.e.            | n.e.          | \$ 0.5                             | \$ 0.5      | million/yr |
| Total direct and indirect sales                             |                                       |                  | n.e.            | n.e.          | \$ 2.9                             | \$ 2.9      | million/yr |
| Maui  |                                       |                  | n.e.            | n.e.          | \$ 2.3                             | \$ 2.3      | million/yr |
| Oahu  |                                       |                  | n.e.            | n.e.          | \$ 0.5                             | \$ 0.5      | million/yr |
| Sales by excise-tax category                                |                                       |                  |                 |               |                                    |             |            |
| Final sales/consumption (taxed at 4%)                       | 55% of payroll                        |                  | n.e.            | n.e.          | \$ 0.5                             | \$ 0.5      | million/yr |
| Maui  | Residual                              |                  | n.e.            | n.e.          | \$ 0.4                             | \$ 0.4      | million/yr |
| Oahu  | 55% of payroll                        |                  | n.e.            | n.e.          | \$ 0.1                             | \$ 0.1      | million/yr |
| Intermediate sales (taxed at 0.5%)                          | Residual                              |                  | n.e.            | n.e.          | \$ 2.4                             | \$ 2.4      | million/yr |
| Profits on direct and indirect sales                        | 10% of sales                          |                  | n.e.            | n.e.          | \$ 0.3                             | \$ 0.3      | million/yr |

Table 5. Employment, Payroll and Population Supported

| Item  | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units      |
|---|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|------------|
|   |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |            |
| <b>5.a. CENTRAL MAUI</b>                    |                         |                  |                 |               |                                    |             |            |
| <b>Sugar operations</b>                     |                         |                  |                 |               |                                    |             |            |
| Employment                                  |                         |                  |                 |               |                                    |             |            |
| Direct jobs, on-site                        | HC&S                    | 630              | 620             |               |                                    |             | jobs       |
| Acres per worker                            |                         | 47               | 49              |               |                                    |             | ac/worker  |
| Indirect jobs, offsite                      | 1.130 per dir. Job      | 712              | 701             |               |                                    |             | jobs       |
| Maui  | 65%                     | 463              | 455             |               |                                    |             | jobs       |
| Oahu  | 35%                     | 249              | 245             |               |                                    |             | jobs       |
| Total jobs, direct and indirect             |                         | 1,342            | 1,321           |               |                                    |             | jobs       |
| Maui  |                         | 1,093            | 1,075           |               |                                    |             | jobs       |
| Oahu  |                         | 249              | 245             |               |                                    |             | jobs       |
| Payroll                                     |                         |                  |                 |               |                                    |             |            |
| Direct payroll                              |                         | \$ 48.5          | \$ 34.3         |               |                                    |             | million/yr |
| Per job                                     |                         | \$ 76,917        | \$ 55,295       |               |                                    |             |            |
| Indirect payroll                            |                         | \$ 34.2          | \$ 33.7         |               |                                    |             | million/yr |
| Maui  | \$ 45,500 per job       | \$ 21.1          | \$ 20.7         |               |                                    |             | million/yr |
| Oahu  | \$ 52,900 per job       | \$ 13.2          | \$ 13.0         |               |                                    |             | million/yr |
| Total payroll, direct and indirect          |                         | \$ 82.7          | \$ 68.0         |               |                                    |             | million/yr |
| Maui  |                         | \$ 69.5          | \$ 55.0         |               |                                    |             | million/yr |
| Oahu  |                         | \$ 13.2          | \$ 13.0         |               |                                    |             | million/yr |
| Residents supported                         |                         |                  |                 |               |                                    |             |            |
| Maui  | 2.25 per job            | 2,459            | 2,420           |               |                                    |             | people     |
| Oahu  | 2.13 per job            | 531              | 522             |               |                                    |             | people     |
| Total                                       |                         | 2,989            | 2,942           |               |                                    |             | people     |
| Homes supported                             |                         |                  |                 |               |                                    |             |            |
| Maui  | 0.44 per res.           | 1,082            | 1,065           |               |                                    |             | homes      |
| Oahu  | 0.34 per res.           | 180              | 178             |               |                                    |             | homes      |
| Total                                       |                         | 1,262            | 1,242           |               |                                    |             | homes      |
| <b>Diversified Ag, Development Activity</b> |                         |                  |                 |               |                                    |             |            |
| Employment                                  |                         |                  |                 |               |                                    |             |            |
| Direct jobs, on-site                        |                         |                  |                 |               |                                    |             |            |
| Field preparations                          |                         |                  |                 |               |                                    |             |            |
| Cropland                                    | 10 ac./worker           |                  |                 |               | 160                                | 88          | jobs       |
| Pastures, irrigated                         | 50 ac./worker           |                  |                 |               | 9                                  | 13          | jobs       |
| Pastures, unirrigated                       | 100 ac./worker          |                  |                 |               | 9                                  | 34          | jobs       |
| Total field preparations                    |                         |                  |                 |               | 178                                | 135         | jobs       |
| Construction                                | 4.32 jobs/\$1 mil       |                  |                 |               | 30                                 | 41          | jobs       |
| Total direct/on-site jobs                   |                         |                  |                 |               | 208                                | 176         | jobs       |
| Indirect jobs, offsite                      |                         |                  |                 |               |                                    |             |            |
| Field preparations                          | 0.43 of d jobs          |                  |                 |               | 77                                 | 58          | jobs       |
| Construction                                | 1.41 of d jobs          |                  |                 |               | 42                                 | 58          | jobs       |
| Total indirect jobs                         |                         |                  |                 |               | 119                                | 116         | jobs       |
| Maui  | 65%                     |                  |                 |               | 77                                 | 76          | jobs       |
| Oahu  | 35%                     |                  |                 |               | 42                                 | 41          | jobs       |
| Total jobs, direct and indirect             |                         |                  |                 |               | 326                                | 293         | jobs       |
| Maui  |                         |                  |                 |               | 285                                | 252         | jobs       |
| Oahu  |                         |                  |                 |               | 42                                 | 41          | jobs       |
| Payroll                                     |                         |                  |                 |               |                                    |             |            |
| Direct payroll                              |                         |                  |                 |               |                                    |             |            |
| Field preparations                          | \$ 40,000 per job       |                  |                 |               | \$ 7.1                             | \$ 5.4      | million/yr |
| Construction                                | \$ 55,000 per job       |                  |                 |               | \$ 1.6                             | \$ 2.3      | million/yr |
| Total direct payroll                        |                         |                  |                 |               | \$ 8.8                             | \$ 7.7      | million/yr |

**Table 5. Employment, Payroll and Population Supported**

(Continued)

| Item                               | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units      |
|------------------------------------|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|------------|
|                                    |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |            |
| Indirect payroll                   |                         |                  |                 |               | \$ 5.7                             | \$ 5.6      | million/yr |
| Maui                               | \$ 45,500 per job       |                  |                 |               | \$ 3.5                             | \$ 3.4      | million/yr |
| Oahu                               | \$ 52,900 per job       |                  |                 |               | \$ 2.2                             | \$ 2.2      | million/yr |
| Total payroll, direct and indirect |                         |                  |                 |               | \$ 14.5                            | \$ 13.3     | million/yr |
| Maui                               |                         |                  |                 |               | \$ 12.3                            | \$ 11.1     | million/yr |
| Oahu                               |                         |                  |                 |               | \$ 2.2                             | \$ 2.2      | million/yr |
| Residents supported                |                         |                  |                 |               |                                    |             |            |
| Maui                               | 2.25 per job            |                  |                 |               | 641                                | 567         | people     |
| Oahu                               | 2.13 per job            |                  |                 |               | 88                                 | 87          | people     |
| Total                              |                         |                  |                 |               | 730                                | 654         | people     |
| Homes supported                    |                         |                  |                 |               |                                    |             |            |
| Maui                               | 0.44 per res.           |                  |                 |               | 282                                | 250         | homes      |
| Oahu                               | 0.34 per res.           |                  |                 |               | 30                                 | 29          | homes      |
| Total                              |                         |                  |                 |               | 312                                | 279         | homes      |
| <b>Diversified Ag. Operations</b>  |                         |                  |                 |               |                                    |             |            |
| Employment                         |                         |                  |                 |               |                                    |             |            |
| Direct jobs, on-site               |                         |                  |                 |               |                                    |             |            |
| Community Farm                     | 15 ac./worker           |                  |                 |               | 53                                 | 20          | jobs       |
| Orchards                           | 20 ac./worker           |                  |                 |               | 643                                | 209         | jobs       |
| Tropical fruits                    | 15 ac./worker           |                  |                 |               | 40                                 | 13          | jobs       |
| Row and annual crops               | 40 ac./worker           |                  |                 |               | 30                                 | 10          | jobs       |
| Energy crops                       | 30 ac./worker           |                  |                 | 7             | 17                                 | 7           | jobs       |
| Pasture                            | 700 au/worker           |                  |                 | n.e.          | 10                                 | 14          | jobs       |
| Green energy                       |                         |                  |                 |               | n.e.                               | n.e.        |            |
| Total direct jobs                  |                         |                  |                 | 7             | 793                                | 273         | jobs       |
| Indirect jobs, offsite             | 0.440 per dir. Job      |                  |                 | 3             | 349                                | 120         | jobs       |
| Maui                               | 65%                     |                  |                 | 2             | 227                                | 78          | jobs       |
| Oahu                               | 35%                     |                  |                 | 1             | 122                                | 42          | jobs       |
| Total jobs, direct and indirect    |                         |                  |                 | 10            | 1,142                              | 393         | jobs       |
| Maui                               |                         |                  |                 | 9             | 1,020                              | 351         | jobs       |
| Oahu                               |                         |                  |                 |               | 122                                | 42          | jobs       |
| Payroll                            |                         |                  |                 |               |                                    |             |            |
| Direct payroll                     |                         |                  |                 |               |                                    |             |            |
| Community Farm                     | \$ 35,000 per job       |                  |                 |               | \$ 1.9                             | \$ 0.7      | million/yr |
| Orchards                           | \$ 35,000 per job       |                  |                 |               | \$ 22.5                            | \$ 7.3      | million/yr |
| Tropical fruits                    | \$ 35,000 per job       |                  |                 |               | \$ 1.4                             | \$ 0.5      | million/yr |
| Row and annual crops               | \$ 50,000 per job       |                  |                 |               | \$ 1.5                             | \$ 0.5      | million/yr |
| Energy crops                       | \$ 50,000 per job       |                  |                 | \$ 0.3        | \$ 0.8                             | \$ 0.3      | million/yr |
| Pasture                            | \$ 40,000 per job       |                  |                 |               | \$ 0.4                             | \$ 0.6      | million/yr |
| Total direct payroll               |                         |                  |                 | \$ 0.3        | \$ 28.5                            | \$ 9.9      | million/yr |
| Indirect payroll                   |                         |                  |                 | \$ 0.1        | \$ 16.8                            | \$ 5.8      | million/yr |
| Maui                               | \$ 45,500 per job       |                  |                 | \$ 0.1        | \$ 10.3                            | \$ 3.6      | million/yr |
| Oahu                               | \$ 52,900 per job       |                  |                 | \$ 0.1        | \$ 6.5                             | \$ 2.2      | million/yr |
| Total payroll, direct and indirect |                         |                  |                 | \$ 0.5        | \$ 45.3                            | \$ 15.6     | million/yr |
| Maui                               |                         |                  |                 | \$ 0.4        | \$ 38.8                            | \$ 13.4     | million/yr |
| Oahu                               |                         |                  |                 | n.e.          | \$ 6.5                             | \$ 2.2      | million/yr |
| Residents supported                |                         |                  |                 |               |                                    |             |            |
| Maui                               | 2.25 per job            |                  |                 | 19            | 2,294                              | 790         | people     |
| Oahu                               | 2.13 per job            |                  |                 | 2             | 260                                | 90          | people     |
| Total                              |                         |                  |                 | 21            | 2,554                              | 879         | people     |
| Homes supported                    |                         |                  |                 |               |                                    |             |            |
| Maui                               | 0.44 per res.           |                  |                 | 8             | 1,010                              | 347         | homes      |
| Oahu                               | 0.34 per res.           |                  |                 | 1             | 88                                 | 30          | homes      |
| Total                              |                         |                  |                 | 9             | 1,098                              | 378         | homes      |

**Table 5. Employment, Payroll and Population Supported**

(Continued)

| Item   | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units      |
|--|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|------------|
|  |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |            |
| 5.b. Upcountry MAUI (farms supplied with water from EMI) |                         |                  |                 |               |                                    |             |            |
| Development activity                                     |                         |                  |                 |               |                                    |             |            |
| Increase in crop acreage                                 |                         |                  |                 |               | 262                                | -           | acres      |
| Development period                                       |                         |                  |                 |               | 5                                  | -           | years      |
| Employment   |                         |                  |                 |               |                                    |             |            |
| Direct jobs, on-site field preparations                  | 10 ac./worker           |                  |                 |               | 5.2                                | -           | jobs       |
| Indirect jobs, offsite                                   | 0.43 of d jobs          |                  |                 |               | 2.3                                | -           | jobs       |
| Total direct and indirect jobs                           |                         |                  |                 |               | 7.5                                | -           | jobs       |
| Payroll  |                         |                  |                 |               |                                    |             |            |
| Direct payroll   | \$ 40,000 per job       |                  |                 |               | \$ 0.21                            | \$ -        | million/yr |
| Indirect payroll   | \$ 45,500 per job       |                  |                 |               | \$ 0.10                            | \$ -        | million/yr |
| Total payroll, direct and indirect                       |                         |                  |                 |               | \$ 0.31                            | \$ -        | million/yr |
| Operations   |                         |                  |                 |               |                                    |             |            |
| Employment   |                         |                  |                 |               |                                    |             |            |
| Direct jobs, on-site                                     |                         |                  |                 |               |                                    |             |            |
| Kula Ag Park   | 15 ac./worker           | n.e.             | n.e.            | 30            | 47                                 | -           | jobs       |
| Other farms  | 15 ac./worker           | n.e.             | n.e.            | 53            | 53                                 | -           | jobs       |
| Total direct jobs  |                         | n.e.             | n.e.            | 83            | 101                                | -           | jobs       |
| Indirect jobs, offsite                                   | 0.48 per dir. Job       | n.e.             | n.e.            | 40            | 48                                 | -           | jobs       |
| Maui   | 65%                     | n.e.             | n.e.            | 26            | 31                                 | -           | jobs       |
| Oahu   | 35%                     | n.e.             | n.e.            | 14            | 17                                 | -           | jobs       |
| Total jobs, direct and indirect                          |                         | n.e.             | n.e.            | 123           | 149                                | -           | jobs       |
| Maui   | Residual                |                  |                 | 109           | 132                                | -           | jobs       |
| Payroll  |                         |                  |                 |               |                                    |             |            |
| Direct payroll   |                         |                  |                 |               |                                    |             |            |
| Kula Ag Park   | \$ 35,000 per job       | n.e.             | n.e.            | \$ 1.0        | \$ 1.7                             | \$ -        | million/yr |
| Other farms  | \$ 35,000 per job       | n.e.             | n.e.            | \$ 1.9        | \$ 1.9                             | \$ -        | million/yr |
| Total direct payroll                                     |                         | n.e.             | n.e.            | \$ 2.9        | \$ 3.5                             | \$ -        | million/yr |
| Indirect payroll   |                         | n.e.             | n.e.            | \$ 1.9        | \$ 2.3                             | \$ -        | million/yr |
| Maui   | \$ 45,500 per job       | n.e.             | n.e.            | \$ 1.2        | \$ 1.4                             | \$ -        | million/yr |
| Oahu   | \$ 52,900 per job       | n.e.             | n.e.            | \$ 0.7        | \$ 0.9                             | \$ -        | million/yr |
| Total payroll, direct and indirect                       |                         | n.e.             | n.e.            | \$ 4.8        | \$ 5.8                             | \$ -        | million/yr |
| Maui   |                         | n.e.             | n.e.            | \$ 4.1        | \$ 4.9                             | \$ -        | million/yr |
| Residents supported                                      |                         |                  |                 |               |                                    |             |            |
| Maui   | 2.25 per job            | n.e.             | n.e.            | 245           | 297                                | -           | people     |
| Oahu   | 2.13 per job            | n.e.             | n.e.            | 30            | 36                                 | -           | people     |
| Total  |                         | n.e.             | n.e.            | 275           | 333                                | -           | people     |
| Homes supported  |                         |                  |                 |               |                                    |             |            |
| Maui   | 0.44 per res.           | n.e.             | n.e.            | 108           | 131                                | -           | homes      |
| Oahu   | 0.34 per res.           | n.e.             | n.e.            | 10            | 12                                 | -           | homes      |
| Total  |                         | n.e.             | n.e.            | 118           | 143                                | -           | homes      |



**Table 5. Employment, Payroll and Population Supported**

(Continued)

| Item   | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units      |
|--|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|------------|
|  |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |            |
| <b>5.c. EAST MAUI (farms with appurtenant and riparian rights)</b> |                         |                  |                 |               |                                    |             |            |
| Employment   |                         |                  |                 |               |                                    |             |            |
| Direct jobs, on-site   |                         |                  |                 |               |                                    |             |            |
| Taro   | 4 ac./worker            | n.e.             | n.e.            | n.e.          | 11                                 | 11          | jobs       |
| Other crops  | 12 ac./worker           | n.e.             | n.e.            | n.e.          | 3                                  | 3           | jobs       |
| Total direct jobs  |                         | n.e.             | n.e.            | n.e.          | 14                                 | 14          | jobs       |
| Indirect jobs, offsite   | 0.48 per dir. Job       | n.e.             | n.e.            | n.e.          | 7                                  | 7           | jobs       |
| Maui   | 65%                     | n.e.             | n.e.            | n.e.          | 4                                  | 4           | jobs       |
| Oahu   | 35%                     | n.e.             | n.e.            | n.e.          | 2                                  | 2           | jobs       |
| Total jobs, direct and indirect                                    |                         | n.e.             | n.e.            | n.e.          | 21                                 | 21          | jobs       |
| Maui   | Residual                | n.e.             | n.e.            | n.e.          | 19                                 | 19          | jobs       |
| Payroll  |                         | n.e.             | n.e.            | n.e.          |                                    |             |            |
| Direct payroll   |                         |                  |                 |               |                                    |             |            |
| Taro   | \$ 35,000 per job       | n.e.             | n.e.            | n.e.          | \$ 0.4                             | \$ 0.4      | million/yr |
| Other crops  | \$ 35,000 per job       | n.e.             | n.e.            | n.e.          | \$ 0.1                             | \$ 0.1      | million/yr |
| Total direct payroll   |                         | n.e.             | n.e.            | n.e.          | \$ 0.5                             | \$ 0.5      | million/yr |
| Indirect payroll   |                         | n.e.             | n.e.            | n.e.          | \$ 0.3                             | \$ 0.3      | million/yr |
| Maui   | \$ 45,500 per job       | n.e.             | n.e.            | n.e.          | \$ 0.2                             | \$ 0.2      | million/yr |
| Oahu   | \$ 52,900 per job       | n.e.             | n.e.            | n.e.          | \$ 0.1                             | \$ 0.1      | million/yr |
| Total payroll, direct and indirect                                 |                         | n.e.             | n.e.            | n.e.          | \$ 0.8                             | \$ 0.8      | million/yr |
| Maui   |                         | n.e.             | n.e.            | n.e.          | \$ 0.7                             | \$ 0.7      | million/yr |
| Residents supported  |                         |                  |                 |               |                                    |             |            |
| Maui   | 2.25 per job            | n.e.             | n.e.            | n.e.          | 42                                 | 42          | people     |
| Oahu   | 2.13 per job            | n.e.             | n.e.            | n.e.          | 5                                  | 5           | people     |
| Total  |                         | n.e.             | n.e.            | n.e.          | 47                                 | 47          | people     |
| Homes supported  |                         |                  |                 |               |                                    |             |            |
| Maui   | 0.44 per res.           | n.e.             | n.e.            | n.e.          | 18                                 | 18          | homes      |
| Oahu   | 0.34 per res.           | n.e.             | n.e.            | n.e.          | 2                                  | 2           | homes      |
| Total  |                         | n.e.             | n.e.            | n.e.          | 20                                 | 20          | homes      |

Table 6. State and County Revenues

| Item  | Multiplier<br>or Source       | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units      |
|---|-------------------------------|------------------|-----------------|---------------|------------------------------------|-------------|------------|
|   |                               | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |            |
| <b>6.a. CENTRAL MAUI</b>                        |                               |                  |                 |               |                                    |             |            |
| <b>Sugar operations</b>                         |                               |                  |                 |               |                                    |             |            |
| Tax base  |                               |                  |                 |               |                                    |             |            |
| Final sales                                     |                               |                  |                 |               |                                    |             |            |
| State   | Table 4, Section 4.a          | \$ 45.5          | \$ 37.4         |               |                                    |             | million/yr |
| Oahu  | Table 4, Section 4.a          | n.e.             | \$ 7.1          |               |                                    |             | million/yr |
| Intermediate sales                              | Table 4, Section 4.a          | \$ 67.0          | \$ 85.9         |               |                                    |             | million/yr |
| Rent paid to the State                          | Table 4, Section 4.a          | \$ 0.1           | \$ 0.1          |               |                                    |             | million/yr |
| Profit  | Table 4, Section 4.a          | \$ 19.1          | \$ 22.0         |               |                                    |             | million/yr |
| Payroll   | Table 5, Section 5.a          | \$ 82.7          | \$ 68.0         |               |                                    |             | million/yr |
| Assessed property value                         | \$ 400 per acre               | \$ 11.8          | \$ 12.1         |               |                                    |             | million    |
| State revenues                                  |                               |                  |                 |               |                                    |             |            |
| Excise taxes                                    |                               |                  |                 |               |                                    |             |            |
| On final sales                                  | 4.0% of fin. sales            | \$ 1.82          | \$ 1.50         |               |                                    |             | million/yr |
| On intermediate sales                           | 0.5% of int. sales            | \$ 0.33          | \$ 0.43         |               |                                    |             | million/yr |
| Corporate income taxes                          | 1.0% of profits               | \$ 0.19          | \$ 0.22         |               |                                    |             | million/yr |
| Individual income taxes                         | 4.1% of payroll               | \$ 3.39          | \$ 2.79         |               |                                    |             | million/yr |
| Rent paid to the State                          |                               | \$ 0.14          | \$ 0.14         |               |                                    |             | million/yr |
| Total State taxes                               |                               | \$ 5.88          | \$ 5.08         |               |                                    |             | million/yr |
| Maui County property taxes                      |                               | \$ 0.05          |                 |               |                                    |             | million/yr |
|   | 0.45% of value                |                  |                 |               |                                    |             | million/yr |
|   | 0.58% of value                |                  | \$ 0.07         |               |                                    |             | million/yr |
| City & County of Honolulu, excise tax surcharge | 0.5% of fin. sales            |                  | \$ 0.04         |               |                                    |             | million/yr |
| <b>Diversified Ag, development activity</b>     |                               |                  |                 |               |                                    |             |            |
| Tax base  |                               |                  |                 |               |                                    |             |            |
| Development period                              | Table 4, Section 4.a          |                  |                 |               | 10                                 | 6           | years      |
| Green energy capacity (solar)                   |                               |                  |                 |               | 38                                 | 38          | MW         |
| Final sales                                     |                               |                  |                 |               |                                    |             |            |
| State   | Table 4, Section 4.a          |                  |                 |               | \$ 29.4                            | \$ 31.4     | million/yr |
| Oahu  | Table 4, Section 4.a          |                  |                 |               | \$ 1.2                             | \$ 1.2      | million/yr |
| Intermediate sales                              | Table 4, Section 4.a          |                  |                 |               | \$ 10.5                            | \$ 11.5     | million/yr |
| Profit  | Table 4, Section 4.a          |                  |                 |               | \$ 4.0                             | \$ 4.3      | million/yr |
| Payroll   | Table 5, Section 5.a          |                  |                 |               | \$ 14.5                            | \$ 13.3     | million/yr |
| State revenues                                  |                               |                  |                 |               |                                    |             |            |
| Excise taxes                                    |                               |                  |                 |               |                                    |             |            |
| On final sales                                  | 4.0% of                       |                  |                 |               | \$ 1.18                            | \$ 1.26     | million/yr |
| On intermediate sales                           | 0.5% of int. sales            |                  |                 |               | \$ 0.05                            | \$ 0.06     | million/yr |
| Corporate income taxes                          | 1.0% of profits               |                  |                 |               | \$ 0.04                            | \$ 0.04     | million/yr |
| Individual income taxes                         | 4.1% of payroll               |                  |                 |               | \$ 0.59                            | \$ 0.54     | million/yr |
| Total State taxes                               |                               |                  |                 |               | \$ 1.86                            | \$ 1.90     | million/yr |
| Less energy subsidy                             | \$500,000 per MW<br>÷ dev yrs |                  |                 |               | \$ (1.88)                          | \$ (3.13)   | million/yr |
| Net revenues                                    |                               |                  |                 |               | \$ (0.01)                          | \$ (1.22)   | million/yr |
| Cumulative net revenues                         |                               |                  |                 |               | \$ (0.13)                          | \$ (7.34)   | million    |
| State taxes                                     |                               |                  |                 |               | \$ 18.62                           | \$ 11.41    | million    |
| Energy subsidy                                  |                               |                  |                 |               | \$ (18.75)                         | \$ (18.75)  | million    |
| Maui County revenues                            |                               |                  |                 |               | n.e.                               | n.e.        |            |
| City & County of Honolulu, excise tax surcharge | 0.5% of                       |                  |                 |               | \$ 0.01                            | \$ 0.01     | million/yr |
| Cumulative revenues                             |                               |                  |                 |               | \$ 0.06                            | \$ 0.04     | million    |

**Table 6. State and County Revenues**

(Continued)

| Item  | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units      |
|---|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|------------|
|   |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |            |
| <b>Diversified Ag, Operations</b>                               |                         |                  |                 |               |                                    |             |            |
| Tax base  |                         |                  |                 |               |                                    |             |            |
| Final sales   |                         |                  |                 |               |                                    |             |            |
| State   | Table 4, Section 4.a    |                  |                 | \$ 0.3        | \$ 24.9                            | \$ 8.6      | million/yr |
| Oahu  | Table 4, Section 4.a    |                  |                 | \$ 0.0        | \$ 3.6                             | \$ 1.2      | million/yr |
| Intermediate sales  | Table 4, Section 4.a    |                  |                 | \$ 0.8        | \$ 248.4                           | \$ 103.4    | million/yr |
| Rent  | Table 4, Section 4.a    |                  |                 | n.e.          | \$ 1.0                             | \$ 0.8      | million/yr |
| Profit  | Table 4, Section 4.a    |                  |                 | \$ 0.1        | \$ 33.0                            | \$ 12.4     | million/yr |
| Payroll   | Table 5, Section 5.a    |                  |                 | \$ 0.5        | \$ 45.3                            | \$ 15.6     | million/yr |
| Assessed property value   |                         |                  |                 |               |                                    |             |            |
| Crop land   | \$ 400 per acre         |                  |                 | \$ 0.08       | \$ 6.38                            | \$ 2.11     | million    |
| Pasture, irrigated  | \$ 100 per acre         |                  |                 |               | \$ 0.47                            | \$ 0.38     | million    |
| Pasture, unirrigated  | \$ 60 per acre          |                  |                 | \$ 0.03       | \$ 0.55                            | \$ 1.24     | million    |
| Land for green energy   | \$ 400 per acre         |                  |                 |               | \$ 0.10                            | \$ 0.10     | million    |
| Fallow  | \$ 100 per acre         |                  |                 | \$ 2.9        |                                    |             | million    |
| Improvements  | Table 5, Section 5.a    |                  |                 |               | \$ 125.65                          | \$ 104.31   | million    |
| Total assessed value  |                         |                  |                 | \$ 3.0        | \$ 133.1                           | \$ 108.1    | million    |
| State revenues  |                         |                  |                 |               |                                    |             |            |
| Excise taxes  |                         |                  |                 |               |                                    |             | million/yr |
| On final sales  | 4.0% of                 |                  |                 | \$ 0.01       | \$ 1.00                            | \$ 0.34     | million/yr |
| On intermediate sales   | 0.5% of int. sales      |                  |                 | \$ 0.00       | \$ 1.24                            | \$ 0.52     | million/yr |
| On rents paid to private landowners                             | 4.0% rents              |                  |                 |               | \$ 0.04                            | \$ 0.03     | million/yr |
| Corporate income taxes  | 1.0% of profits         |                  |                 | \$ 0.00       | \$ 0.33                            | \$ 0.12     | million/yr |
| Individual income taxes   | 4.1% of payroll         |                  |                 | \$ 0.02       | \$ 1.86                            | \$ 0.64     | million/yr |
| Total State taxes   |                         |                  |                 | \$ 0.03       | \$ 4.46                            | \$ 1.66     | million/yr |
| Maui County property taxes                                      | 0.60% of value          |                  |                 | \$ 0.02       | \$ 0.80                            | \$ 0.65     | million/yr |
| City & County of Honolulu, excise tax surcharge                 | 4.0% of                 |                  |                 | \$ 0.00       | \$ 0.14                            | \$ 0.05     | million/yr |
| <b>6.b. Upcountry MAUI (farms supplied with water from EMI)</b> |                         |                  |                 |               |                                    |             |            |
| Development activity  |                         |                  |                 |               |                                    |             |            |
| Tax base  |                         |                  |                 |               |                                    |             |            |
| Development period  | Table 4, Section 4.b    |                  |                 |               | 5                                  | -           | years      |
| Expenditures and sales  | Table 5, Section 5.b    |                  |                 |               | \$ 0.6                             | \$ -        | million/yr |
| Payroll   |                         |                  |                 |               | \$ 0.3                             | \$ -        | million/yr |
| State revenues  |                         |                  |                 |               |                                    |             |            |
| Excise tax on final sales                                       | 4.0% of                 |                  |                 |               | \$ 0.02                            | \$ -        | million/yr |
| Individual income taxes   | 4.1% of payroll         |                  |                 |               | \$ 0.01                            | \$ -        | million/yr |
| Total State taxes   |                         |                  |                 |               | \$ 0.04                            | \$ -        | million/yr |
| Cumulative revenues   |                         |                  |                 |               | \$ 0.18                            | \$ -        | million    |
| Maui County revenues (cumulative)                               |                         |                  |                 |               | n.e.                               | ne.         |            |
| City & County of Honolulu, excise tax surcharge (cumulative)    |                         |                  |                 |               | n.e.                               | ne.         |            |
| Operations  |                         |                  |                 |               |                                    |             |            |
| Tax base  |                         |                  |                 |               |                                    |             |            |
| Final sales   |                         |                  |                 |               |                                    |             |            |
| State   | Table 4, Section 4.b    |                  |                 | \$ 2.7        | \$ 3.2                             | \$ -        | million/yr |
| Oahu  | Table 4, Section 4.b    |                  |                 | \$ 0.4        | \$ 0.5                             | \$ -        | million/yr |
| Intermediate sales  | Table 4, Section 4.b    |                  |                 | \$ 23.7       | \$ 28.6                            | \$ -        | million/yr |
| Profit  | Table 4, Section 4.b    |                  |                 | \$ 2.6        | \$ 3.2                             | \$ -        | million/yr |
| Payroll   | Table 5, Section 5.b    |                  |                 | \$ 4.8        | \$ 5.8                             | \$ -        |            |
| Assessed property value   |                         |                  |                 |               |                                    |             |            |
| Kula Ag Park  | \$ 400 per acre         |                  |                 | \$ 0.18       | \$ 0.28                            |             | million    |
|   | \$ 60 per acre          |                  |                 |               |                                    | \$ 0.04     | million    |
| Land to be added to Kula Ag Park                                | \$ 100 per acre         |                  |                 | \$ 0.03       |                                    |             | million    |
| Other farms   | \$ 360 per acre         |                  |                 | \$ 0.29       | \$ 0.29                            |             | million    |
|   | \$ 60 per acre          |                  |                 |               |                                    | \$ 0.05     | million    |
| Total assessed value  |                         |                  |                 | \$ 0.5        | \$ 0.6                             | \$ 0.09     | million    |

**Table 6. State and County Revenues**

(Continued)

| Item   | Multiplier<br>or Source | Baselines        |                 |               | Alternative Future<br>Water Leases |             | Units      |
|--|-------------------------|------------------|-----------------|---------------|------------------------------------|-------------|------------|
|  |                         | Typical<br>Sugar | Recent<br>Sugar | Post<br>Sugar | Limited<br>to D&O                  | No<br>Lease |            |
| State revenues   |                         |                  |                 |               |                                    |             |            |
| Excise taxes   |                         |                  |                 |               |                                    |             |            |
| On final sales   | 4.0% of                 |                  |                 | \$ 0.11       | \$ 0.13                            | \$ -        | million/yr |
| On intermediate sales  | 0.5% of int. sales      |                  |                 | \$ 0.12       | \$ 0.14                            | \$ -        | million/yr |
| Corporate income taxes   | 1.0% of profits         |                  |                 | \$ 0.03       | \$ 0.03                            | \$ -        | million/yr |
| Individual income taxes  | 4.1% of payroll         |                  |                 | \$ 0.20       | \$ 0.24                            | \$ -        | million/yr |
| Total State taxes  |                         |                  |                 | \$ 0.45       | \$ 0.54                            | \$ -        | million/yr |
| Maui County revenues   |                         |                  |                 |               |                                    |             |            |
| Property taxes   | 0.60% of value          |                  |                 | \$ 0.003      | \$ 0.003                           | \$ 0.00     | million/yr |
| Rents, Kula Ag Park  | Table 4, Section 4.b    |                  |                 | \$ 0.54       | \$ 0.85                            | \$ -        | million/yr |
| Total County revenues  |                         |                  |                 | \$ 0.54       | \$ 0.85                            | \$ 0.00     | million/yr |
| City & County of Honolulu, excise tax surcharge                    | 0.5% of                 |                  |                 | \$ 0.002      | \$ 0.002                           | \$ -        | million/yr |
| <b>6.c. EAST MAUI (farms with appurtenant and riparian rights)</b> |                         |                  |                 |               |                                    |             |            |
| Tax base   |                         |                  |                 |               |                                    |             |            |
| Final sales  |                         |                  |                 |               |                                    |             |            |
| State  |                         |                  | n.e.            | n.e.          | \$ 0.5                             | \$ 0.5      | million/yr |
| Oahu   |                         |                  | n.e.            | n.e.          | \$ 0.07                            | \$ 0.07     | million/yr |
| Intermediate sales   |                         |                  | n.e.            | n.e.          | \$ 2.4                             | \$ 2.4      | million/yr |
| Profits on direct and indirect sales                               |                         |                  | n.e.            | n.e.          | \$ 0.3                             | \$ 0.3      | million/yr |
| Payroll  |                         |                  | n.e.            | n.e.          | \$ 0.8                             | \$ 0.8      | million/yr |
| Assessed value   |                         |                  |                 |               |                                    |             |            |
| Taro   | \$ 300 per acre         |                  |                 | n.e.          | \$ 0.01                            | \$ 0.01     | million    |
| Other Ag   | \$ 300 per acre         |                  |                 | n.e.          | \$ 0.01                            | \$ 0.01     | million    |
| Total assessed value   |                         |                  |                 |               | \$ 0.02                            | \$ 0.02     | million    |
| State revenues   |                         |                  |                 |               |                                    |             |            |
| Excise taxes   |                         |                  |                 |               |                                    |             |            |
| On final sales   | 4.0% of                 |                  | n.e.            | n.e.          | \$ 0.018                           | \$ 0.018    | million/yr |
| On intermediate sales  | 0.5% of int. sales      |                  | n.e.            | n.e.          | \$ 0.012                           | \$ 0.012    | million/yr |
| Corporate income taxes   | 1.0% of profits         |                  | n.e.            | n.e.          | \$ 0.003                           | \$ 0.003    | million/yr |
| Individual income taxes  | 4.1% of payroll         |                  | n.e.            | n.e.          | \$ 0.034                           | \$ 0.034    | million/yr |
| Total State taxes  |                         |                  | n.e.            | n.e.          | \$ 0.067                           | \$ 0.067    | million/yr |
| Maui County property tax   | 0.60% of value          |                  |                 |               | \$ 0.0001                          | \$ 0.0001   | million/yr |
| City & County of Honolulu, excise tax surcharge                    | 0.5% of                 |                  | n.e.            | n.e.          | \$ 0.0003                          | \$ 0.0003   | million/yr |

**APPENDIX**  
**STATE AND COUNTY GOALS, OBJECTIVES, POLICIES**  
**AND GUIDELINES RELATED TO AGRICULTURAL LANDS**

**1. HAWAI‘I STATE CONSTITUTION (Article XI, Section 3):**

...to conserve and protect agricultural lands, promote diversified agriculture, increase agricultural self-sufficiency and assure the availability of agriculturally suitable lands...

**2. HAWAI‘I STATE PLAN (Chapter 226, Hawaii Revised Statutes, as amended):**

**Section 226-7 Objectives and policies for the economy--agriculture.**

- (a) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:
  - (1) Viability in Hawaii's sugar and pineapple industries.
  - (2) Growth and development of diversified agriculture throughout the State.
  - (3) An agriculture industry that continues to constitute a dynamic and essential component of Hawaii's strategic, economic, and social well-being.
- (b) To achieve the agricultural objectives, it shall be the policy of the State to:
  - (2) Encourage agriculture by making best use of natural resources.
  - (10) Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.
  - (16) Facilitate the transition of agricultural lands in economically nonfeasible agricultural production to economically viable agricultural uses.

**Section 226-103 Economic priority guidelines.**

- (c) Priority guidelines to promote the continued viability of the sugar and pineapple industries:
  - (1) Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries.
- (d) Priority guidelines to promote the growth and development of diversified agriculture and aquaculture:



- (1) Identify, conserve, and protect agricultural and aquacultural lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquacultural uses of such lands.
- (10) Support the continuation of land currently in use for diversified agriculture.

**Section 226-104 Population growth and land resources priority guidelines.**

(b) Priority guidelines for regional growth distribution and land resource utilization:

- (2) Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.

**3. AGRICULTURAL STATE FUNCTIONAL PLAN (1991)**

(Functional plans are guidelines for implementing the State Plan. They are approved by the Governor, but not adopted by the State Legislature.)

Objective H: Achievement of Productive Agricultural Use of Lands Most Suitable and Needed for Agriculture.

Policy H(2): Conserve and protect important agricultural lands in accordance with the Hawaii State Constitution.

Action H(2)(a): Propose enactment of standards and criteria to identify, conserve, and protect important agricultural lands and lands in agricultural use.

Action H(2)(c): Administer land use district boundary amendments, permitted land uses, infrastructure standards, and other planning and regulatory functions on important agricultural lands and lands in agricultural use, so as to ensure the availability of agriculturally suitable lands and promote diversified agriculture.

**4. IMPORTANT AGRICULTURAL LANDS [§205-41]**

There is a compelling state interest in conserving the State's agricultural land resource base and assuring the long-term availability of agricultural lands for agricultural use to achieve the purposes of:

- (1) Conserving and protecting agricultural lands;
- (2) Promoting diversified agriculture;
- (3) Increasing agricultural self-sufficiency; and
- (4) Assuring the availability of agriculturally suitable lands.

## **5. COUNTY OF MAUI 2030 GENERAL PLAN, COUNTYWIDE POLICY PLAN (2010)**

### **Countywide goals, objectives, policies and actions**

#### **F. Strengthen the Local Economy**

##### **Objective**

2. Diversify and expand sustainable forms of agriculture and aquaculture.

##### **Policies**

- b. Prioritize the use of agricultural land to feed the local population, and promote the use of agriculture lands for sustainable and diversified agricultural activities.
- e. Support ordinances, programs, and policies that keep agricultural land and water available and affordable to farmers.

##### **Implementing Actions**

- c. Create agricultural parks in areas distant from genetically modified crops.

#### **J. Promote Sustainable Land Use and Growth Management**

##### **Objective**

2. Improve planning for and management of agricultural lands and rural areas.

##### **Policies**

- a. Protect prime, productive, and potentially productive agricultural lands to maintain the islands' agricultural and rural identities and economies.
- c. Discourage developing or subdividing agriculturally designated lands when non-agricultural activities would be primary uses.

##### **Implementing Actions**

- a. Inventory and protect prime, productive, and potentially productive agricultural lands from competing non-agricultural land uses.

## **6. MAUI ISLAND PLAN, GENERAL PLAN 2030 (2012)**

### **Core Values**

- E. Preserve rural and agricultural lands and encourage sustainable agriculture.

### **Economic Development**

#### **Goal**

- 4.3 Maui will have a diversified agricultural industry contributing to greater economic, food, and energy security and prosperity.

**Objective**

- 4.3.1 Strive for at least 85 percent of locally-consumed fruits and vegetables and 30 percent of all other locally-consumed foods to be grown in-State.

**Policies**

- 4.3.1.a Strive to substitute food/agricultural product imports with a reliable supply of locally-produced food and agricultural products.
- 4.3.1.c Encourage growing a diverse variety of crops and livestock to ensure the stewardship of our land while safeguarding consumer safety.

**Objective**

- 4.3.2 Maintain or increase agriculture's share of the total island economy.

**Policies**

- 4.3.2.a Encourage the export of the island's agricultural products to offshore markets.
- 4.3.2.c Encourage the continued viability of sugar cane production, or other agricultural crops, in central Maui and all of Maui Island.

**Objective**

- 4.3.3 Expand diversified agriculture production at an average annual rate of 4 percent.

**Policies**

- 4.3.3.a Promote the development of locally-grown and ecologically-sound biofuels, aquaculture, and forest products.

**Agricultural Lands**

**Goal**

- 7.1 Maui will have a prosperous agricultural industry and will protect agricultural lands.

**Objective**

- 7.1.1 Significantly reduce the loss of productive agricultural lands.

**Policies**

- 7.1.1.a Allow, where appropriate, the clustering of development on agricultural lands when approved as a CSD [Conservation Site Design] plan or similar approval mechanism.
- 7.1.1.b Require, where appropriate, the review and approval of CSD plans prior to the subdivision of agricultural land.

- 7.1.1.c Discourage developing or subdividing productive agricultural lands for residential uses in which the residence would be the primary use and any agricultural activities would be secondary uses.
- 7.1.1.e Focus urban growth, to the extent practicable, away from productive and important agricultural lands.
- 7.1.1.f Strongly discourage the conversion of productive and important agricultural lands (such as sugar, pineapple, and other produce lands) to rural or urban use, unless justified during the General Plan update, or when other overriding factors are present.
- 7.1.1.h Provide incentives for landowners to preserve and protect agricultural lands from development through the use of TDR/PDR, tax credits, easement programs, or similar means.
- 7.1.1.j Require all major developments adjacent to agricultural lands to provide an appropriate and site-specific agricultural protection buffer as part of a required site plan.

### **Directed Growth Plan**

#### **Rural Growth Area, Policies**

- 8.2.d All development within rural growth areas should avoid encroachment upon prime agricultural land.

#### **Wailuku-Kahului**

As shown in Figure 6, Pu‘unani is within the Growth Area for Wailuku, with a portion within the Urban Boundary and a portion within the Rural Boundary.

## **7. REFERENCES**

Act 25, S.B. No. 1158, April 15, 1993.

County of Maui, Planning Department, Long Range Division. *Maui Island Plan, General Plan 2030*. December 28, 2012.

County of Maui. *County of Maui 2030 General Plan, Countywide Policy Plan*. Adopted by Ordinance No. 3732, effective on March 24, 2010.

Hawai‘i Department of Agriculture. *The Hawaii State Plan: Agriculture, State Functional Plan*. 1991.

State of Hawai‘i, Office of State Planning, Office of the Governor. *The Hawaii State Plan, 1991*. 1991.

State of Hawai‘i. “Hawai‘i Revised Statutes, Chapter 205, Land Use Commission,  
Part III. Important Agricultural Lands.”



Proposed Lease (Water Lease) for the  
Nāhiku, Keʻanae, Honomanū, and Huelo  
License Areas

## **Draft Environmental Impact Statement**



**WILSON OKAMOTO**  
C O R P O R A T I O N  
I N N O V A T O R S • P L A N N E R S • E N G I N E E R S

## **VOL. 3**

Proposed Lease (Water Lease) for the Nāhiku, Keʻānae,  
Honomanū, and Huelo License Areas

### **Draft Environmental Impact Statement**



**September 2019**

**Prepared For**



Alexander & Baldwin, Inc.  
East Maui Irrigation Company, Ltd.

**Prepared By**



Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

**001968**

---

**APPENDIX J:**  
Pre-Assessment Consultation  
Correspondance



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Pacific Islands Fish and Wildlife Office  
300 Ala Moana Boulevard, Room 3-122  
Honolulu, Hawaii 96850



DEC 21 2016

EM

In Reply Refer To:  
2017-TA-0059

**RECEIVED**  
**DEC 27 2016**  
**WILSON OKAMOTO CORPORATION**

Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, HI 96826  
Attn.: Mr. Earl Matsukawa, Project Manager

Mr. Earl Matsukawa and representatives of Wilson Okamoto Corporation:

The U.S. Fish and Wildlife Service (Service) is providing this letter in response to your request for early consultation in relation an Environmental Impact Statement (EIS) Preparation Notice for a proposed lease of State of Hawaii waters in the Nāhiku, Keanae, Honomanu and Huelo license areas of Maui, Hawaii, pursuant to Hawaii Revised Statutes Chapter 343 (HRS 343). This letter has been prepared under the authority of and in accordance with provisions of the Endangered Species Act (ESA) of 1973 [16 U.S.C. 1531 *et seq.*; 87 Stat. 884]. These comments are also consistent with the National Environmental Policy Act of 1969 [42 U.S.C. 4321 *et seq.*; 83 Stat. 852], as amended, and other authorities mandating the Service's review of projects and provision of technical assistance to conserve trust resources.

#### Proposed Action

The proposed action involves diversion of flows from 31 perennial streams on the north flank of the Haleakala volcano on the eastern section of Maui island, Hawaii (referred to subsequently as "East Maui"). These stream flows originate from four separate license areas running from east to west along the mountain as follows: Nāhiku, with an area of approximately 10,111 acres; Keanae, with an area of approximately 10,768 acres; Honomanu, with an area of approximately 3,381 acres; and Huelo, with an area of approximately 8,753 acres. In aggregate, these license areas comprise approximately 33,013 acres, or 51.6 square miles, much of it covered in native rain forest vegetation and inhabited by hundreds of native species, many of them endemic to the island of Maui, and some listed as Threatened or Endangered under the ESA. The diverted stream flows will be captured by the existing East Maui Irrigation Aqueduct System (referred to

subsequently as the "EMI system"), which consists of 388 separate intake structures, 24 miles of ditches, 50 miles of tunnels, 12 inverted siphons, and numerous other small intakes, pipes and flumes. This system is owned by the East Maui Irrigation Company, Limited (EMI), a wholly owned subsidiary of Alexander & Baldwin, Inc. (A&B), and has operated in various forms since 1878 (Wilcox 1996).

This system is currently authorized to divert up to 80 million gallons of water per day (80 mgd) based on a one-year revocable permit approved by the State of Hawaii's Board of Land and Natural Resources (BLNR) on December 9, 2016. Through the proposed action, A&B now seeks to obtain a long-term 30-year lease pursuant to Hawaii Revised Statutes (HRS) 171-58c for the "right, privilege, and authority to enter, and go upon" the four lease areas noted above "for the purpose of developing, diverting, transporting and using government-owned waters." In addition, the proposed action will involve access to State of Hawaii lands in order to maintain and repair existing roads and trails used as part of the EMI system. It is proposed that the waters diverted from the 31 streams on East Maui will be used to irrigate 26,600 acres of agricultural lands in central Maui owned by A&B and formerly devoted to sugarcane plantation use through its subsidiary Hawaiian Commercial & Sugar (HC&S), as well as to maintain current service to the Maui County Department of Water Supply (which also supplies the Kula Agricultural Park). The applicant has agreed that the proposed lease will not allow diversion of water in excess of the amount allowed under a set of Interim Instream Flow Standards that are currently pending before the State Commission on Water Resource Management (CWRM).

As a condition of this lease application, A&B was instructed by the BLNR on April 14, 2016 to produce a Scope of Work for the preparation of an EIS pursuant to HRS Chapter 343, the State of Hawaii's environmental review law. This Scope of Work was submitted to the BLNR on June 9, 2016, and accepted by the Board on July 8, 2016, with a request that A&B proceed with the preparation of an EIS "in as expeditious a manner as possible." It is the notice of intent to prepare this EIS which has triggered the current request for early consultation with the Service.

#### Background

Construction on what would eventually become the modern EMI system began in 1876, and was basically complete by 1923. Throughout this progression of development the ditch systems were extended progressively eastward along the northern flank of Haleakala, eventually reaching their current most eastward terminus at Makapipi Stream near Nāhiku. For the past 93 years, the EMI system has thus represented a highly integrated water catchment system that diverts the majority of stream runoff from the north side of Haleakala to the agricultural lands of central Maui. At this time the EMI system represents the largest privately owned water company in the United States, and its Waioala Canal has a higher median flow than any natural river in the state of Hawaii (Wilcox 1996). The total delivery capacity of the system in its current configuration is 445 mgd, and during the period when the HC&S plantation was in operation the average daily delivery was 160 mgd. In addition to the EMI system, HC&S has also developed a set of



groundwater wells that can supply up to 144 mgd of additional water. In total, at maximum output, it appears that the water delivery system available to HC&S can therefore provide up to 590 mgd.

The EMI system was operated under long-term licenses for the four license areas mentioned previously until 1986, when the last of these leases expired. From that point onward, the State of Hawaii has issued the company one-year revocable permits for continued diversion. On May 14, 2001, A&B, the owner of the system, filed for a 30 year long-term lease in the four license areas. This action was opposed by a number of groups, who requested a contested case hearing on the matter, and establishment of Interim Instream Flow Standards (IIFS) for 27 of the 40 officially recognized streams lying within the license areas EMI is seeking to divert from. As a consequence of this, the BLNR deferred action on the long-term lease, but continued to approve the existing revocable permits in a "holdover" status on a month-to-month basis, pending resolution of the dispute, a practice that continues to the present time. The IIFS petitions, which are still pending before CWRM, have the potential to significantly influence the amount of water that the EMI system is allowed to divert from these license areas. The contested case hearing on the 30-year lease proposed by A&B has been in abeyance pending CWRM action on the IIFS petitions, and the completion of the proposed EIS under HRS 343, but will resume on January 9, 2017.

On December 9, 2016, A&B went before the BLNR for approval of their current holdover permit, asking permission to divert 100 mgd. After considerable public testimony and an executive session, the Board granted the holdover permit, but capped the allowed diversion at 80 mgd. This amount of water is half of the EMI system's historical median delivery volume when the HC&S plantation was in operation, and only 18 percent of the system's maximum delivery capacity. Significant questions thus arise regarding the future allocation of water previously diverted by this system to instream versus off stream uses; the license areas in which future diversions will occur; the total volume of water that will need to be diverted to serve the current and reasonably projected needs of Maui in the near term; the period of time over which such future diversions will be permitted before being re-evaluated; and the ecological consequences of these decisions.

#### Anticipated Impacts

The EIS Preparation Notice provided to the Service indicates that EMI intends to request a 30-year long term lease to divert 100 mgd for agricultural uses in central Maui, and to continue service to the Maui Department of Water Supply, which supplies drinking water to many of the island's citizens. The Service would note that the amount of diversion proposed is 20 percent in excess of that granted to A&B in the holdover permit approved by the BLNR on December 16, 2016. It is also five times more than the amount of water that A&B is currently taking from East Maui, according to its opening brief filed in October 2016 for the resumption of the IIFS contested case hearing for the 27 streams in the four license areas under consideration. In that

document, A&B states that it is currently diverting only 20-25 mgd, primarily for basic land maintenance uses including dust control and firefighting, that no diversions are occurring in the Nahiku or Keanae license areas, and that the previously diverted flow volume is now being returned to various streams in these sectors. Therefore, resumption of diversions at a rate of 100 mgd would represent a significant increase over currently prevailing rates, with associated ecological consequences.

The long history of stream diversions by the EMI system on East Maui has created an array of impacts to trust resources, including both the native stream biota, other species which inhabit the adjacent upland forests, and nearshore marine ecosystems that rely on streams for nutrient inputs. Several native stream-associated insect species occurring on East Maui water lease areas are now listed under the Endangered Species Act, specifically the damselflies *Megalagrion pacificum*, *Megalagrion nesiotex*, and *Megalagrion xanthomelas*, all three designated as Endangered. The first mentioned species breeds in stream pools and side channels, with adults patrolling the margins of the stream corridor, and therefore suffers direct impacts from loss of habitat linked to diminished stream flows. The breeding habitats of the second mentioned species are not known, but the adults also utilize the stream corridor, and are not present in areas where diversions have created dry streambeds in the place of a formerly flowing channel. The third mentioned species breeds in pools along stream terminal reaches, and although not currently known from windward East Maui, has the potential to occur there. Higher rates of diversion will therefore lead to higher rates of direct impact to all these listed species.

In addition, based on information provided in the EIS scoping packet and pertinent information in our files, including data compiled by the Hawaii Biodiversity and Mapping Project, there are 9 listed birds, 2 listed reptiles, 1 listed mammal, 7 listed insects, and 21 listed plants with final designated Critical Habitat within or near the vicinity of the license areas proposed for diversion. These listed species are as follows:

| Birds   | Status     |
|---|------------|
| Band-rumped storm-petrel ( <i>Oceanodroma castro</i> )        | Endangered |
| Crested honeycreeper ( <i>Palmeria dolei</i> , 'akohelohe)    | Endangered |
| Hawaiian coot ( <i>Fulvia ulai</i> )                          | Endangered |
| Hawaiian duck ( <i>Anas wyvilliana</i> )                      | Endangered |
| Hawaiian goose or nene ( <i>Branta sandvicensis</i> )         | Endangered |
| Hawaiian petrel ( <i>Pterodroma phaeopygia sandvicensis</i> ) | Endangered |
| Hawaiian stilt ( <i>Himantopus mexicanus knudseni</i> )       | Endangered |
| Maui parrotbill ( <i>Pseudonestor xanthophrys</i> , kiwiku)   | Endangered |
| Newell's shearwater ( <i>Puffinus auricularis newelli</i> )   | Threatened |
| Reptiles  | Status     |
| Green sea turtle ( <i>Chelonia mydas</i> )                    | Endangered |
| Hawksbill sea turtle ( <i>Eretmochelys imbricata</i> )        | Endangered |





period than is currently being requested, which will allow more regular assessment of evolving societal demands and ecological impacts. Once again, the Service recommends that multiple lease length alternatives be analyzed in this regard.

*Amount of Water to be Diverted* – The EIS should examine in detail the current level of water diversion in the EMI system, the environmental impacts of diversion, and the subsequent uses of the diverted water, including the following:

- 1) The degree of loss that is sustained through seepage along the system as a whole or in its various components. The EIS should identify those individual ditches or structures with the highest seepage rates, and whether these can be repaired, bypassed, or retired from service in order to render the diversion more efficient, and reserve the maximum amount of water for aquatic ecosystems and their associated native species.
- 2) The environmental impacts of alternative diversion volumes, including the current volume of 25 mgd as stated in the recent A&B contested case opening brief, a higher volume of 50 mgd that is double the current rate, the 80 mgd currently mandated by the BLNR, and the 100 mgd proposed by A&B. The impacts assessed should include the degree to which the diversion structures may represent barriers to upstream or downstream faunal passage of native Hawaiian fishes and other migratory stream biota.

- 3) The actual uses to which the diverted water is being put, and the reasonably foreseeable changes in such demand over varying time spans, as discussed above in regard to diversified agriculture. The Service maintains that proposed amounts of stream diversion should not be predicated on speculative future use at the expense of current ecosystem services and integrity, but should instead be fully justified based on robust data and economic models. If future demand justifies additional off-stream diversion, the current law allows A&B to petition CWRM for further allocations of water at any point in the future. By contrast, the Service does not support locking in excessive off-stream allocations for prolonged periods of time in advance of proven demand. The Service notes that natural resources are defined as a public trust under Article 11, Section 1 of the State of Hawaii Constitution, and that the State Water Code (HRS 174C) specifically mandates that public trust uses such as minimum instream flows for ecological integrity and traditional cultural practices must be fully addressed before off-stream allocations can be granted. The Service also notes that under HRS 174C, agricultural diversions are not considered a public trust use. As stated by the Hawaii State Supreme Court in its *Waiahole Ditch* decision of August 22, 2000: “Although its purpose has evolved over time, the public trust has never been understood to safeguard rights of exclusive use for private commercial gain.”

- 4) The degree to which water from other sources available to A&B, specifically pumped wells, can be substituted for water diverted from streams, thus significantly reducing impacts to stream ecosystems. With its currently installed well capacity of 145 mgd, it appears that all current and future uses projected by A&B could be served by these sources, and the use of well water should thus be considered as an alternative.

*Lease Areas Subject to Diversion* – The EIS should evaluate whether diversions from particular water lease areas will have higher environmental impacts than diversions from others:

- 1) As noted previously, on the whole the Keanae and Nahiku lease areas support a greater extent of native forest and streams with higher levels of native biodiversity than do the Huelo and Honomanu license areas. Therefore, the EIS should examine alternatives that involve curtailing diversion from either one or two of these lease areas.
- 2) The EIS should evaluate the comparative environmental impacts and benefits of fully restoring flow to some stream systems while completely diverting others, versus restoring some level of base flow to all streams impacted by the EMI system.

*Impacts to Federally Listed Species and their Recovery* – The EIS should evaluate in detail the potential direct and indirect impacts to federally listed species of plants, birds, bats and insects occurring in the four water license areas on windward East Maui, including:

- 1) The direct effects of stream flow reduction or restoration on native *Megalagrion* damselflies, and whether the proposed diversions will impede the recovery of these species.
- 2) The indirect effects of stream flow reduction or restoration on native forest birds, and whether additional diversion rates above those currently prevailing will result in additional risk to these populations.
- 3) The degree to which current and future maintenance activities necessary to keep the EMI system functional will impact ESA-listed plants, birds or bats.

#### Summary

In summary, the Service recommends that the EIS consider the following alternatives:

- 1) Alternative leasing periods shorter than that currently proposed, including 5, 15 and 30 years.
- 2) Alternative diversion volumes less than that currently proposed, including 25, 50, 80 and 100 mgd.



- 3) Alternative use of pumped well water in place of diverted stream water.
- 4) Alternative geographical diversion scenarios in regard to particular water lease areas, including termination of diversions from the Nahiku and/or Keanae water lease areas.

The Service also recommends that the EIS make specific reference to how the proposed diversions may affect federally listed plant, bird, bat and insect species occurring in the four water lease areas under consideration.

The Service also notes that if there is a federal action agency funding, permitting, or assisting in the implementation of this project, we recommend in addition to compliance under HRS 343, that the agency consult with the Service to address potential project impacts to listed species pursuant to section 7(a)(2) of the Endangered Species Act. If there is no federal action agency associated with the project, but impacts to listed species cannot be fully avoided, the project should coordinate with the Service directly pursuant to section 10 (a)(1)(B) of the Endangered Species Act.

The Service appreciates the opportunity to comment on this EIS Preparation Notice. If you have any questions regarding this letter, please contact Fish and Wildlife Biologist Dan Polhemus by telephone at (808) 792-9415 or by electronic mail at [dan\\_polhemus@fws.gov](mailto:dan_polhemus@fws.gov), or alternately Fish and Wildlife Biologist Michelle Bogardus by telephone at (808) 792-9473 or by electronic mail at [michelle\\_bogardus@fws.gov](mailto:michelle_bogardus@fws.gov)

Sincerely,



*Mary M. Abrams*  
For Mary M. Abrams, Ph.D.  
Field Supervisor

cc:  
NMFS  
EPA  
DAR

#### References:

- Bassiouni, M. and Oki, D. S. 2013. Trends and shifts in streamflow in Hawaii, 1913-2008. *Hydrological Processes* 27: 1484-1500.
- Chu, P. S. and H. Chen. 2005. Interannual and interdecadal rainfall variations in the Hawaiian Islands. *Journal of Climate* 18: 4796-4813.
- Hamilton, K. 2013. High resolution dynamical projections of climate change for Hawaii and other Pacific Islands. University of Hawaii, Honolulu, HI. Available from: <https://www.sciencebase.gov/catalog/filem/54b82e9ce4b031f52703e95c>
- State of Hawaii Commission on Water Resource Management. 2016. Case No. CCH-MA13-01. Hawaiian Commercial and Sugar Company's opening brief regarding re-opened evidentiary hearing; certificate of service. 18 pp.
- Wilcox, C. 1996. Sugar Water. Hawaii's Plantation Ditches. University of Hawaii Press, Honolulu. xii + 191 pp.



10238-02  
Letter to Mary M. Abrams, Ph.D.  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Mary M. Abrams, Ph.D.  
Field Supervisor, U.S Department of the Interior Fish and Wildlife Service  
300 Ala Moana Boulevard, Room 3-122  
Honolulu, HI 96850

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Dr. Abrams:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. The Fish and Wildlife Service provided early consultation comments by letter dated December 21, 2016, which was prior to the publication of the EISPN on February 8, 2017. Your agency did not provide written comments on the EISPN. We acknowledge your comments and concerns, which were considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments and this response has been appended to the Draft EIS in Appendix J.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui, which are now owned by Mahi Pono and planned for diversified agriculture.
2. Chapter 4 of the Draft EIS and the Agricultural and Related Economic Impacts study (Appendix I), and the Economic and Fiscal Impact Study (Appendix H), describe historical baselines in terms of a period of typical sugar operations (between 1987 and 2006), and more recent sugar operations (between 2008 and 2013). During these periods, average surface water deliveries to the Central Maui agricultural fields were approximately 156 mgd and 114 mgd, respectively.

3. As described in the Draft EIS, after taking into account the requirements of the Interim Instream Flow Standards under the Commission on Water Resource Management's Decision and Order dated June 20, 2018 (CWRM D&O), it is estimated that the amount of water that can be diverted from the License Area is approximately 87.95 mgd, with potentially an additional 4.37 mgd available for diversion from lands outside of the Lease Area.
4. This significant reduction in surface water diversions means there will be less groundwater that can be pumped from the groundwater wells in the Central Maui fields. Contrary to your statement that the existing groundwater wells in the Central Maui fields can supply up to 144 mgd, the average groundwater pumping during the period between 1987 and 2006 was 42.5 mgd, and between 2008 and 2013 was 69.90 mgd.
5. The diversified agriculture plan proposed by Mahi Pono includes crops that are far less tolerant to brackish water than sugarcane. Taking into account the reduction in the amount of surface water diversions, the diversified agricultural plan described in the Draft EIS anticipates being able to pump only approximately 16 mgd of brackish groundwater to supplement the surface water supply provided through the EMI Aqueduct System. A discussion of sustainable yield and groundwater resources is provided in Section 4.2.2 of the Draft EIS. The use of East Maui surface water to irrigate the Central Maui fields has long supplemented the underlying aquifers, and drilling additional groundwater wells does not appear to be a feasible or environmentally sound option.
6. A discussion of the three native damselflies (Megalagrion xanthomelas, Megalagrion pacificum, and Megalagrion nesiotis) and the mosquito (Culex quinquefasciatus) can be found in Sections 4.4 and 4.2.1 of the Draft EIS and in the technical studies appended the Draft EIS. Specifically, the Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A) and the Terrestrial and Flora and Fauna Report (See Appendix C). The Terrestrial and Flora and Fauna Report also provides information on listed species and applicable areas of critical habitat (See Appendix B).
7. The Draft EIS includes in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including alternative lease duration and diversion volume. It is believed that a shorter Water Lease term would derail development of the farm plan and the conversion of the Central Maui lands to diversified agriculture because of the risk of not being able to farm for a long enough period to recover the required planned investment. Conversely, the longer the term of the Water Lease, the greater the beneficial agricultural and economic impacts because of the certainty that comes from a long-term lease, which could encourage greater investment in long-term improvements. See Draft EIS Appendix I (Agricultural and Related Economic Impacts) and Draft EIS Chapter 3.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mary M. Abrams, Ph.D.  
Page 3  
September 23, 2019

8. The Draft EIS provides an analysis of permitting diversions in an amount up to what is permitted under the CWRM D&O as well as lesser amounts. See Draft EIS Appendix H (Economic and Fiscal Impact Study), Appendix I (Agricultural and Related Economic Impacts), and Draft EIS Chapter 3. The farm plan for the Central Maui fields was formulated to be in compliance with the CWRM D&O. For each 1 mgd reduction in the amount of surface water permitted under the CWRM D&O, there would be a reduction of some 173 acres of land in crops in Central Maui and 24.51 acres of crops in Upcountry Maui.

9. Some key between the Proposed Action and the no Water Lease alternative (i.e., an alternative whereby water would be diverted only from private lands) would be as follows:

- About 11,570 acres more green open space in the form of farms and irrigated pastures (20,650 acres vs 9,080 acres).
- About three times as much food production, including greater food self-sufficiency and more exports.
- About \$206 million per year more in direct and indirect sales (\$329.5 million vs \$123.5 million).
- About 750 more direct and indirect jobs (1,140 jobs vs 390 jobs).
- About \$29.7 million per year more in total payroll (\$45.3 million vs \$15.6 million).
- About \$2.9 million per year more in State and County tax revenues (\$4.6 million vs \$1.7 million).

It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

  
Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

DAVID Y. ICE  
COMMISSIONER OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

January 3, 2017

Wilson Okamoto Corporation  
Attention: Mr. Earl Matsukawa, AICP  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

via email: [ematsukawa@wilsonokamoto.com](mailto:ematsukawa@wilsonokamoto.com)

Dear Mr. Matsukawa:

SUBJECT: Early Consultation for the an Environmental Impact Statement Preparation  
Notice for Proposed Lease for the Nāhiku, Kēanā, Honomanu and Huelo  
License Areas

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comments.

At this time, enclosed are comments from the (a) Engineering Division, (b) Division of Forestry and Wildlife, (c) Land Division Administration, (d) Maui Island Advisory Council – Nā Ala Hele, Trails & Access Program, (e) Land Division – Maui District, and (f) Commission on Water Resource Management on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

  
Russell Y. Tsuji  
Land Administrator

Enclosure(s)  
cc: Central Files





16 DEC 01 PM 10:47 ENGINEERING  
STATE OF HAWAII  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSIONER OF LAND AND NATURAL RESOURCES



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

November 29, 2016

MEMORANDUM

**DLNR Agencies:**

- ☒ Div. of Aquatic Resources
- ☒ Div. of Boating & Ocean Recreation
- ☒ **Engineering Division**
- ☒ Div. of Forestry & Wildlife
- ☒ Div. of State Parks
- ☒ Commission on Water Resource Management
- ☒ Office of Conservation & Coastal Lands
- ☒ Land Division - Maui District
- ☒ Historic Preservation

To:

From:

FROM: To:

SUBJECT:

LOCATION:

APPLICANT:

Russell Y. Tsuji, Land Administrator  
Early Consultation for the an Environmental Impact Statement Preparation  
Notice for Proposed Lease for the Nahiku, Keanae, Honomau and Huelo  
License Areas  
East, Central and Up-County Maui, Island of Maui; TMK: (2) various  
Alexander and Baldwin, Inc. and East Maui Irrigation Company, Limited

Transmitted for your review and comment is information on the above-referenced proposed lease. We would appreciate your comments on this proposed lease. Please submit any comments by **December 23, 2016**.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

- ☐ We have no objections.
- ☐ We have no comments.
- ☒ Comments are attached.

Signed:

Print Name:

Date:

cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES  
ENGINEERING DIVISION

LD/Russell Y. Tsuji

Ref: Early Consultation for an Environmental Impact Statement Preparation  
Notice for Proposed Lease for the Nahiku, Keanae, Honomau and Huelo  
License Areas

COMMENTS

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a designated Flood Hazard.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zone designations can be found using the Flood Insurance Rate Map (FIRM), which can be accessed through the Flood Hazard Assessment Tool (FHAT) (<http://gis.hawaii.nfip.org/FHAT>).

Be advised that 44CFR reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may take precedence over the NFIP standards as local designations prove to be more restrictive. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- o Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- o Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- o Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7253.
- o Kauai: County of Kauai, Department of Public Works (808) 241-4846.

Signed:

CARTY S. CHANG, CHIEF ENGINEER

Date:

12/5/16



10238-02  
September 23, 2019

Mr. Carty S. Chang  
Chief Engineer, Engineering Division  
Department of Land and Natural Resources  
P.O. Box 621  
Honolulu, HI 96809

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Chang:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. You provided early consultation comments by letter dated December 5, 2016, which was prior to the publication of the Environmental Impact Statement Preparation Notice (EISPN) on February 8, 2017. The Engineering Division did not provide written comments on the EISPN. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix J.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. Sections 3.4.7 and 4.3.3 of the Draft EIS assess the flood hazard impacts associated with the Proposed Action.
2. Chapter 4 of the Draft EIS includes an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full or partial restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of Streams and the Ocean Water Chemistry (See Appendix A); Terrestrial and Flora and Fauna Report (See Appendix B); Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Carty S. Chang, Chief Engineer  
Page 2  
September 23, 2019

(See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

DAVID Y. IGE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF FORESTRY AND WILDLIFE  
1151 PUNCHBOWL STREET, ROOM 325  
HONOLULU, HAWAII 96813

SETHANN B. CASE  
CHIEF OF DIVISION  
DIVISION OF FORESTRY AND WILDLIFE  
DEPARTMENT OF LAND AND NATURAL RESOURCES

KIMOLA KALUHIWA  
FIRST DEPUTY

JEFFREY T. PARSON P.E.  
DEPUTY DIRECTOR - WATER

ADAM R. BROWN  
BUREAU CHIEF - FORESTRY

CHRISTOPHER J. HARRIS  
BUREAU CHIEF - WILDLIFE

CONSERVATION AND RESTORATION  
DIVISION OF FORESTRY AND WILDLIFE

RESEARCH AND MONITORING  
DIVISION OF FORESTRY AND WILDLIFE

KAROL ANN DUNN  
DEPUTY CHIEF OF DIVISION

STATE PARKS

RECEIVED  
LAND DIVISION

2016 DEC 20 AM 10:38

DEPT. OF LAND &  
NATURAL RESOURCES  
STATE OF HAWAII

December 19, 2016

TO: RUSSELL TSUIJI  
LAND ADMINISTRATOR

FROM: DAVID G. SMITH  
FORESTRY AND WILDLIFE ADMINISTRATOR

SUBJECT: EARLY CONSULTATION FOR EIS PREPARATION NOTICE FOR  
PROPOSED LEASE FOR THE NAHIKU, KEANAE, HONOMANU, AND  
HUELO LICENSE AREAS

ds

Thank you for the opportunity to comment on the proposed lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas by Alexander and Baldwin, Inc. and East Maui Irrigation Company, Limited (A&B). The associated application filed for the sale of lease of state lands for the purpose of delivering water from those lands to users includes the state lands managed/designated to the Division of Forestry and Wildlife comprising the Koʻolau Forest Reserve, established by governor's proclamations of 1905 and 1907, and the Hanawi Natural Area Reserve, established by executive order 3351 (1986) (hereinafter, the Reserves). Those Reserves are managed by the Division for purposes consistent with their establishment under state law, including protection of watersheds, natural resources, and public access. Further, the Reserves are public trust lands subject to constitutional and statutory provisions for public use, including hunting, gathering, recreational, subsistence and cultural use.

The Division is concerned that the proposed lease of the Reserves includes public lands well in excess of what is necessary to ensure the effective delivery of the water, and that the requested lease would unnecessarily encumber the Reserves, potentially impacting the purpose and public use of those areas. Thus the Division recommends that the areas to be conveyed for a water license be done so through a land agreement that is limited to the infrastructure required for maintenance and conveyance of water, and that the terms of any agreement established for the delivery of water ensure unrestricted public access to the reserves and any state owned roads and trails.

The Division appreciates the long-standing and productive relationship we have had with A&B and the adjacent landowners of East Maui for the responsible stewardship of watershed lands and natural resources of this region. This partnership has facilitated effective management and ensured that the natural resources of the East Maui watersheds are protected for the benefit of

Russell Tsuji, early consultation comments  
Page 2

future generations. We look forward to productive discussions with A&B regarding this request and determining the appropriate land disposition for the proposed water conveyance. Please contact Scott Fretz, Maui Branch Manager, at (808) 984-8100 or by email at [Scott.Fretz@hawaii.gov](mailto:Scott.Fretz@hawaii.gov) if you have any questions or would like to follow-up on our comments. Mahalo

cc: Kevin Moore, Scott Fretz, Irene Sprecher

001979



10238-02  
Letter to David G. Smith  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Mr. David G. Smith  
Forestry and Wildlife Administrator  
Department of Land and Natural Resources  
1151 Punchbowl Street  
Honolulu, HI 96813

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Smith:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. On behalf of the Division of Forestry and Wildlife (DOFAW), you provided early consultation comments by letter dated December 19, 2016 and January 20, 2017, which was prior to the publication of the EISP. On February 8, 2017, DOFAW did not provide written comments on the EISP. We acknowledge your comments and concerns which were considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments and this response has been appended to the Draft EIS in Appendix J.

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui, which are now owned by Mahi Pono and planned for diversified agriculture.
2. Your comment was taken into consideration in the formulation of the analysis of alternatives to the Proposed Action. You expressed concerns that the land area proposed for the Water Lease, consisting of some 33,000 acres of State land, and which land includes the Hanawi Natural Area Reserve and the Ko'olau Forest Reserve, is in excess of the amount of land needed to ensure effective delivery of the water through the EMI Aqueduct System. You recommended that any land agreement with the State be limited to the infrastructure required for the maintenance and

conveyance of the water through the EMI Aqueduct System. You also recommended that there be unrestricted public access to the two Reserves and any State-owned roads and trails. The Proposed Action as described in the Draft EIS is consistent with the May 14, 2001 request for a Water Lease covering some 33,012 acres of land.

On May 14, 2001, A&B and EMI submitted a request that the BLNR offer a long-term lease at public auction for the right, privilege and authority to enter and go upon State-owned lands at Ko'olau Forest Reserve and Hanawi Natural Area Reserve, for the purposes of developing, diverting, transporting and using government-owned waters. The total lease area as described in that submittal was 33,012.91 acres (Lease Area), but was noted as being subject to review and confirmation by the Department of Accounting and General Services, Survey Division. The submittal noted, among other things, that the lessee would be required to maintain roads, trails, and the EMI Aqueduct System, and that public hunting would be allowed, subject to reasonable restrictions to be documented in the lease.

Shortly after A&B submitted the request, the Coalition to Protect East Maui Water, Maui Tomorrow Foundation, and Nā Moku Aupuni O Ko'olau Hui requested a contested case hearing on the proposed Water Lease. Pending the outcome of the contested case, which is still unresolved, the BLNR deferred action on the A&B request and granted holdover revocable permits to A&B. Since that time, the BLNR has authorized holdover and/or annual revocable permits for this land and the use of water, with the latest being approved on November 9, 2018. The revocable permits cover the proposed Lease Area of some 33,012.91 acres, and the rental amount due to the State under the November 2018 revocable permit approval is \$19,247.02 per month (\$230,964.24 annually).

3. Although A&B holds revocable permits over the proposed Lease Area, as described in Section 4.8 of the Draft EIS, hiking and hunting are permitted uses within the proposed Lease Area. Hiking access is limited to hiking clubs, and access to the Lease Area for hiking is acquired through a hiking waiver from EMI. The public hunting units within the Ko'olau Forest Reserve are within the portions of proposed Lease Area. As you know, the Division of Forestry and Wildlife administers these hunting areas. In order to hunt within those portions of the proposed Lease Area, hunters must obtain a license from the DLNR and a hunting waiver from EMI. Access to the hunting areas is managed by EMI through eight existing EMI access roads.
4. You indicated that there should be unrestricted public access within the proposed Lease Area and to any roads or trails owned by the State within the Lease Area. Although this approach differs from the Proposed Action as described in the Draft EIS, the alternative of reducing the land area under the proposed Water Lease to a smaller area reasonably necessary to operate the EMI Aqueduct System with appropriate buffers to ensure public safety and the security of the system, while not reducing access to the water under the Water Lease, has been considered in the Draft EIS. See Chapter 3. Access that includes sufficient buffers to prevent members of the public

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

001980



from accessing the system could be consistent with the objectives of the Proposed Action. (objectives of the Proposed Action are discussed in Section 1.2 of the Draft EIS), as long as access to and the safety of the water source and the system is not affected and the water volume remains the same as under the Proposed Action.

5. As discussed in Chapter 3 of the Draft EIS, under this "Modified Lease Area" scenario it is assumed that access to the State lands would be managed solely by the State. Similarly, the roads and trails outside of the modified/reduced Lease Area would be managed and maintained by the State. Potential environmental impacts of this Modified Lease Area alternative was assessed in the Terrestrial Flora and Fauna Technical Report for the Proposed East Maui Water Lease (Appendix C) and the Archaeological Literature Review and Field Inspection (Appendix E), and the analysis determined that increased or unfettered public access into the Lease Area could result in the introduction and spreading of invasive species and damage to historic resources.

6. Chapter 5 of the Draft EIS addresses relationship of the Proposed Action to applicable land use plans and policies. Relevant provisions of Hawaii Revised Statutes Chapters 183 and 195 and related administrative rules are included in Chapter 5.

7. Chapter 4 of the Draft EIS includes an assessment of the existing environment and impacts of the Proposed Action, including native ecosystems, resource management, endangered species, drainage and soil management, cultural resources, public access, and climate change.

8. Various technical studies are appended the Draft EIS and provide detailed examinations or resources and potential impacts, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant





STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

SUZANNE B. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCES MANAGEMENT

KEKOA KALUHIWA  
FIRST DEPUTY

JEFFREY T. FEARSON, P.E.  
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
WATER QUALITY  
COMMISSION ON WATER RESOURCES MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
WATER RESOURCES  
CONSERVATION AND COASTAL LANDS  
FORESTRY AND WILDLIFE  
WATER RESOURCES  
LAND  
KAILOGLAND HILLS RESERVE COMMISSION

December 16, 2016

## MEMORANDUM

**TO:** Russell Y. Tsuji, Administrator

**THROUGH:** Kevin E. Moore, Assistant Administrator

**FROM:** Richard T. Howard, Land Agent

**SUBJECT:** Proposed Water Lease for the Nahiku, Keanae, H  
License Areas - Environmental Impact Statement

I have reviewed the subject Environmental Impact Statement Preparation Notice (EISP/N), which presents the goal and objective of Alexander & Baldwin's Proposed Action, i.e. a 30-year water lease for the continued right, privilege, and authority to enter and go upon State lands for the purpose of developing, diverting, transporting, and using government owned waters through the EMI Aqueduct System.

The EMI Aqueduct System, consisting of 388 separate intakes, 24 miles of ditches and 50 miles of tunnels, as well as numerous small dams, intakes pipes and flumes, crosses both State lands and those owned by East Maui Irrigation Company. The State lands are situated in four license areas, Nahiku, Keanehe, Honomahu and Huelo, as shown on Table 1.

RECEIVED  
LAND DIVISION  
2016 DEC 21 AM 8:55  
DEPT. OF LAND &  
NATURAL RESOURCES  
STATE OF HAWAII

Russell Y. Tsuji, Administrator  
December 16, 2016  
Page 2

Table 1

| License Area | TMK                | Acres      | Encumbrances                              |
|--------------|--------------------|------------|---|
| Nahiku       | (2) 1-2-004:005    | 3,087.070  | EO3351, Governor's Proclamation of 5/2/38 |
|              | (2) 1-2-004:007Por | 4,745.000  | EO3351, Governor's Proclamation of 5/2/38 |
| Keama        | (2) 1-1-002:002    | 13,007.147 | Governor's Proclamation of 5/2/38         |
| Honomanu     | (2) 1-1-001:044    | 3,381.000  | Governor's Proclamation of 5/2/38, EO3868 |
| Huelo        | (2) 1-1-001:050    | 2,121.850  | Unencumbered                              |
|              | (2) 2-9-014:001    | 6,585.140  | Unencumbered                              |
|              | (2) 2-9-014:005    | 24.000     | Unencumbered                              |
|              | (2) 2-9-014:012    | 1.600      | Unencumbered                              |
|              | (2) 2-9-014:011    | 3.500      | GL S-4596                                 |
|              | (2) 2-9-014:017    | 16.600     | Unencumbered                              |
|              |                    | 32,972.907 |   |

A Brief description of encumbrances follows:

- **E03351:** The set aside of 7,500 acres for the NARS. Fortunately, the irrigation ditch does not pass through the NARS (see attached maps), so no approvals from the NARS Commission will be necessary.
- **Governor's Proclamation of 5/23/38:** Modifies the boundaries and changes the area of the Ko'olau Forest Reserve. A submittal to withdraw 1,341 acres from the forest reserve and set aside to the DOT, Highways Division for highway improvements was approved by the Board of Land and Natural Resources on November 19, 2004, item D-34. The DOT was to provide the survey maps and description according to State DACS standards. According to the project status form entry of 6/16/11, Debra followed up with Cynthia Okinaka regarding the status of the maps and descriptions, which were outstanding.
- **E03868:** The set aside of .631 acres to the DOT, Highways Division for highway improvement purposes.
- **GL S-4593:** Grant of term easement to Gregory and Masako Westcott for ingress and egress purposes including the right to construct, reconstruct, use maintain and repair the roadway from 101/178 through 9/30/43.

Section 3.10.4 Parks and Recreation Facilities of the EISPN addresses the potential impacts the Proposed Action will have on public access to the license areas for hunting and hiking. It states:

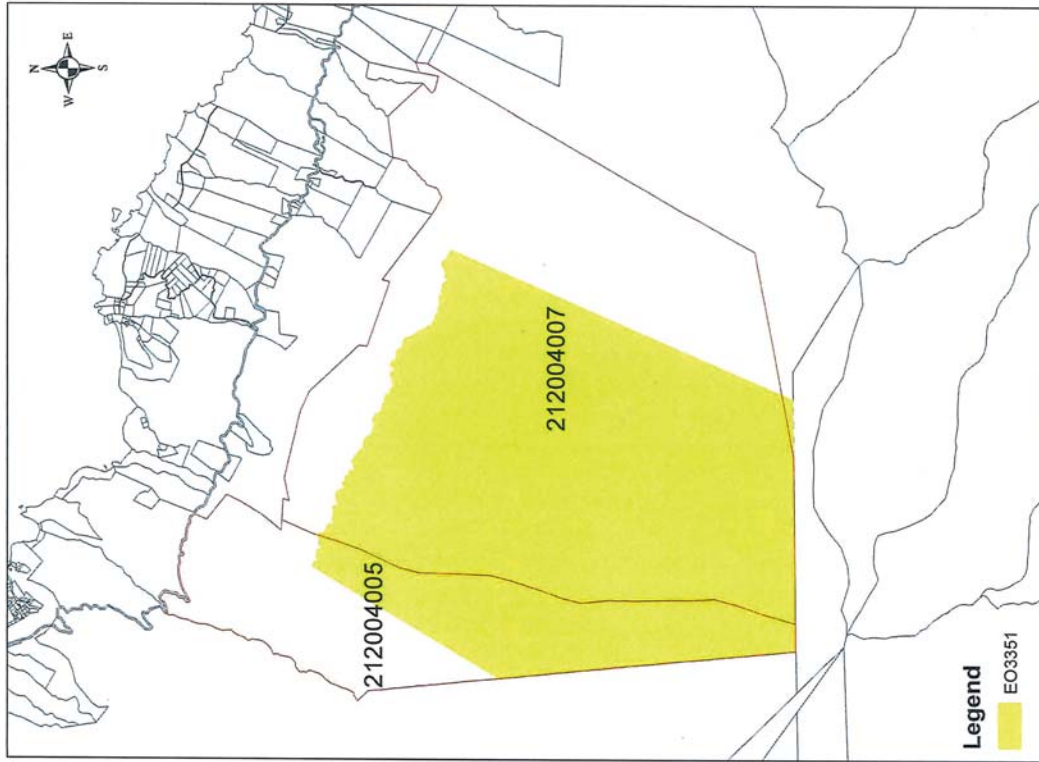
“Designated as a “Hunting Unit” by the Department of Land and Natural Resources, Division of Forestry and Wildlife, hunters with a license and an EMI permit/waiver are permitted to hunt within the Ko’olau Forest reserve on a year-round basis. Access to hunting grounds is by 4-wheel drive vehicles over existing access roads within the License Area and is regulated by a hunting club.”

With respect to hiking it says:

"Hiking on existing access roads is also permitted within the License Area, and is limited to hiking club activities to ensure the safety of individuals as well as to prevent vandalism to the existing ditch and tunnel system."

The EISPN does not anticipate any impacts on the parks and recreational facilities "as hunting and hiking access to the License area will be maintained under the issuance of a State Water Lease."

Alexander & Baldwin's preferred alternative for the Water Lease is to encumber approximately 32,972 acres of State land together with the right to divert, transport and use State owned water. A water lease and term easement for the EMI Aqueduct System is the more appropriate disposition. Pursuant to Section 171-11, a water lease and easement over the parcels located in the forest reserve will require the concurrence of the Division of Forestry and Wildlife and the Governor, in addition to Land Board approval. Finally, survey maps and descriptions of the ditch system, access roads and related facilities would be needed in order to process an easement for the system.





10238-02  
September 23, 2019

Richard T. Howard  
Land Agent, Department of Land and Natural Resources  
Post Office Box 621  
Honolulu, Hawaii 96809

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Kē'anae, Honomanū  
and Huelo License Areas

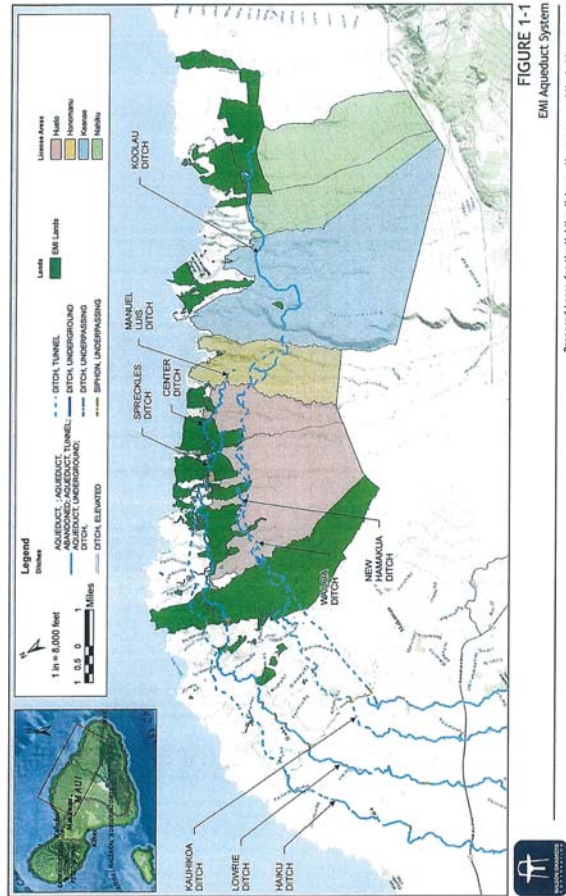
Dear Mr. Howard:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Kē'anae, Honomanū, and Huelo License Areas. Your office provided early consultation comments by letter dated December 16, 2016, which was prior to the publication of the EISP on February 8, 2017. Your office did not provide written comments on the EISP. We acknowledge your comments and concerns which were considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your early consultation comments has been appended to the Draft EIS in Appendix J.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Kē'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui, which are now owned by Mahi Pono and planned for diversified agriculture.
2. We acknowledge that the License Area includes lands set aside for the Hanawi Natural Area Reserve as well as lands within the Ko'olau Forest Reserve.
3. A description of hiking and hunting opportunities within the License Area is provided in Section 4.8 of the Draft EIS, which discusses recreational uses and park facilities located within the areas affected by the Proposed Action. The Proposed Action does not involve the curtailment of any existing hunting or hiking options within the License Area.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277





10238-02

Letter to Richard T. Howard, Land Agent

Page 2

September 23, 2019

4. We acknowledge that survey maps would be needed in order to process an easement for the EMI Aqueduct System. However, an easement authorizing the EMI Aqueduct System was already granted in 1938 between the Territory of Hawai'i and A&B.

5. Section 1.3.1 of the Draft EIS describes the EMI Aqueduct System. Maps of the EMI Aqueduct System are included in Chapter 2 of the Draft EIS.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



Na Ala Hele, Trails & Access Program  
Maui Island Advisory Council

December 21, 2016

Ms. Suzanne Case  
State of Hawaii Department of Land and Natural Resources  
Land Division  
P.O. Box 621  
Honolulu, Hawaii 96809

Re: Early Consultation for the Preparation of an Environmental Impact Statement Preparation Notice  
Proposed Lease for the Nahiku, Keanae, Honomanu and Huelo License Areas East, Central, and  
Upcountry Maui, Hawaii

Dear Ms. Case:

The Na Ala Hele, Trail and Access Program's vision, goals and objectives has as its vision statement the following:

*"To develop, via the Na Ala Hele program, a trail and access network and management system which:*

- 1. Provides a broad range of recreational, cultural, religious, and subsistence opportunities for all of Hawaii's people and*
- 2. Helps to conserve Hawaii's cultural heritage and environment."*

In light of this vision, the Maui Island Na Ala Hele Advisory Council has the following concerns regarding the proposed lease:

1. We don't see the necessity to lease the entire Koolau Forest Reserve and Hanawi Natural Area parcels if only portions are needed for water transmission. We are deeply concerned about restriction of public access. We do recommend the license be for only delivery systems and infrastructure, including intakes, ditches, tunnels, dams, pipes and flumes. We would like to see shared use of all roads for multi-use purposes including, equestrian, hiking, biking, hunting and OHV use as appropriate.
2. We feel a 30-year lease is an inappropriate duration of time. A shorter timeframe is preferable.
3. As A&B has been leasing this land since 1886, we would like to see included in the Cultural Impact Assessment historic research and inventory on all the roads, trails and features because all such trails and roads are public access under the Highways Act of 1892.
4. We would strongly encourage the roads that go through EMI lands also be set aside as an easement for public use.

001985


c/o Maui Na Ala Hele, Trails & Access Program - 1955 Main Street, #901, Wailuku, Hawaii 96793  
Phone: (808) 873-3508 Fax: (808) 984-8114

RECEIVED  
LAND DIVISION

2016 DEC 21 PM 12:42

DEPT. OF LAND &  
NATURAL RESOURCES  
STATE OF HAWAII

5. What is proposed in the lease is not consistent with the statutory purpose of the forest reserve system and the protection of natural resources including aquatic stream life and riparian ecosystems.
6. Streams in Hawaii have traditionally been used as linear open spaces for connecting recreational, educational, cultural and natural areas and therefore fit the definition of a greenway. Our concern is that these pathways are accessible to the public for the above uses and subsistence opportunities.

Sincerely,  
  
 Russell Reinertson, Chair  
 Maui Island Advisory Council

Cc: Scott Fretz  
 David Smith  
 Jeffery Pearson  
 Meredith Ching  
 Garret Hew  
 Earl Matsukawa  
 Department of Land and Natural Resources  
 Commission on Water Resources Management  
 Alexander & Baldwin  
 East Maui Irrigation Company  
 Wilson Okamoto Corporation

c/o Maui Na Ala Hele, Trails & Access Program - 1955 Main Street, #901, Wailuku, Hawaii 96793  
 Phone: (808) 873-3508 Fax: (808) 384-8114



10238-02  
 September 23, 2019

Russell Reinertson  
 Chair, Maui Island Advisory Council  
 Maui Na Ala Hele, Trails & Access Program  
 1955 Main Street #301  
 Wailuku, Maui 96793

Subject: Environmental Impact Statement  
 Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
 and Huelo License Areas

Dear Mr. Reinertson:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and providing early consultation comments dated December 21, 2016, which was prior to the publication of the EISP on February 8, 2017 (Maui Na Ala Hele did not provide written comments on the EISP). We acknowledge those comments and concerns which were considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A copy of your letter has been appended to the Draft EIS in Appendix J.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui. These fields are now owned by Mahi Pono. Mahi Pono's farm plan includes cultivating the fields for diversified agriculture, substantially increasing the amount of local food production.
2. The Proposed Action contemplates a lease of 30 years. A shorter Water Lease term was considered as an alternative. However, it is believed that a shorter Water Lease term would derail development of the farm plan and the conversion of the Central Maui lands to diversified agriculture because of the risk of not being able to farm for a long enough period to recover the required planned investment. Conversely, the longer the term of the Water Lease, the greater the beneficial agricultural and economic impacts because of the certainty that comes from a long-term lease, which could encourage greater investment in long-term improvements. See Draft EIS Appendix I (Agricultural and Related Economic Impacts) and Draft EIS Chapter 3.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277



3. The Draft EIS includes in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action. On such alternative assessed is a reduction to the geographic extent of the proposed Lease Area to an area reasonably necessary to operate the EMI Aqueduct System with appropriate buffers to ensure public safety and the security of the system. Fully unrestricted public access is seen as a safety risk to the public and to the integrity of the EMI Aqueduct System. However, access that includes sufficient buffers to prevent members of the public from accessing the system could be consistent with the objectives of the Proposed Action. (Objectives of the Proposed Action are discussed in Section 1.2 of the Draft EIS). Potential environmental impacts of this Modified Lease Area alternative was assessed in the Terrestrial Flora and Fauna Technical Report for the Proposed East Maui Water Lease (Appendix C) and the Archaeological Literature Review and Field Inspection (Appendix E). Sections 3.4.14 and 4.8 of the Draft EIS discuss recreational resources, as well as access to such resources within the proposed Lease Area.

4. Cultural Surveys Hawai'i, Inc. prepared an archaeological report as well as a cultural impact assessment, which are summarized in Sections 4.5 and 4.6 of the Draft EIS, respectively. These reports are also appended in the Draft EIS (Appendices E and F, respectively).
5. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action and alternatives on indigenous freshwater species, terrestrial flora and fauna, and invasive mosquitoes. The Draft EIS discusses the impacts of the Proposed Action to freshwater species in Section 4.2.1 and impacts to terrestrial flora and fauna in Sections 4.4.1 and 4.4.2. Both reports are appended to the Draft EIS (See Appendix B and Appendix C). Impacts to natural resources are discussed throughout Chapter 4.

Your letter and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your agency's interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

DAVID Y. ICE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

November 29, 2016

**MEMORANDUM**

TO:

**DLNR Agencies:**

- ☒ Div. of Aquatic Resources
- ☐ Div. of Boating & Ocean Recreation
- ☒ Engineering Division
- ☒ Div. of Forestry & Wildlife
- ☐ Div. of State Parks
- ☒ Commission on Water Resource Management
- ☐ Office of Conservation & Coastal Lands
- ☒ Land Division – Maui District
- ☒ Historic Preservation

FROM:

Russell Y. Tsuji, Land Administrator

SUBJECT:

Early Consultation for an Environmental Impact Statement Preparation  
Notice for Proposed Lease for the Nahiku, Keanae, Honomau and Huelo  
License Areas

LOCATION:

East, Central and Up-County Maui, Island of Maui; TMK: (2) various

APPLICANT:

Alexander and Baldwin, Inc. and East Maui Irrigation Company, Limited

Transmitted for your review and comment is information on the above-referenced proposed lease. We would appreciate your comments on this proposed lease. Please submit any comments by **December 23, 2016**.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

- ☐ We have no objections.
- ☒ We have no comments.
- ☒ Comments are attached.

Signed:



Print Name:

Daniel Ornelas

Date:

12/23/16

cc: Central Files

*Ornelas 12/23/16 3:42p*



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

54 High Street, Room 101  
Honolulu, Hawaii 96813  
PHONE: (808) 984-8103  
FAX: (808) 984-8111

December 23, 2016

RP S-7368, RP S-7263  
RP S-7264, RP S-7265  
RP S-7266

Memorandum

To: Russell Tsuji, Land Administrator  
From: Daniel Ornelas, Maui District Land Agent  
Subject: Early Consultation, Environmental Impact Statement Preparation Notice (EISP/N), Proposed Lease of Government Lands of East Maui, 33,000 acres (more or less); Nahiku, Keanae, Hoomanu, Huelo, Maui; TMK (2) 1-2-004:005 & 007, (2) 1-1-002:002, (2) 1-1-001:044 & 050, and (2) 2-9-014:001

This memo serves to document comments from the Maui District Land Office (MDLO) in response to review of the subject draft report received by memo dated November 29, 2016. Please be advised that comments are limited to current priority projects and does not reflect the broad range of responsibilities MDLO administers in regards to the disposition and management of government lands.

Recently, MDLO has been involved in the formulation of a development plan for 285 acres of government lands at Pulehunui, central Maui, situate at TMK (2) 3-8-008:001 por. The development plan, which includes the proposed Kakanilua Business Park, is intended to guide the use and development of parcel 001 amongst multiple stakeholders in the best interest of the State.

Currently, parcel 001 is under Revocable Permit S-7368 to Alexander and Baldwin, Inc. A portion of these lands were recently included into the Maui County Urban Growth Boundary which opens the opportunity to expand the range of authorized land uses from solely agriculture uses to M-1 and M-2 commercial and industrial uses.

A key to expanded use and successful development of the Kakanilua Business Park is the acquisition of suitable water resources. It is noted that there is an existing ditch onsite at parcel 001 that is fed by surface waters originating out of government lands in east Maui being considered for long term water lease.

As a result, the department may request from the Board of Land and Natural Resources (Board), that as a condition of any water lease being issued for government lands in east Maui, a sufficient amount of water be reserved to service the proposed Kakanilua Business Park.

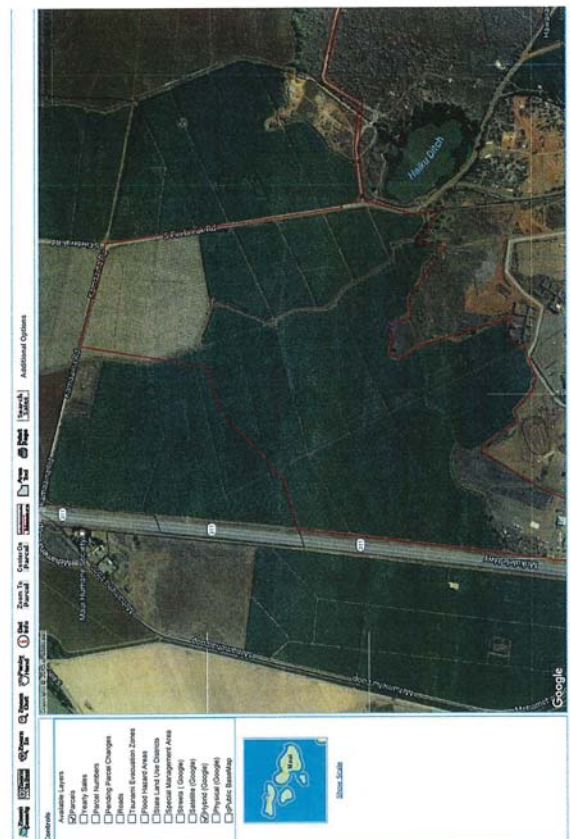
Furthermore, the Land Division needs to ensure that it advises the DLNR Engineering Division of the need for water resources as they update the State Water Projects Plan that is scheduled for public hearings to be held on Maui island in mid-January, 2017.

Finally, please be advised that, MDLO has received comments from both the Maui Division of Forestry & Wildlife and the Maui Division of Aquatic Resources. Pursuant to review of their written concerns, there is a need for the applicant to provide a more in-depth discussion of current management activities related to road and ditch system use and maintenance, ongoing access agreements with third parties, and reasons for the request to lease all 33,000+ acres as opposed to a disposition of a license / easement for just the ditch and related road system. In other words, what are ongoing uses, costs, benefits, processes and impacts involved with leasing over 33,000 acres of government lands in east Maui.

Mahalo for allowing this opportunity to consider this request. If you have any questions, please call me at the Maui District Land Office at (808) 984-8103.

Enc.

Cc: Maui Board Member, J. Gomes  
Ian Hirokawa, Special Projects Coordinator  
Lydia Morikawa, Development Specialist  
Central/District Files



[http://qpublic9.qpublic.net/qpm4/map.php?county=hi\\_mau&layers=parcels+streets&mapmode](http://qpublic9.qpublic.net/qpm4/map.php?county=hi_mau&layers=parcels+streets&mapmode)

12/23/2016



10238-02

September 23, 2019

Mr. Daniel Ornellas  
Maui District Land Agent  
Department of Land and Natural Resources  
54 High Street, Room 101  
Wailuku, Hawaii 96793

**Subject:** Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke‘anae, Honomanū  
and Huelo License Areas

Dear Mr. Ornellas:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas. Your office provided early consultation comments by letter dated December 23, 2016, which was prior to the publication of the EISP/N on February 8, 2017. Your office did not provide written comments on the EISP/N. We acknowledge your comments and concerns which were considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai‘i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your early consultation comments and this response has been appended to the Draft EIS in Appendix J.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomāuā, and Huelo License Areas for the "*purpose of developing, diverting, transporting, and using government owned waters*" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui, which are now owned by Mahi Pono and planned for diversified agriculture.
2. TMK No. (2) 3-8-008:001 (por.) is not within the License Area of the Proposed Action.
3. RP S-7368 has been terminated.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277



10238-02  
Letter to Mr. Daniel Ornellas  
Page 2  
September 23, 2019

4. We acknowledge your comment that the Department of Land and Natural Resources may request that the BLNR impose a condition on the Water Lease that the lessee provide water to the proposed Kakanihā Business Park. The diversified agriculture farm plan presented in the Draft EIS was formulated to utilize the amount of water expected to be available for diversion after compliance with the Commission on Water Resources Management's Interim Instream Flow Standards Decision and Order, which was issued in June 2018, and after providing an estimated 7.1 million gallons a day to the County of Maui Department of Water Supply for the Upcountry Maui and Nahiku communities.

5. Regarding comments from the Maui Division of Forestry & Wildlife and the Maui Division of Aquatic Resources, Chapter 4 of the Draft EIS includes an assessment of the existing environment and impacts of the Proposed Action. Various technical studies are also appended the Draft EIS and provide detailed examinations, including: Assessment of Streams and the Ocean Water Chemistry (See Appendix A); Terrestrial and Flora and Fauna Report (See Appendix B); Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

6. Chapter 3 of the Draft EIS includes an evaluation of the reasonable alternatives to the Proposed Action, including discussion of a Water Lease with a more limited geographical scope.

It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

DAVID Y. KIR  
COMMISSIONER OF LAND AND NATURAL RESOURCES



RECEIVED  
LAND DIVISION  
2016 DEC 27 PM 2:01

DEPT. OF LAND & NATURAL RESOURCES  
STATE OF HAWAII  
LAND DIVISION

POST OFFICE BOX 601  
HONOLULU, HAWAII 96809

November 29, 2016

MEMORANDUM

TO:

DLNR Agencies:

- ☒ Div. of Aquatic Resources
- ☒ Div. of Boating & Ocean Recreation
- ☒ Engineering Division
- ☒ Div. of Forestry & Wildlife
- ☒ Div. of State Parks
- ☒ Commission on Water Resource Management
- ☒ Office of Conservation & Coastal Lands
- ☒ Land Division - Maui District
- ☒ Historic Preservation

FROM:

Russell Y. Tsuji, Land Administrator

SUBJECT:

Early Consultation for the an Environmental Impact Statement Preparation Notice for Proposed Lease for the Nahiku, Keanae, Honomānu and Huelo License Areas

LOCATION:

East, Central and Up-County Maui, Island of Maui; TMK: (2) various Alexander and Baldwin, Inc. and East Maui Irrigation Company, Limited

APPLICANT:

Transmitted for your review and comment is information on the above-referenced proposed lease. We would appreciate your comments on this proposed lease. Please submit any comments by **December 23, 2016**.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

- ☐ We have no objections.
- ☐ We have no comments.
- ☒ Comments are attached.

Signed: /s/ Lenore N. Ohye

Print Name: Acting Deputy Director  
Date: December 22, 2016

cc: Central Files

RFB 4531.6  
14371

RECEIVED  
COMMISSION ON WATER  
RESOURCE MANAGEMENT  
2016 DEC -1 AM 10:44

SUZANNE D. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

P.O. BOX 621  
HONOLULU, HAWAII 96809

December 22, 2016

REF: RFD 4531.6

TO: Mr. Russell Tsuji, Administrator  
State of Hawaii, DLNR Land Division Oahu, DLNR-LD

FROM: Jeffrey T. Pearson, P.E., Deputy Director  
Commission on Water Resource Management

SUBJECT: Early Consultation for an Environmental Impact Statement Preparation Notice for Proposed Lease  
for the Nahiku, Keanae, Honomanu and Huelo License Areas

FILE NO.: RFD 4531.6  
TMK NO.: (2) various

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWARM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore all water use is subject to legally protected water rights. CWARM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at <http://dlnr.hawaii.gov/cwrm>.

Our comments related to water resources are checked off below.

- ☐ 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.
- ☐ 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- ☐ 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.
- ☐ 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at <http://www.usgbc.org/leed>. A listing of fixtures certified by the EAP as having high water efficiency can be found at <http://www.epa.gov/watersense>.
- ☐ 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at <http://planning.hawaii.gov/cwm/initiatives/low-impact-development/>
- ☐ 6. We recommend the use of alternative water sources, wherever practicable.
- ☐ 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at <http://energy.hawaii.gov/green-business-program>.
- ☐ 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at

Mr. Russell Tsuji  
Page 2  
December 22, 2016

- [http://www.hawailscape.com/wp-content/uploads/2013/04/LICH\\_Irrigation\\_Conservation\\_BMPs.pdf](http://www.hawailscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf).
- ☐ 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
  - ☐ 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.
  - ☐ 11. A Well Construction Permit(s) is (are) required before the commencement of any well construction work.
  - ☐ 12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.
  - ☐ 13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.
  - ☐ 14. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
  - ☐ 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a stream channel.
  - ☒ 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.
  - ☒ 17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.
  - ☐ 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.
- OTHER: ☒ The Commission on Water Resource Management (Commission) is requiring Stream Diversion Works Permit Applications be filed for all diversions that East Maui Irrigation Company (EMI) is planning to abandon. The Commission has also reopened Contested Case Hearing CCH-MA13-01 to address the end of sugar farming on Maui and its impact upon the interim instream flow standards for East Maui. Information on CCH-MA13-01 can be found on the Commission's website at: <http://dlnr.hawaii.gov/cwrm/newsevents/cch/cch-ma13-01/>.
- Additionally, the Commission had previously attempted to set interim instream flow standards through an administrative process that involved the compilation and analysis of best available information on specific East Maui streams. The historical record of that process is captured on the Commission's website at: <http://dlnr.hawaii.gov/cwrm/surfacewater/ifs/eastmaui/ifs/>.

If you have any questions, please contact Dean Uyeno of the Commission staff at 587-0234.





10238-02  
September 23, 2019

Dean D. Uyeno, Acting Deputy Director  
Commission on Water Resource Management  
Post Office Box 621  
Honolulu, HI 96809

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Deputy Director Uyeno:

Thank you for the Commission on Water Resource Management's (CWRM) participation in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. CWRM provided early consultation comments by letter dated December 22, 2016, which was prior to the publication of the EISP on February 8, 2017. CWRM did not provide written comments on the EISP. We acknowledge your comments and concerns which were considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your early consultation comments has been appended to the Draft EIS in Appendix J.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui, which are now owned by Mahi Pono and planned for diversified agriculture.
2. We acknowledge that a Stream Diversion Works Permit may be required before any stream diversions are constructed. We understand that a petition to amend the Interim Instream Flow Standard is required for any new or expanded diversion of surface water.
3. We acknowledge that Stream Diversion Works Permit Applications must be filed to abandon diversions.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02

Letter to Mr. Dean D. Uyeno, Acting Deputy Director  
Page 2  
September 23, 2019

4. By Findings of Fact, Conclusions of Law, & Decision and Order in CCH-MA13-01, dated June 20, 2018, CWRM set Interim Instream Flow Standards (IFS) for numerous East Maui streams. The Proposed Action is in compliance with the IFS requirements thereunder.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

HISTORIC PRESERVATION DIVISION  
KAKUHIHEWA BUILDING  
601 KAMOKILA BLVD, STE 555  
KAPOLEI, HAWAII 96707

001993



10238-02  
September 23, 2019

Ms. Susan Lebo, Ph.D.  
Archaeology Branch Chief  
State Historic Preservation Division  
Kakuhihewa Building  
601 Kamokila Blvd, Suite 555  
Kapolei, Hawaii 96707

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Dr. Lebo:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. Your office provided early consultation comments by letter dated January 25, 2017, which was prior to the publication of the EISP on February 8, 2017. Your office did not provide written comments on the EISP. We acknowledge your comments and concerns which were considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your early consultation comments has been appended to the Draft EIS in Appendix J.

In your early consultation comments, you requested that an archaeological inventory survey and an architectural inventory survey be prepared prior to the issuance of the proposed Water Lease. Additionally, you requested inventory plans for both of the surveys. However, by letter dated October 6, 2017, from Dr. Alan Downer (Log No. 2017.00026, Doc No. 1706MBF11), based on the understanding that issuance of the proposed Water Lease does not involve any ground disturbance and that the potential impact of flooding from abandoning diversions on five of the streams will not be greater than periodic naturally occurring events, SHPD determined that no archaeological inventory survey and no archaeological inventory survey plan was required.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Susan Lebo, Ph.D.  
Page 2  
September 23, 2019

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui, which are now owned by Mahi Pono and planned for diversified agriculture.
2. Chapter 4 Section 4.5 of the Draft EIS includes a discussion of historic and archaeological resources within the proposed License Area. Technical studies appended to the Draft EIS include a Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); and a Cultural Impact Assessment (See Appendix F). The analysis of these reports is provided in Chapter 4 of the Draft EIS.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P.O. BOX 3378  
HONOLULU, HI 96801-3378

VIRGINIA PRESSLER, M.D.  
DIRECTOR OF HEALTH

In reply, please refer to:  
EAD/CWB

12005PNN.16

December 5, 2016

Mr. Earl Matsukawa  
Project Manager  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

**SUBJECT: Comments on the Early Consultation for the Preparation of an Environmental Impact Statement Preparation Notice for the Proposed Lease for the Nahiku, Keanae, Honomanu, and Huelo License Areas  
East, Central, and Up-Country, Island of Maui, Hawaii**

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated November 23, 2016, requesting comments on your Environmental Impact Statement Preparation Notice. The DOH-CWB has reviewed the document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: <http://health.hawaii.gov/epo/files/2013/05/Clean-Water-Branch-Std-Comments.pdf>.

1. Any project and its potential impacts to State waters must meet the following criteria:
  - a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.
  - b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.
  - c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

Mr. Earl Matsukawa  
December 5, 2016  
Page 2

12005PNN.16

2. You may be required to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55).

For NPDES general permit coverage, a Notice of Intent (NOI) form must be submitted at least 30 calendar days before the commencement of the discharge. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the applicable form ("CWB Individual NPDES Form" or "CWB NOI Form") through the e-Permitting Portal and the hard copy certification statement with the respective filing fee (\$1,000 for an individual NPDES permit or \$500 for a Notice of General Permit Coverage). Please open the e-Permitting Portal website located at: <https://eha-cloud.doh.hawaii.gov/epermil/>. You will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool and locate the appropriate form. Follow the instructions to complete and submit the form.

3. If your project involves work in, over, or under waters of the United States, it is highly recommended that you contact the Army Corp of Engineers, Regulatory Branch (Tel: 835-4303) regarding their permitting requirements.

Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and HAR, Chapter 11-54.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation.
5. It is the State's position that all projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters. Project planning should:
  - a. Treat storm water as a resource to be protected by integrating it into project planning and permitting. Storm water has long been recognized as a source of irrigation that will not deplete potable water resources. What is often overlooked



Mr. Earl Matsukawa  
December 5, 2016  
Page 3

12005PNN.16

is that storm water recharges ground water supplies and feeds streams and estuaries; to ensure that these water cycles are not disrupted, storm water cannot be relegated as a waste product of impervious surfaces. Any project planning must recognize storm water as an asset that sustains and protects natural ecosystems and traditional beneficial uses of State waters, like community beautification, beach going, swimming, and fishing. The approaches necessary to do so, including low impact development methods or ecological bio-engineering of drainage ways must be identified in the planning stages to allow designers opportunity to include those approaches up front, prior to seeking zoning, construction, or building permits.

- b. Clearly articulate the State's position on water quality and the beneficial uses of State waters. The plan should include statements regarding the implementation of methods to conserve natural resources (e.g., minimizing potable water for irrigation, gray water re-use options, energy conservation through smart design) and improve water quality.
- c. Consider storm water Best Management Practice (BMP) approaches that minimize the use of potable water for irrigation through storm water storage and reuse, percolate storm water to recharge groundwater to revitalize natural hydrology, and treat storm water which is to be discharged.
- d. Consider the use of green building practices, such as pervious pavement and landscaping with native vegetation, to improve water quality by reducing excessive runoff and the need for excessive fertilization, respectively.
- e. Identify opportunities for retrofitting or bio-engineering existing storm water infrastructure to restore ecological function while maintaining, or even enhancing, hydraulic capacity. Particular consideration should be given to areas prone to flooding, or where the infrastructure is aged and will need to be rehabilitated.

If you have any questions, please visit our website at: <http://health.hawaii.gov/cwb>, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,



ALEC WONG, P.E., CHIEF  
Clean Water Branch

NN

c: DOH-EPO [via e-mail [Noella.Narimatsu@doh.hawaii.gov](mailto:Noella.Narimatsu@doh.hawaii.gov) only]



10238-02  
September 23, 2019

Mr. Alec Wong  
Chief of Clean Water Branch  
PO Box 3378  
Honolulu, HI 96801-3378

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Wong:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. You provided an early consultation comment letter dated December 5, 2016, prior to the publication of the EISP on February 8, 2017, and also provided written comments on the EISP dated February 17, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaii Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix J (as to the early consultation letter) and Appendix M (as to your EISP comments).

Your early consultation comments have been incorporated in to the Draft EIS as relevant to the Proposed Action. As suggested by your early consultation comments, the Proposed Action will implement appropriate BMPs which is discussed in Chapter 4 of the Draft EIS. As discussed in Chapter 4 of the Draft EIS, the Proposed Action will comply with the relevant regulations related to Water Quality Standards, HAR Chapter 11-54, and Water Pollution Control, HAR Chapter 11-55.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

001996



DAVID Y. IGE  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES

P.O. BOX 119, HONOLULU, HAWAII 96810-0119

DEC 19 2016

(PI)431.6

Mr. Earl Matsukawa, Project Manager  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

Subject: Early Consultation for the Preparation of an  
Environmental Impact Statement Preparation Notice (EISP/N)  
Proposed Lease for the Nāhiku, Ke'anae, Honomanu, and  
Huelo License Areas  
East, Central, and Up-Country Maui, Hawaii  
TMK: Nāhiku (2) 1-2-004:05, 07 (por); Ke'anae (2) 1-1-002:02 (por);  
Honomanu (2) 1-1-001:44;  
Huelo (2) 1-1-001:050, (2) 2-9-014:01, 05, 11, 12, 17

Thank you for the opportunity to comment on the subject project. We have no comments to offer at this time as the proposed project does not impact any of the Department of Accounting and General Services' projects or existing facilities.

If you have any questions, your staff may contact Ms. Dora Choy of the Public Works Division at 586-0488.

Sincerely,

*Robert M. Oger*  
RODERICK K. BECKER  
Comptroller

c: Mr. Wade Shimabukuro, DAGS-Maui District Office



10238-02  
September 23, 2019

Mr. Curt Otaguro  
Comptroller  
State of Hawai'i, Department of Accounting and General Services  
P.O. Box 119  
Honolulu, HI 96810-0119

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanu  
and Huelo License Areas

Dear Mr. Otaguro:

Thank you for the Department of Accounting and General Services' (DAGS) participation in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanu, and Huelo License Areas. DAGS provided early consultation comments dated December 19, 2016, which was prior to the publication of the Environmental Impact Statement Preparation Notice (EISP/N) on February 8, 2017; DAGS did not provide written comments on the EISP/N. We acknowledge that DAGS did not have any comments to offer as the Proposed Action does not impact any of DAGS' projects or existing facilities.

Your letter and this response will be reproduced in Appendix J of the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your agency's interest and participation in this environmental review process.

Sincerely,

*Earl Matsukawa*  
Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

DAVID Y. IGE  
Governor

SHAN S. TSUTSUI  
Lt. Governor



State of Hawaii  
DEPARTMENT OF AGRICULTURE  
1428 South King Street  
Honolulu, Hawaii 96814-2512  
Phone: (808) 973-9600 FAX: (808) 973-9613

SCOTT E. ENRIGHT  
Chairperson, Board of Agriculture  
PHYLLIS SHIMABUKURO-GEISER  
Deputy to the Chairperson

EM

December 22, 2016

RECEIVED  
DEC 27 2016  
WILSON OKAMOTO CORPORATION

Wilson Okamoto Corporation  
Attention: Mr. Earl Matsukawa, Project Manager  
1907 South Beretania Street, Suite 400  
Honolulu, HI 96826

Dear Mr. Matsukawa:

Re: Early Consultation for the Preparation of an  
Environmental Impact Statement Preparation Notice  
Proposed Lease for the Nāhiku, Ke'anae, Honomanu,  
and Huelo License Areas  
East, Central, and UpCountry Maui, Hawaii

Thank you for the opportunity to comment on the proposed lease for the Nāhiku, Ke'anae, Honomanu, and Huelo License Areas on Maui. The Hawaii Department of Agriculture has no comments at this time but respectfully requests to be kept on your correspondence list as we are closely monitoring this subject.

We would appreciate being kept abreast of this project's progress and status and thank you for future opportunities to provide comments. Should you have any questions, please contact Mrs. Janice Fujimoto, P.E. of our Agricultural Resource Management Division, at 973-9493.

Sincerely,

BRIAN KAU, P.E.  
Administrator and Chief Engineer  
Agricultural Resource Management  
Division



10238-02  
September 23, 2019

Mr. Brian Kau, P.E.  
Administrator and Chief Engineer, Agricultural Resource Management Division  
State of Hawai'i, Department of Agriculture  
1428 South King Street  
Honolulu, HI 96814-2512

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanu  
and Huelo License Areas

Dear Mr. Kau,

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanu, and Huelo License Areas. The Department of Agriculture provided an early consultation letter dated December 22, 2016, which was prior to the publication of the Environmental Impact Statement Preparation Notice (EISP/N) on February 8, 2017. Department of Agriculture did not provide written comments on the EISP/N. We acknowledge the Department's early consultation comments, which were considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17.

We acknowledge that the Department of Agriculture did not have any comments in response to our request for early consultation.

Your letter and this response will be reproduced in Appendix J of the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your agency's interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277



**OFFICE OF PLANNING  
STATE OF HAWAII**

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813  
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

DAVID Y. IGE  
GOVERNOR  
LEO R. ASUNCION  
DIRECTOR  
OFFICE OF PLANNING

Telephone: (808) 587-2646  
Fax: (808) 587-2647  
Web: <http://planning.hawaii.gov/>

Ref. No. P-15388

December 8, 2016

Mr. Earl Matsukawa, AICP  
Project Manager  
Wilson Okamoto Corporation  
1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

Subject: Early Consultation for the Preparation of an Environmental Impact Statement Preparation Notice for the Proposed Lease of the Nahiku, Keanae, Honomanu, and Huelo License Areas; East, Central, and Upcountry Maui, Hawaii

TMKS: (2) 1-2-04:05, 07 (por); (2) 1-1-02:02 (por); (2) 1-1-001:044; and  
(2) 1-1-001:005, 2-9-014:01, 05, 11, 12, 17

Thank you for the opportunity to provide comments on this early consultation request for the preparation of an Environmental Impact Statement Preparation Notice (EISP/N) on the proposed lease for the Nahiku, Keanae, Honomanu, and Huelo license areas on the Island of Maui. The early consultation review material was transmitted to our office via letter dated November 23, 2016.

It is our understanding that Alexander and Baldwin, Inc. is organizing the preparation of an EISP/N for the issuance of a potential long-term (30 year) water lease from the Board of Land and Natural Resources. This water lease will be granted via auction for the "right, privilege, and authority to enter and go upon" the Nahiku, Keanae, Honomanu, and Huelo license areas for the purpose of developing, diverting, transporting, and using government owned waters. The water lease will also require the Lessee to use lands owned by the State of Hawaii to maintain and repair existing access roads and trails used as part of the East Maui Irrigation Company aqueduct system.

The water lease will allow for the continued operation of the aqueduct system to deliver potable water to the County of Maui. Department of Water Supply for the domestic and agricultural water needs for the Island of Maui.

The Office of Planning (OP) has reviewed the transmitted material and has the following comments to offer:

Mr. Earl Matsukawa, AICP  
Project Manager  
Wilson Okamoto Corporation  
December 8, 2016  
Page 2

1. Pursuant to Hawaii Administrative Rules § 11-200-17(h) – relationship of the proposed action to land use plans, policies, and controls for the affected area – the proposed action must demonstrate that it is consistent with state environmental, social, and economic goals and land use policies. OP provides technical assistance to State and county agencies in administering the statewide planning system in Hawaii Revised Statutes (HRS) Chapter 226, the Hawaii State Planning Act. The Environmental Impact Statement (EIS) should include an analysis of the proposed action to continue the diversion of upcountry Maui streams for domestic and agricultural uses. The EIS should analyze the continued leasing of Maui surface water resources and its compatibility with the themes of the Hawaii State Planning Act or clarify where it is in conflict with them.
- If any of these themes are not applicable to this action, the EIS should affirmatively state such determination. The most efficient method is summarizing these in tabular form, followed by discussion paragraphs.
2. The coastal zone management (CZM) area is defined as "all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the U.S. territorial sea" (see HRS § 205A-1, the definition of "coastal zone management area").
- HRS Chapter 205A-5(b) requires all state and county agencies to enforce the CZM objectives and policies. The EIS should include an assessment as to how the proposed action conforms to the goals and objectives of the Hawaii CZM program as listed in HRS § 205A-2. Compliance with HRS § 205A-2 is an important component for satisfying the requirements of HRS Chapter 343.
- Of these objectives and policies, the proposed action should address HRS § 205A-2(4)(C) and (D) - Coastal Ecosystems. Within the analysis of HRS § 205A-2, the EIS should include an in-depth discussion related to the proposed project activities by exploring planning and water management issues related to this 30-year water lease, and examining the long-term water needs for the residents of Maui.
3. A program focus of our Land Use Division (LUD) is the conservation of state agricultural land resource base to assure the long-term availability of agricultural lands for agricultural use, as listed in HRS § 205-41. LUD reserves comment on this

001999

Mr. Earl Matsukawa, AICP  
Project Manager  
Wilson Okamoto Corporation  
December 8, 2016  
Page 3

proposed action until an EISPN is submitted for its review.

If you have any questions regarding this comment letter, please contact Josh Hekeia of our office at (808) 587-2845.

Sincerely,



Leo R. Asuncion  
Director



10238-02  
September 23, 2019

Ms. Mary Alice Evans, Director  
Office of Planning, State of Hawai'i  
P.O. Box 2359  
Honolulu HI, 96804

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Evans:

Thank you for the Office of Planning's participation in the scoping process for the subject Environmental Impact (EIS) Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. Office of Planning provided early consultation comments dated December 8, 2016, which was prior to the publication of the EISPN on February 8, 2017. Office of Planning also provided written comments dated March 2, 2017, in response to the EISPN. We acknowledge your agency's comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix J (as to the early consultation comments) and M (as to the EISPN comments).

We have taken your agency's comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui, which are now owned by Mahi Pono and planned for diversified agriculture.



10238-01

Letter to Ms. Mary Alice Evans

Page 2

September 23, 2019

2. Pursuant to HAR § 11-200-17(h), the Draft EIS discusses the Proposed Action's consistency with various plans and policies in Chapter 5 of the Draft EIS, specifically the Hawai'i Coastal Zone Management Program in Section 5.1.5, the Hawai'i State Plan in Section 5.1.1, and the State Functional Plans in Section 5.1.2. As you suggested, the analysis is provided in tabular form, followed by discussion paragraphs.

3. The Draft EIS discusses impacts to soils associated with the Proposed Action in Section 4.1.2 of the Draft EIS.

4. The Draft EIS discusses impacts to hydrology associated with the Proposed Action in Section 4.2 of the Draft EIS as well as the reports various technical reports prepared for the Draft EIS, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); and Terrestrial and Flora and Fauna Report (See Appendix C).

5. The Draft EIS includes in Section 4.7 an assessment of the impacts of the Proposed Action to socio-economic characteristics including the agricultural economy. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an Agricultural and Related Economic Impacts Report (See Appendix I) and an Economic and Fiscal Impact Analysis Report (See Appendix H).

Your agency's written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

DAVID Y. ICE  
GOVERNOR  
STATE OF HAWAII

SHANE T. KAHUA  
GOVERNOR  
STATE OF HAWAII



JORIE M. K. MASAGATANI  
CHAIRMAN  
HAWAIIAN HOMES COMMISSION

WILLIAM J. LAHA, JR.  
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII  
DEPARTMENT OF HAWAIIAN HOME LANDS

P. O. BOX 1879  
HONOLULU, HAWAII 96805

December 22, 2016

RECEIVED  
DEC 29 2016  
WILSON OKAMOTO CORPORATION

Earl Matsukawa, Project Manager  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawai'i 96826

Dear Mr. Matsukawa:

Subject: Early Consultation for the Preparation of an  
Environmental Impact Statement Preparation Notice  
Proposed Lease for Nāhiku, Ke'anae, Honomanū, and  
Huelo License Areas, East, Central and Up-Country  
Maui, Hawai'i.

Mahalo for transmitting your November 23, 2016 request for early consultation on the Preparation of an Environmental Impact Statement Preparation Notice Proposed Lease for Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, East, Central and Up-Country Maui, Hawai'i (EISP) to the Department of Hawaiian Home Lands (DHHL). We understand Alexander & Baldwin, Inc. and the East Maui Irrigation Company (collectively, A&B) have applied for a thirty-year water lease for government waters from the Nāhiku, Ke'anae, Honomanū, and Huelo license areas through the existing East Maui Irrigation (EMI) aqueduct system, subject to section 178-58(c), Hawaii Revised Statutes (HRS) and DHHL's rights to reserve water under section 221 of the Hawaiian Homes Commission Act (HHCA). While we appreciate the early consultation, we note that due to the complexity of the issues raised by the proposed lease, the comments we offer here are not necessarily our final comments on these matters.

We note at the outset of these comments that because A&B may be only one entity to bid on the proposed lease, we respectfully question the appropriateness of A&B preparing this EIS, rather than the state Board of Land and Natural Resources (BLNR), which shall award the lease. Other management options for these diversions are conceivable and perhaps offer other benefits to the legal beneficiaries of these public trust resources. Having

002001



one possible bidder responsible for identifying and analyzing alternatives may bias the states consideration of all appropriate management options.

With that noted, DHHL has reviewed your November 23, 2016 request for comments on this EISPN. As requested, DHHL provides the following comments. We begin with a brief discussion of DHHL and related native Hawaiian interests in these waters and then offer three specific particular comments that we believe will need to be addressed in this EIS.

#### Background: DHHL interests in East Maui Waters

The East Maui Irrigation (EMI) system draws water from approximately 56,000 acres of watershed lands.<sup>1</sup> The four subject license areas cover approximately 17,000 acres that are privately owned by EMI, while the other 33,000 acres are owned by the State and comprise the four license areas described in the EISPN: Huelo (8,752.69 acres), Honomanū (3,381 acres), Ke'anae (10,768 acres), and Nāhiku (10,111.22 acres). The EMI ditch system captures from the four license area lands an average of approximately 165 million gallons per day (mgd),<sup>2</sup> and up to increase to up to 445 mgd.<sup>3</sup> Leasing these lands and the waters that flow from them to allow the continued delivery of water out of these areas may have significant ecological, aesthetic, historic, cultural, economic, social, and health impacts on Maui's communities, including especially DHHL beneficiaries.<sup>4</sup>

<sup>1</sup> Hearing Officer's Proposed Findings of Fact, Conclusions of Law, Decision & Order in Petition to Amend Interim Instream Flow Standards, Commission on Water Resource Management, CCH-MA13-01, at 9 (Jan. 15, 2015) (Minute Order No. 16) ("2015 CWRM Proposed FOFs/COLs").

<sup>2</sup> Long term average delivery of the EMI ditch is 165 mgd, but A&B claimed average delivery between 2004 through 2013 was 126 mgd.

<sup>3</sup> See S.B. Gingerich & D.S. Oki, *Ground Water in Hawaii: U.S. Geological Survey, Fact Sheet 126-00* (2000).

<sup>4</sup> See HAR §11-200.2 ("Effects" and "impacts" are synonymous and include ecological, aesthetic, historic, cultural, economic, social, or health effects).



Fig. 1. DHHL Maui Land Inventory, Maui Island Plan, at 1-10.

DHHL and our native Hawaiian beneficiaries have a series of critical relationships with East Maui's diverted waters. These waters sustain the traditional and customary practices of native Hawaiians, including DHHL beneficiaries who live in and around DHHL's approximately 241 acres at Ke'anae and Wailuanui. DHHL also owns and holds in trust lands elsewhere in Maui at Keōkea-Waiōhuli, Pūlehunui, and Kahikinui; these lands currently use and or may require in the future the use of East Maui waters. Finally, through state Constitutional and statutory provisions, DHHL is entitled to revenues that derive from any water license receipts received by the state of Hawai'i.

Adequate disclosure of the environmental impacts of leasing East Maui waters for A&B's diversions the rights and interests of DHHL and its beneficiaries is needed. This will require careful attention to, among other matters, the specific locations and quantified needs of DHHL's planned and existing developments in Ke'anae, Wailuanui, Keōkea-Waiōhuli, Pūlehunui, and Kahikinui. It will also require an analysis of how different alternatives may affect water-licensing rates.

We now offer five broad comments for your use in preparing this EIS.

*Comment No. 1: Assessment of the environmental impacts of A&B's diversions must develop a broad, historical perspective, inclusive of effects on the water rights of native tenants and native Hawaiians affected by the diversions.*

Environmental effects and impacts of the general lease must be assessed in light of the historical context in which the EMI ditch was developed and from the perspective of native tenants of the lands and native Hawaiians affected by the ditch. With the passage of a Reciprocity Treaty between the United States and the Hawaiian Kingdom on January 30, 1875, sugar planters' plans to water the kula lands of Maui for growing sugar cane became economically feasible. On September 13, 1876, four days after the treaty went into effect, King Kalākaua granted issuance of the first Water License for construction of the "Haiku Ditch," which drew water from Hāmākua Loa District streams. The Kingdom of Hawai'i first approved construction of the East Maui ditch system to promote prosperity for all the people of the Kingdom.<sup>5</sup> The pono wai (water rights) of native tenants of the respective lands through which the ditch system was developed were protected through provisions in the original water licenses, which stated:

*PROVIDED NEVERTHELESS and the continuance of the right here before granted is upon this condition . . . that existing rights or present tenants of said lands or occupiers along said streams shall in no wise be lessened or affected injuriously by reason of anything hereinbefore granted or covenanted . . . .<sup>6</sup>*

The Hawai'i Supreme Court continued to recognize that diversion of surface water was permissible "only if it does not violate the requirement of the well established rule that such diversion shall be without injury to the rights of others." *Hawaiian Commercial & Sugar Co. v. Wailuku Sugar Co.*, 15 Haw. 675, 689

<sup>5</sup> *Keāhi Maly & Onaona Maly, Wai o ke Ola: He Wahi Mo'olelo No Maui Hikina. A Collection of Native Traditions and Historical Accounts of the Lands of Hāmākua Pōko, Hāmākua Loa, and Kō'olau Maui Hikina (East Maui), Island of Maui, No. MaHikina 59-011702b, Vol. 1, chap. 5, at 443 (Jan. 17, 2001) ("Maly & Maly 2001")* citing Section 42 of the Kingdom of Hawai'i Civil Code of 1859.

<sup>6</sup> *Maly & Maly 2001* at 444 (emphasis in original quotation) citing Letter dated September 13, 1876 William L. Mochonua, Minister of the Department of the Interior, Kingdom of Hawai'i; to J.M. Smith, President Haiku Sugar Company, et al.; 2015 CWRM Proposed FOFs/COLs at 10, ¶55.

(1904) (A&B claimed harm from the Wailuku Sugar Co.'s diversions in 'Iao aquifer and was granted an injunction against Wailuku Sugar). More than a century later, it is the impacts of A&B's surface water diversions on others, particularly native Hawaiian beneficiaries, should be a significant focus of A&B's environmental impact statement.

*Comment No. 2: DHHL's rights to East Maui surface waters must be appropriately considered in assessing the impacts of the proposed general lease and in formulating alternatives to the proposed action.*

DHHL's interests in water resources, and the DHHL developments they may support should be fully addressed in assessing the impacts of the proposed general leases. The State and its subdivisions (including the State Commission on Water Resource Management (CWRM)) and BLNR have duties to protect DHHL's rights in water resources as enumerated in the Hawaiian Homes Commission Act, 1920, as amended, §§ 101(4), 220, 221; the Hawai'i Constitution, article XI, §§ 1 and 7; and HRS Chapter 174C, also known as the State Water Code, and in other legal provisions. Our environmental impact review law, HRS Chapter 343 requires environmental impact disclosure documents to examine the impacts of proposed actions on Hawaiian rights, including those of DHHL and its beneficiaries.

The State's has a broad mandate to provide "adequate amounts of water and supporting infrastructure" for Hawaiian home lands. This duty certainly applies to the BLNR and this policy directive must be considered in assessing impacts of the general leases. *Id.* In addition, there are related legal provisions that need to be considered as guidance for how the impacts of proposed leasing alternatives are considered.

For instance, under the State Water Code, HRS § 174C-101(a), the CWRM is directed to incorporate and protect adequate reserves of water for Hawaiian home lands as set forth in section 221 of the Hawaiian Homes Commission Act.<sup>7</sup>

<sup>7</sup> The clear intent of HHCA section 221 was that the Department should have a priority claim to water above any private users in accordance with the Act's mandate. *See e.g.*, HHCA § 221(b) (stating that all water licenses issued shall be subject to the condition that DHHL is entitled to use, without charge any water that DHHL deems necessary in order to "adequately to supply the livestock, aquaculture operations, agriculture operations, or domestic needs of individuals upon any tract"); HHCA § 221(c) (stating that the Department may use without charge water not covered by a water license, or covered by a water license issued after passage of the HHCA in order "adequately



Provisions of this chapter shall not be construed to amend or modify rights or entitlements to water as provided for by the Hawaiian Homes Commission Act, 1920, as amended, and by chapters 167 and 168, relating to the Molokai irrigation system. Decisions of the commission on water resource management relating to the planning for, regulation, management, and conservation of water resources in the State shall, to the extent applicable and consistent with other legal requirements and authority, incorporate and protect adequate reserves of water for current and foreseeable development and use of Hawaiian home lands as set forth in section 221 of the Hawaiian Homes Commission Act.

HRS § 174C-101(a) (emphases added). DHHL reservations and water uses are also public trust uses,<sup>8</sup> as described in a series of significant Hawaii's Supreme Court cases including: *In re Water Use Permit Applications*, 94 Hawai'i 97, 9 P.3d 409 (2000) ("*Waihole I'*"), *In re Water Use Permit Applications*, 105 Hawai'i 1 93 P.3d 643 (2004) ("*Waihole II'*"), *In re Kukui (Moloka'i) Inc.*, 116 Hawai'i 481, 486, 174 P.3d 320, 325 (2007) ("*Kukui*"), *In re 'Iao Ground Water Mgmt. Area High-Level Source Water use Permit Applications*, 128 Hawai'i 228, 287 P.3d 129 (2012) ("*Mā Mai 'Ehā'*"), and *Kauai Springs, Inc. v. Planning Comm'n of County of Kauai*, 133 Hawai'i 141, 173-75, 324 P.3d 951, 982-85 (2014) ("*Kauai Springs*"). Thus, the Hawaii's State Constitution, Water Code, the HHCA, and case law protect and affirm DHHL's water rights for its beneficiaries.<sup>9</sup> In the context of preparing for a possible lease of such broad significance, these rulings should be guidance on how to identify alternatives and analyze how different alternatives may positively or negatively affect the rights of DHHL and its beneficiaries.

DHHL's uses of and potential future needs from diverted East Maui waters in Pūlehunui, Kēōkea-Waiōhuli, and Kahikinui are

to supply the livestock, aquaculture operations, agriculture operations, or domestic needs of individuals upon any tract[.].<sup>10</sup>

<sup>8</sup> Other public trust purposes include (1) water resource protection, (2) domestic water use, and (3) the exercise of Native Hawaiian and traditional and customary rights. Public trust uses do not include private commercial uses. *Kukui*, 116 Hawai'i at 791 n.6, 174 P.3d at 330 n.6; see also *Waiōhuli I*, 94 Hawai'i at 136-37, 9 P.3d at 448-49.

<sup>9</sup> See *In re Wai'ōla o Moloka'i*, 103 Hawai'i 401, 431, 83 P.3d 664, 694 (2004) (recognizing home land water entitlements as a public trust purpose), HRS §§ 174C-101(a), -49(a), -49i, -31(q); HHCA §§ 101(b)(4), 220(d); see also HAR §§ 13-171-60 to -63.

public trust uses. However, DHHL rights and interests extend beyond its uses of East Maui water in MDWS systems. Complete apprehension of rights and interests is necessary to assess the proposed action's significance under HAR §11-200-12. Significance assessment under HAR §11-200-12(3) concerns: "conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders." Hawaii's Environmental Policy Act, Chapter 344, HRS (HEPA) includes conserving natural resources by safeguarding "natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain conditions under which humanity and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawaii." HRS §344-3(1). Consideration of DHHL water requirements for its proposed land uses is necessary to support a determination that the proposed general leases of the four license areas are consistent with HEPA.

DHHL also has interests in public trust in-stream uses for its tracts in Ke'āne and Wailua, including native Hawaiian traditional and customary uses. Disclosure of the environmental impacts of the four license area leases strongly implicates the State's duty to analyze "tradition[al] and customary native Hawaiian practices and appurtenant rights and the public trust obligations emanating from the Hawaii's Constitution and case decisions construing it[.]."<sup>10</sup> Alerting decision makers to significant environmental impacts on public trust uses of in-stream and diverted waters accords with the purpose of Hawaii's environmental review law.<sup>11</sup> The prioritized water uses of DHHL and other public trust users, including native Hawaiian traditional and customary practitioners, must be appropriately considered in assessing the impacts of the proposed general lease and in formulating alternatives to the proposed action.

<sup>10</sup> *Mani Tomorrow v. State, Bd. of Land & Nat. Res. of State of Hawaii*, 110 Hawai'i 234, 243, 131 P.3d 517, 526 (2006) (affirming the circuit court's finding that BLNR breached its duty).

<sup>11</sup> HRS §343-1; see also *Keehole Def. Coal., Inc. v. Bd. of Land & Nat. Res.*, 110 Hawai'i 419, 441, 134 P.3d 585, 607 (2006), as amended (May 26, 2006) (considering whether State failed to prepare a new or revised EIS under a claim to breach of the public trust).



Comment No. 3: *DHHL's general, island, regional, and water policy plans should be consulted in assessing the significant, cumulative, and secondary impacts of the proposed action.*

The EISPN should consider DHHL's general, island, regional, and water policy plans in discussing direct, cumulative, and secondary impacts and alternatives in the general lease of the Nāhiku, Ke'anae, Honomanū, and Huelo License areas. First, DHHL develops and maintains a general plan providing for the development and use of land needed for fulfilling the purposes of the Hawaiian Homes Commission Act of 1920, as amended (HHCA).<sup>12</sup> DHHL developed a Maui Island Plan (Sep. 2004), which identifies DHHL land use designations of its Maui lands that function similarly to county land-use zoning. DHHL also developed several pertinent regional plans, which identify land use development factors, issues, opportunities, and each region's top priority projects for implementation within three years of regional plan development. Most pertinent to the proposed EISPN are DHHL's Maui Island Plan, Water Policy Plan (Jul. 2014),<sup>13</sup> Keōkea-Waiōhuli Regional Plan (Jun. 2010), and the Kahikinui Regional Plan (Jul. 2011). As discussed below, DHHL is considering use of DWS waters delivered via the EMI system for its Keōkea-Waiōhuli lots and Kahikinui developments. Keōkea-Waiōhuli Regional Plan at 20; Kahikinui Regional Plan at 21.

Comment No. 4: *DHHL's rights and interests, including reservations of water, in East Maui surface waters and potential development needs for those water resources must be considered in determining impacts of long-term leases for the Nāhiku, Ke'anae, Honomanū, and Huelo License areas.*

CWRM is obligated to reserve adequate water for DHHL's foreseeable needs in undesignated aquifer system areas and recently did so when it approved a reservation request by the HHC for 3.398 mgd of ground water pursuant to HRS § 174C-101(a) in the Keahou Aquifer System Area (KASA) on Hawai'i Island.<sup>14</sup>

<sup>12</sup> HAR §10-4-2; see "Department of Hawaiian Home Lands General Plan," (approved Feb. 26, 2002).

<sup>13</sup> See The Hawaiian Homes Commission Water Policy Plan, adopted July 22, 2014 available at:

<http://dhhl.hawaii.gov/wp-content/uploads/2013/09/HHC-Water-Policy-Plan-140722.pdf>.

<sup>14</sup> The CWRM Staff Submittal for that action noted, "Due to the interest in the KASA petition to designate the area as a ground water management area, DHHL filed the petition for reservation request." CWRM Staff Submittal, item No A-2 (Aug. 17, 2015). Staff noted DHHL's "proposed buildout water reservation . . . will be consistent with the [Hawai'i Water Plan (HWP)] for the KASA" and granting the reservation would promote

Currently, DHHL is developing a water reservation request for East Maui aquifer system areas, inclusive of the Ko'olau aquifer in which the four license areas lie. DHHL has also updated its current and foreseeable water needs for Maui, and they are included in a draft update to the State Water Projects Plan ("SWPPP"), which is to be considered by the CWRM in the near future. Planned water needs provided in the SWPP will be one basis upon which DHHL will determine further requests for reservations of water, as well as other considerations.

a. DHHL interests in diverted EMI system waters.

DHHL owns approximately 831 acres of lands at Pūlehuunui, also known as Pu'unene, in Central Maui. DHHL's Pūlehuunui lands were designed by the Hawaiian Homes Commission (HHC) as agricultural, industrial, commercial, and energy development zones. DHHL does not currently hold allocations or reservations of water for these lands. Although Pūlehuunui lands overlie the Kahului Aquifer, DHHL's right to water is not limited to this aquifer. DHHL is required to investigate development of diverse sources of water, including East Maui irrigation waters, and related infrastructure, to ascertain the means of providing water service to these lands. DHHL emphasizes the need to plan for accommodations for DHHL rights and interests. Since 2004, DHHL has had a pending water reservation request for 0.6 mgd for 100 acres of industrial use in Pūlehuunui. DHHL's current foreseeable needs at Pūlehuunui are 1.734 mgd of potable and 1.8564 nonpotable water resources.<sup>15</sup>

DHHL's Keōkea-Waiōhuli mixed-use tract that currently uses 0.096 mgd of potable water and will increase its use to 0.8097 mgd of potable and 0.5780 mgd of nonpotable water resources by 2031. DHHL has a Water Credits Agreement with MDWS, signed on December 9, 1997, under which MDWS will deliver 0.5 mgd of potable water to DHHL for homesteading use in exchange for DHHL improvements to the water system.<sup>16</sup> The non-potable water resources will be used to irrigate Keōkea-Waiōhuli subsistence agricultural lands and will be supplied by the Upcountry Maui Irrigation System.

CWRM's approach to "managing the resource and protecting the public trust through the collaboration and consistency framework provided by the HWP." *Id.* at 5.

<sup>15</sup> Draft SWPP at 4-26.

<sup>16</sup> Draft SWPP at 4-23, -24.

DHHL is considering extending the MDWS Kula water system to its Kaikini tract for pastoral land uses, which will require 0.0765 mgd, some of which will be met through fog drip catchment systems.<sup>17</sup> Finally, DHHL's tract at Ulupalakua may foreseeably require 0.0034 mgd of potable water resources from East Maui irrigation ditches.<sup>18</sup>

b. DHHL interests in in-stream uses of East Maui waters.

DHHL's Wailua tract will be used for general agriculture and lo'i kalo. Fifteen (15) acres of lands designated for subsistence agriculture are allocated for lo'i kalo on the Wailua tract. DHHL also plans for house lots to have lo'i kalo cultivated on adjoining lots. MIP at xvii. The nearby Ke'anae tract will include thirty-two (32) three-acre subsistence agricultural lots on 57 acres located on the mauka portion of the property.<sup>19</sup> Ke'anae's mauka lands include two perennial streams, Pālahulu and Pi'inau streams, which are diverted by EMI's Ko'olau ditch (east of and flowing into the Wailoa Ditch).<sup>20</sup> Of the 57 acres at Ke'anae, thirty (30) acres will be set aside for lo'i kalo.<sup>21</sup> The lo'i kalo uses included in Ke'anae and Wailua subsistence agriculture are estimated to require 150,000 gallons per acre per day.<sup>22</sup> General agricultural uses can be met through ambient rainfall irrigation, but Wailua lo'i kalo will require 2.2802 mgd in nonpotable stream water and Ke'anae lo'i kalo will require 4.5878 mgd in nonpotable stream water.

Environmental impact disclosure documents should assess adverse impacts on DHHL's rights and interests in these waters, and provide alternatives that will prevent such impacts to DHHL and its beneficiaries, which include practitioners of traditional and customary lo'i kalo cultivation and other uses of Ko'olau streams.

<sup>17</sup> Draft SWPP at 4-27; Kahikinui Regional Plan at 21.  
<sup>18</sup> Draft SWPP at 4-28.  
<sup>19</sup> Maui Island Plan, at 6-24.  
<sup>20</sup> Maui Island Plan at 6-19; 2015 CWRM Proposed FOFs/COLs, at 30.  
<sup>21</sup> Maui Island Plan at 6-19, -24.  
<sup>22</sup> See Stephen B. Gingerich, Chiu W. Yeung, Tracy-Joy N. Ibarra, and John A. Engott, "Water use in wetland kalo cultivation in Hawai'i," USGS Open File Rpt. No. 2007-1157 (2007) available at <http://pubs.usgs.gov/of/2007/1157/>.

Comment No. 5: We highly encourage you to consult directly with Hawaiian Homestead community associations and other (N)ative Hawaiian organizations when preparing this EIS in order to better assess potential impacts to cultural and natural resources, access and other rights of Native Hawaiians.

Conclusion:

Mahalo nui for transmitting and requesting pre-consultation comments on the proposed EISP for proposed general leases for Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. DHHL requests that the publicized EISP version fully and expressly address impacts of A&B's proposed general leases on DHHL's reasonably foreseeable rights, plans for water and land development, and its beneficiaries, including native Hawaiian traditional and customary practitioners. Please direct any questions to me at (808) 620-9501, or your staff may contact Kaleo Manuel in our Planning Office at (808) 620-9485 or at [Kaleo.L.Manuel@hawaii.gov](mailto:Kaleo.L.Manuel@hawaii.gov).

Aloha,



Jobie M. K. Masagatani, Chair  
Hawaiian Homes Commission

Cc: Pua Canto, Maui Commissioner  
Mona Kapaku, Maui District Office Supervisor  
Maui Homestead Associations  
Kamana'opono Crabbe, Ka Pou Hana, Office of Hawaiian Affairs





10238-02  
Letter to William Ailā, Jr., Interim Director  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

William Ailā, Jr.  
Interim Director  
State of Hawai'i  
Department of Hawaiian Home Lands  
91-5420 Kapolei Parkway  
Kapolei, HI 96707

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Director Ailā:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas. Your office provided early consultation comments by letter dated December 22, 2016, which was prior to the publication of the EISPN on February 8, 2017; your office did not provide written comments on the EISPN. We acknowledge your comments and concerns which were considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your early consultation comments has been appended to the Draft EIS in Appendix J.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui, which are now owned by Mahi Pono and planned for diversified agriculture.

2. Section 1.4 of the Draft EIS explains that in 2016, the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also considers a proposed diversified agriculture farm plan by Mahi Pono, which purchased A&B's Central Maui lands agricultural lands in December 2018.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

- The Draft EIS also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) that has been studied.
3. Chapter 3 of the Draft EIS includes an evaluation of the reasonable alternatives to the Proposed Action.
4. As suggested by your comments, the Draft EIS includes a broad, historical perspective, and it also takes into account the Decision and Order issued by the Commission on Water Resource Management dated June 20, 2018, which ordered the restoration of certain streams for kalo cultivation. A discussion of DHHL's rights to reserve water sufficient for current and future homestead needs and DHHL's planning system is provided in Chapter 2 of the Draft EIS. Chapter 2 also describes the beneficiary consultation meeting on the proposed Water Lease that was held on January 14, 2019 at the Paukūkalo Community Center on Maui.
5. Chapter 4 of the Draft EIS discusses the existing environment, impacts of the Proposed Action, and mitigation measures.
6. Various technical studies are appended the Draft EIS and provide detailed examinations of impacts on various resources, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I). The analysis of these reports is provided in Chapter 4 of the Draft EIS.
7. Cultural Surveys Hawai'i, Inc. prepared an archaeological report as well as a cultural impact assessment, which are summarized in Section 4.5 and 4.6 of the Draft EIS, respectively. These reports are also appended in the Draft EIS (Appendices E and F, respectively).

10238-02  
Letter to William Ailā, Jr., Interim Director  
Page 3  
September 23, 2019

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



DAVID Y. IGE  
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.  
DIRECTOR OF HEALTH

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P. O. BOX 3378  
HONOLULU, HI 96801-3378

December 21, 2016

In reply, please refer to:  
File:  
EPO 16-399

Mr. Earl Matsukawa  
Project Manager  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
Email: [woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

RECEIVED  
DEC 27 2016  
WILSON OKAMOTO CORPORATION

EMI

Dear Mr. Matsukawa:

**SUBJECT: Early Consultation for Preparation of an Environmental Impact Statement (EC EISP)**  
**Proposed Lease for Nahiku, Keanae, Honomanu, and Huelo License Areas, East Central, and Up-Country Maui, Hawaii**

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your EC EISP to our office on November 28, 2016.

In the development and implementation of all projects, EPO strongly recommends regular review of State and Federal environmental health land use guidance. State standard comments and available strategies to support sustainable and healthy design are provided at: <http://health.hawaii.gov/epo/landuse>. Projects are required to adhere to all applicable standard comments.

EPO has recently updated the environmental Geographic Information System (GIS) website page. It now compiles various maps and viewers from our environmental health programs. The eGIS website page is continually updated so please visit it regularly at: <http://health.hawaii.gov/epo/egis>.

EPO also encourages you to examine and utilize the Hawaii Environmental Health Portal at: <https://eha-cloud.doh.hawaii.gov>. This site provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings.

We suggest you review the requirements of the Clean Water Branch (HAR, Section 11-54-1.1, -3, 4-8) and/or the National Pollutant Discharge Elimination System (NPDES) permit (HAR, Chapter 11-55) at: <http://health.hawaii.gov/cwb>. If you have any questions, please contact the Clean Water Branch, Engineering Section at (808) 586-4309 or [cleanwaterbranch@doh.hawaii.gov](mailto:cleanwaterbranch@doh.hawaii.gov). If your project involves waters of the U.S., it is highly recommended that you contact the Army Corps of Engineers, Regulatory Branch at: (808) 835-4303.

You may also wish to review the draft Office of Environmental Quality Control (OEQC) viewer at: <http://eha-web.doh.hawaii.gov/oeqc-viewer>. This viewer geographically shows where some previous Hawaii Environmental Policy Act (HEPA) (Hawaii Revised Statutes, Chapter 343) documents have been prepared.

In order to better protect public health and the environment, the U.S. Environmental Protection Agency (EPA) has developed a new environmental justice (EJ) mapping and screening tool called EJSCREEN. It is based on nationally consistent data and combines environmental and demographic indicators in maps and reports. EPO encourages you

002008

Mr. Earl Matsukawa  
Page 2  
December 21, 2016

to explore, launch and utilize this powerful tool in planning your project. The EPA EJSCREEN tool is available at:  
<http://www.epa.gov/ejscreen>.

The Department of Health encourages the application of sustainability strategies and principles early in the planning, review and funding of projects. We also request that you consider conducting a Health Impact Assessment (HIA). More information is available on line at:

- World Health Organization (WHO) HIA information: <http://www.who.int/hia/en>
- U.S. Centers for Disease Control (CDC) HIA information: <https://www.cdc.gov/healthyplaces/hia.htm>
- U.S. Environmental Protection Agency (EPA) HIA information: <https://www.epa.gov/healthresearch/health-impact-assessments>

We request that you utilize all of this information on your proposed project to increase sustainable, innovative, inspirational, transparent and healthy design. Thank you for the opportunity to comment.

We request a written or electronic response confirming your receipt of this DOH EPO comment letter. You may mail your response directly to EPO at 919 Ala Moana Blvd., Suite 312, Honolulu, Hawaii 96814. However, we would prefer an electronic reply to [DOH.EPO@doh.hawaii.gov](mailto:DOH.EPO@doh.hawaii.gov). We hope that our letter(s) and your response(s) will be included in the final document. If you have any questions, please contact me by calling (808) 586-4337.

Mahalo nui loa,

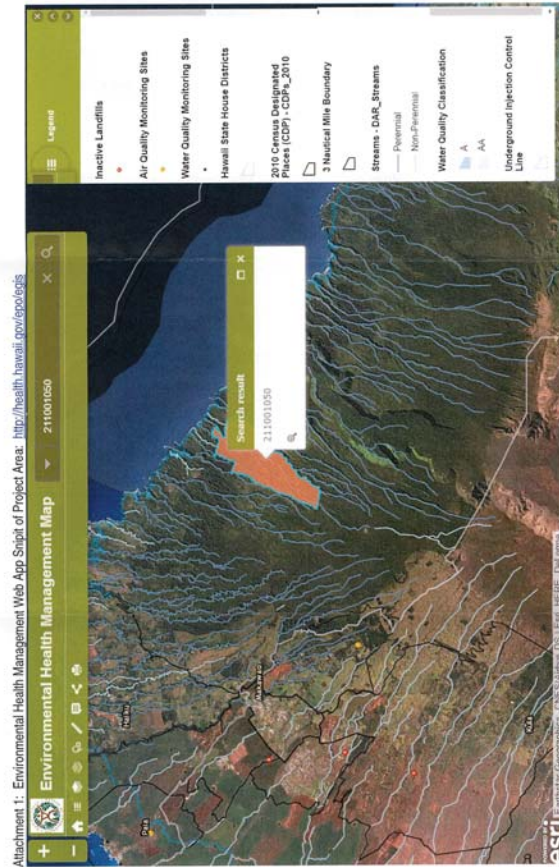


Laura Leialoha Phillips McIntyre, AICP  
Program Manager, Environmental Planning Office

LM:nn

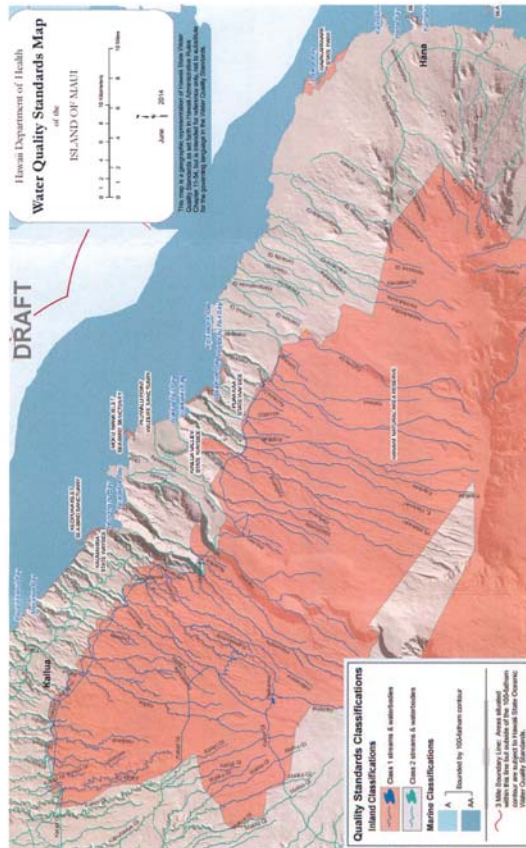
- Attachment 1: Environmental Health Management Web App Snipit of Project Area: <http://health.hawaii.gov/epo/egis>  
Attachment 2: Clean Water Branch: Water Quality Standards Map - Maui  
Attachment 3: Wastewater Branch: Act 120 Cesspool Tax Credit Web App Snipit of Project Area  
Attachment 4: Wastewater Branch: Recycled Water Use Map of Project Area  
Attachment 5: Clean Water Branch Project Letter dated December 5, 2016

c: Suzanne Case, DLNR  
Jeffrey Pearson, Commission on Water Resources Management  
Meredith Ching, Alexander & Baldwin  
Garret Hew, East Maui Irrigation Company  
DOH: DHO Maui, DDEH, EMD, SDWB, CWB (via email only)

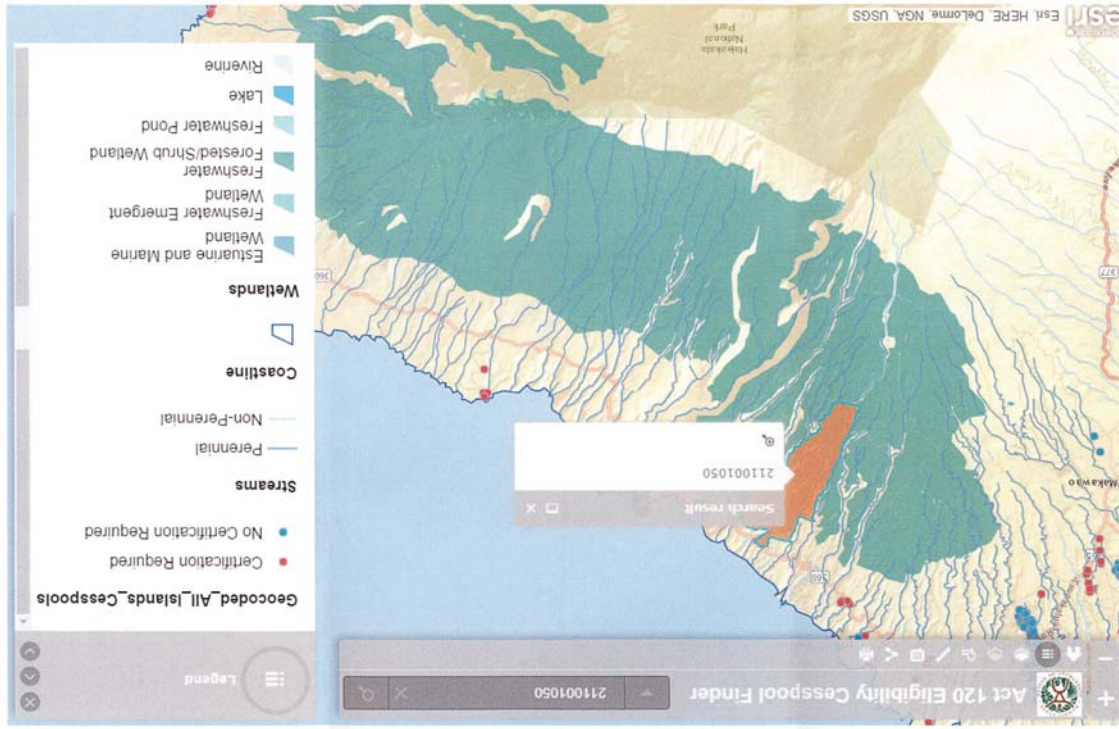




Attachment 2: Clean Water Branch: Water Quality Standards Map - Maui



Attachment 3: Wastewater Branch: Act 120 Cesspool Tax Credit Web App Snipit of Project Area



DAVID Y. IGE  
GOVERNOR OF HAWAII



VIRGINIA PRESSLER, M.D.  
DIRECTOR OF HEALTH

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P.O. BOX 3378  
HONOLULU, HI 96801-3378

In reply, please refer to:  
EMDCVB

12005PNN.16

December 5, 2016

Attachment 4: Wastewater Branch: Recycled Water Use Map of Project Area



Mr. Earl Matsukawa  
Project Manager  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

**SUBJECT: Comments on the Early Consultation for the Preparation of an Environmental Impact Statement Preparation Notice for the Proposed Lease for the Nahiku, Keanae, Honomanu, and Huelo License Areas East, Central, and Up-Country, Island of Maui, Hawaii**

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated November 23, 2016, requesting comments on your Environmental Impact Statement Preparation Notice. The DOH-CWB has reviewed the document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at <http://health.hawaii.gov/epo/files/2013/05/Clean-Water-Branch-Std-Comments.pdf>.

1. Any project and its potential impacts to State waters must meet the following criteria:
  - a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.
  - b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.
  - c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).



2. You may be required to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55).

For NPDES general permit coverage, a Notice of Intent (NOI) form must be submitted at least 30 calendar days before the commencement of the discharge. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the applicable form ("CWB Individual NPDES Form" or "CWB NOI Form") through the e-Permitting Portal and the hard copy certification statement with the respective filing fee (\$1,000 for an individual NPDES permit or \$500 for a Notice of General Permit Coverage). Please open the e-Permitting Portal website located at: <https://leha-cloud.doh.hawaii.gov/epermit/>. You will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool and locate the appropriate form. Follow the instructions to complete and submit the form.

3. If your project involves work in, over, or under waters of the United States, it is highly recommended that you contact the Army Corp of Engineers, Regulatory Branch (Tel: 835-4303) regarding their permitting requirements.

Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and HAR, Chapter 11-54.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation.

5. It is the State's position that all projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters. Project planning should:

- a. Treat storm water as a resource to be protected by integrating it into project planning and permitting. Storm water has long been recognized as a source of irrigation that will not deplete potable water resources. What is often overlooked

is that storm water recharges ground water supplies and feeds streams and estuaries; to ensure that these water cycles are not disrupted, storm water cannot be relegated as a waste product of impervious surfaces. Any project planning must recognize storm water as an asset that sustains and protects natural ecosystems and traditional beneficial uses of State waters, like community beautification, beach going, swimming, and fishing. The approaches necessary to do so, including low impact development methods or ecological bio-engineering of drainage ways must be identified in the planning stages to allow designers opportunity to include those approaches up front, prior to seeking zoning, construction, or building permits.

- b. Clearly articulate the State's position on water quality and the beneficial uses of State waters. The plan should include statements regarding the implementation of methods to conserve natural resources (e.g., minimizing potable water for irrigation, gray water re-use options, energy conservation through smart design) and improve water quality.
- c. Consider storm water Best Management Practice (BMP) approaches that minimize the use of potable water for irrigation through storm water storage and reuse, percolate storm water to recharge groundwater to revitalize natural hydrology, and treat storm water which is to be discharged.
- d. Consider the use of green building practices, such as pervious pavement and landscaping with native vegetation, to improve water quality by reducing excessive runoff and the need for excessive fertilization, respectively.
- e. Identify opportunities for retrofitting or bio-engineering existing storm water infrastructure to restore ecological function while maintaining, or even enhancing, hydraulic capacity. Particular consideration should be given to areas prone to flooding, or where the infrastructure is aged and will need to be rehabilitated.

If you have any questions, please visit our website at: <http://health.hawaii.gov/cwb/>, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,



ALEC WONG, P.E., CHIEF  
Clean Water Branch

NN

- c: DOH-EPO [via e-mail [Noella.Narimatsu@doh.hawaii.gov](mailto:Noella.Narimatsu@doh.hawaii.gov) only]



10238-02  
September 23, 2019

Bruce S. Anderson, PhD.  
Director, Department of Health  
State of Hawai'i  
1250 Punchbowl Street  
Honolulu, HI 96813

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Dr. Anderson:

Thank you for the Environmental Planning Office's (EPO) participation in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. Because the EPO permanently closed on May 2, 2018, we are directing this response to you in your capacity as director of the Department of Health. EPO provided early consultation comments by letter dated December 21, 2016, which was prior to the publication of the EISP on February 8, 2018. EPO did not provide written comments on the EISP. We acknowledge EPO's early consultation comments and concerns, which were considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of EPO's comments has been appended to the Draft EIS in Appendix J.

We acknowledge that EPO suggested that the applicant consider a number of resources in preparing the Draft EIS. We have taken EPO's comments into consideration in preparing the Draft EIS, and offer the following responses:

The Draft EIS takes into utilized the relevant resources suggested by EPO, including GIS information from several sources. *See* Chapters 1 and 3 of the Draft EIS. The Department of Health's Clean Water Branch was also consulted as part of the early consultation and Draft EIS process. *See* Appendix J (Pre-Assessment Consultation Correspondence) and Appendix M (Scoping Meeting and EISP Comments and Responses). Compatibility of the Proposed Action with the State's functional plans is considered in Chapter 5 of the Draft EIS.

EPO's written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Dr. Bruce S. Anderson  
Page 2  
September 23, 2019

We appreciate EPO's interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

DAVID Y. IGE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF HEALTH  
MAUI DISTRICT HEALTH OFFICE  
54 HIGH STREET  
WAILUKU, HAWAII 96793-3378

VIRGINIA PRESSLER, M.D.  
DIRECTOR OF HEALTH

LORIN W. PANG, M.D., M.P.H.  
DISTRICT HEALTH OFFICER

December 23, 2016

Mr. Earl Matsukawa  
Project Manager  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

Subject: Early Consultation for the Preparation of an Environmental Impact Statement  
Preparation Notice Proposed Lease for the Nāhiku, Keānae, Honomanu and Huelo License Areas  
East, Central and Up-Country Maui, Hawaii

Thank you for the opportunity to review this project. We have no comments to offer. It is strongly recommended that the Standard Comments found at the Department's website: <http://health.hawaii.gov/epo/home/landuse-planning-review-program/> be reviewed and any comments specifically applicable to this project should be adhered to.

Should you have any questions, please contact me at 808 984-8230 or email me at [patricia.kitkowski@doh.hawaii.gov](mailto:patricia.kitkowski@doh.hawaii.gov).

Sincerely,

*Patti Kitkowski*

Patti Kitkowski  
District Environmental Health Program Chief

c EPO



10238-02  
September 23, 2019

Ms. Patti Kitkowski  
Maui District Environmental Health Program Chief  
Department of Health  
54 High Street  
Wailuku, HI 96793-3378

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keānae, Honomanu and Huelo License Areas

Dear Ms. Kitkowski:

Thank you for your agency's participation in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keānae, Honomanu, and Huelo License Areas. You provided an early consultation letter dated December 23, 2016, which was prior to the publication of the EISPN on February 8, 2017, and you also provided written comments dated February 23 and March 22, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix J (as to the early consultation comments) and Appendix M (as to your comments on the EISPN).

We acknowledge that the Department of Health, Maui District Health Office, in early consultation did not have comments but recommended that the applicant review the Standard Comments on the Department of Health's former Environmental Planning Office's (EPO) website. The EPO submitted early consultation comments, a copy of which is included in Appendix J to the Draft EIS.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

*Earl Matsukawa*

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

002014



ALAN M. ARAKAWA  
Mayor



PATRICK K. WONG  
Corporation Counsel  
EDWARD S. KUSHI  
First Deputy  
LYDIA A. TODA  
Risk Management Officer  
Tel No. (808) 270-7335  
Fax No. (808) 270-1761

DEPARTMENT OF THE CORPORATION COUNSEL  
COUNTY OF MAUI  
200 SOUTH HIGH STREET, 3<sup>RD</sup> FLOOR  
WAILUKU, MAUI, HAWAII 96793  
EMAIL: CORPCOUN@MAUICOUNTY.GOV  
TELEPHONE: (808) 270-7740  
FACSIMILE: (808) 270-7152

EW

December 13, 2016

Earl Matsukawa, AICP  
Project Manager  
Wilson Okamoto Corporation  
1907 South Bertania Street, Suite 400  
Honolulu, HI 96826  
Fax: (808) 946-2253

RECEIVED  
DEC 15 2016  
WILSON OKAMOTO CORPORATION

Re: Proposed Lease for the Nahiku, Keanae, Honomanu, and Huelo License Areas  
Dear Mr. Matsukawa,

Thank you for offering my client the opportunity to comment on the preparation of the Environmental Impact Statement Preparation Notice for the Proposed Lease for the Nahiku, Keanae, Honomanu and Huelo License Areas. The Maui County Department of Water Supply does not have any comments at this stage of the EIS process

Sincerely,

A handwritten signature in black ink, appearing to read "Caleb P. Rowe".

Caleb P. Rowe  
Deputy Corporation Counsel

cc: Suzanne Case, Department of Land and Natural Resources  
Jeffrey Pearson, Commission on Water Resources Management  
Meredith Ching, Alexander & Baldwin  
Garret Hew, East Maui Irrigation Company

002015



10238-02  
September 23, 2019

Mr. Caleb P. Rowe, Esq.  
Deputy Corporation Counsel  
County of Maui, Department of the Corporation Counsel  
200 South High Street, 3rd Floor  
Wailuku, HI 96793

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Mr. Rowe:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas. On behalf of the County of Maui Department of Water Supply (DWS), you provided a letter dated December 13, 2016, in response to our request for early consultation comments. That was prior to the publication of the Environmental Impact Statement Preparation Notice (EISP) on February 8, 2017. You did not provide written comments on the EISP.

We acknowledge that you indicated your client, DWS, did not have any early consultation comments. However, we note that DWS subsequently sent two early consultation communications to us on December 15, 2016 and December 20, 2016. A copy of your letter, DWS' letters, and responses to those communications will be appended to the Draft EIS in Appendix J.

It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your agency's interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



DEPARTMENT OF  
**HOUSING AND HUMAN CONCERNS**  
HOUSING DIVISION  
COUNTY OF MAUI

35 LUNALILO STREET, SUITE 102 • WAILUKU, HAWAII 96793 • PHONE (808) 270-7351 • FAX (808) 270-6284

ALAN M. ARAKAWA  
Mayor  
CAROL K. REIMANN  
Director  
JAN SHISHIDO  
Deputy Director

November 29, 2016

Mr. Earl Matsukawa  
Project Manager  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

**Subject: Early Consultation for the Preparation of an Environmental Impact Statement Preparation Notice (EISP) for the Proposed Lease for the Nāhiku, Ke'ānae, Honomanū and Huelo License Areas, Maui, Hawaii TMKS: (2)1-2-04:05, 07(por.), (2)1-02-02(por.), (2)1-1-001:44, (2)1-1-001:050, (2)2-9-014:01, 05, 11, 12 & 17**

The Department has reviewed the request for Early Consultation for the Preparation of an Environmental Impact Statement Preparation Notice (EISP) for the above subject project. Based on our review, we have determined that the subject project is not subject to Chapter 2.96, Maui County Code. The Department has no additional comments to offer.

Please call Mr. Veranio Tongson Jr. of our Housing Division at (808) 270-1741 if you have any questions.

Sincerely,

BUDDY A. ALMEIDA  
Housing Administrator

cc: Director of Housing and Human Concerns

TO SUPPORT AND EMPOWER OUR COMMUNITY TO REACH ITS FULLEST POTENTIAL  
FOR PERSONAL WELL-BEING AND SELF-RELIANCE



002016

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277





**WILSON OKAMOTO**  
CORPORATION  
INNOVATORS • PLANNERS • ENGINEERS

10238-02  
September 23, 2019

Ms. Lori Tsuchiko

Director  
County of Maui, Department of Housing and Human Concerns  
35 Lunailo Street, Suite 102  
Wailuku, HI 96793

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Director Tsuchiko:

Thank you for the Department of Housing and Human Concerns (DHHC) participation in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. DHHC provided early consultation comments dated November 29, 2016, which was prior to the publication of the Environmental Impact Statement Preparation Notice (EISPN) on February 8, 2017. DHHC did not provide written comments on the EISPN. We acknowledge DHHC's comments and concerns, which were considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A copy of DHHC's letter has been appended to the Draft EIS in Appendix J.

We acknowledge the DHHC's determination that the Proposed Action is not subject to Chapter 2.96 of the Maui County Code, and that DHHC had no additional comments to offer.

Your letter and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your agency's interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

ALAN M. ARAKAWA  
Mayor

DAVID C. GOODE  
Director

ROWENA M. DAGDAG-ANDAYA  
Deputy Director

Telephone: (808) 270-7845  
Fax: (808) 270-7955



COUNTY OF MAUI  
**DEPARTMENT OF PUBLIC WORKS**  
200 SOUTH HIGH STREET, ROOM NO. 434  
WAILUKU, MAUI, HAWAII 96793

December 9, 2016

EM

GLEN A. UENO, P.E., P.L.S.  
Development Services Administration

CARY YAMASHITA, P.E.  
Engineering Division

LESJL. OTANI, P.E., L.S.  
Highways Division

RECEIVED

DEC 15 2016

WILSON OKAMOTO CORPORATION

Mr. Earl Matsukawa, Project Manager  
WILSON OKAMOTO CORPORATION  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

**SUBJECT: EARLY CONSULTATION FOR THE PREPARATION OF AN  
ENVIRONMENTAL IMPACT STATEMENT PREPARATION  
NOTICE PROPOSED LEASE FOR HE NAHIKU, KEANAE,  
HONOMANU AND HUELLO LICENSE AREAS  
EAST, CENTRAL, AND UPCOUNTRY MAUI, HAWAII**

We reviewed your early consultation request and have no comments at this time.

If you have any questions regarding this memorandum, please call Rowena  
Dagdag-Andaya at (808) 270-7845.

Sincerely,

DAVID C. GOODE  
Director of Public Works

DCG:RMDA:da

cc: Engineering Division

S:\USA\Eng\ICZMI\DraftComments\11001044\_050\_11002002\_12004-005.007\_25014001.055.011.012.017\_prop\_wtr\_lease\_eis.rtf

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

002017



10238-02  
September 23, 2019

Ms. Rowena Dagdag-Andaya  
Director of Public Works  
County of Maui, Department of Public Works  
200 South High Street, Room No. 434  
Wailuku, HI 96793

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Director Dagdag-Andaya:

Thank you for the Department of Public Works' (DPW) participation in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas. DPW responded to our request for early consultation comments by letter dated December 9, 2016, which was prior to the publication of the Environmental Impact Statement Preparation Notice (EISPN) on February 8, 2017. DPW did not provide written comments on the EISPN.

We acknowledge that the County of Maui, Department of Public Works did not have any comments in response to our request for early consultation.

Your letter and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your agency's interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

ALAN M. ARAKAWA  
Mayor



DEPARTMENT OF WATER SUPPLY  
COUNTY OF MAUI  
200 SOUTH HIGH STREET  
WAILUKU, MAUI, HAWAII 96793-2155  
www.mauwater.org

December 20, 2016

Mr. Earl Matsukawa, Project Manager  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

RECEIVED  
DEC 27 2016  
WILSON OKAMOTO CORPORATION

EM

Re: Proposed Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas -  
Early Consultation for the Preparation of an Environmental Impact Statement

Dear Mr. Matsukawa:

Thank you for the opportunity to comment on the early consultation for the Preparation of an Environmental Impact Statement (EIS) for the Proposed Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas.

The Proposed Action requests the issuance of a 30-year Water Lease from the Board of Land and Natural Resources (BLNR) for the "right, privilege and authority to enter and go upon" the stated license areas for the "purpose of developing, diverting, transporting, and using government owned waters" via the East Maui Irrigation (EMI) system, allowing operation of the EMI system and delivery to Department of Water Supply (DWS) and agricultural users, not to exceed diversion of more water that allowed by the pending Interim in Stream Flow Standards (IIFS) decision.

#### Legal Issues

The relationship of the IIFS and contested cases to potential constraints on water diversion and delivery by the EMI system are germane to the proposed action to issue a 30-year lease. The EIS should comprehensively discuss the status of CWRM's efforts to amend IIFS for certain East Maui streams, including estimated timelines. A full disclosure of a range of potential outcomes, and their relationships to the Proposed Action, should be evaluated.

The Final EIS Scope of Services preliminary identifies those parameters for which the CWRM's decision to amend the IIFS is deemed needed and states that the completion of the Draft EIS will be deferred for those elements. However, in the Re-opening of Hearing for Limited Purposes, the Hearings Officer identified specific areas for which additional evidence is anticipated: 1. HC&S Co./A&B's current and future use of surface waters and the impact on the groundwater sources for its central Maui fields of HC&S cessation of sugar operations; 2. the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

"By Water All Things Find Life"

impact on DWS's use of surface water; 3. Maui County's position on the future use of the central Maui fields; and 4. how EMI is managing the decrease in diversions, the interim restorations and issues concerning the integrity of the EMI system. Data and evidence for the following elements below are available and not dependent on a CWRM Decision on IIFS for full disclosure in the Draft EIS:

#### Hydrogeology

The EIS should fully address Groundwater Interaction in the License Areas, as the Re-opening of Hearing for Limited Purposes will consider impact on groundwater sources for Central Maui fields but not revisit impacts on groundwater resources in License Areas.

#### Economic Impacts

The costs of the EMI System management, capital improvement, system operation and maintenance are important in assessing the future viability of the system and should be disclosed by the applicant. Relevant information include:

- The current and projected costs of the EMI system management, capital improvements, system operation and maintenance.
- Projected revenues and alternative scenarios that might occur after 2016 in the event of reduced and geographically altered IIFS and water demands by various water users. Alternative scenarios based on disclosed assumptions should be developed in consultation with the appropriate parties.
- Although the non-consumptive use of water involved in hydroelectric uses is likely difficult to appraise, the EIS should describe the extent to which hydroelectricity is generated, including the associated costs and revenues.

#### Changing Economic Conditions

The transition of A&B's lands to an alternative agricultural model, with variations in crop types, geographic distribution, timing, and associated future water demands, and water availability are uncertain. The EIS should address potential impacts directly or indirectly related to the Proposed Action in the event that:

- Permitted diversions under the IIFS are inadequate to sustain the economic viability of the EMI System in whole or in part.
- Alternative agricultural uses are inadequate to sustain the economic viability of the EMI System over the transition period or longer term.

In the event the EMI system is not economically viable, "at risk" or compromised due to the above cited issues or state of infrastructure, lack of capital to upgrade, etc., the EIS should assess alternative solutions that might be considered to mitigate the impacts. Examples might include County or State acquisition, lease, management; or other collaborative arrangements.

#### County of Maui Plans

The EIS should address how the proposed project could affect the following provisions of the *County of Maui 2030 General Plan Countywide Policy Plan* (Policy Plan) strategies, goals, objectives and policies relevant to water use, delivery and conservation. Policy Plan Key Strategy I states: "1. Improve Physical Infrastructure - New and old sustainable approaches for the delivery, use, and conservation of water and energy resources..." (<http://www.co.maui.hi.us/DocumentCenter/Home/View/11132>)

The EIS should address how the Proposed Action could affect the following provisions of the *County of Maui General Plan 2030, Maui Island Plan* ([www.mauicounty.gov/1503/Maui-Island-Plan](http://www.mauicounty.gov/1503/Maui-Island-Plan)), which includes the following goals, objectives, and policies.

- Goal: 6.3 Maui will have an environmentally sustainable, reliable, safe, and efficient water system.
- Objective: 6.3.2 Increase the efficiency and capacity of the water systems in striving to meet the needs and balance the island's water needs.
- Policies: 6.3.2.a Ensure the efficiency of all water system elements including well and stream intakes, water catchment, transmission lines, reservoirs, and all other system infrastructure.
- Objective: 6.3.3 Improve water quality and the monitoring of public and private water systems.
- Policies: 6.3.3.a Protect and maintain water delivery systems.

With regard to efficiency, capacity, and monitoring of systems, the EIS should describe the percent transmission efficiency and how the optimization of the system would affect capacity, monitoring, maintenance and overall management.

We hope you find this information useful. Should you have any questions, please contact staff planner Alex Buttaro at (808) 463-3103 or alex.buttaro@mauicounty.gov.

Sincerely,

  
David Taylor, P.E.  
Director

DT:EB:bab  
S:\PLANNING\Permit\_Review\Projects Review\planning review\EA-EIS\EMI system Lease BLNR





10238-02  
September 23, 2019

Mr. Jeffrey T. Pearson  
Director  
County of Maui, Department of Water Supply  
200 South High Street  
Wailuku, HI 96793-2155

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Mr. Pearson:

Thank you to the County of Maui Department of Water Supply (MDWS) for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas. MDWS provided early consultation comments by letter dated December 20, 2016, which was prior to the publication of the Environmental Impact Statement Preparation Notice (EISPN) on February 8, 2017. MDWS did not provide written comments on the EISPN. We acknowledge MDWS's early consultation comments and concerns, which were considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A copy of your letter has been appended to the Draft EIS in Appendix J.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui that are now owned by Mahi Pono and planned for diversified agriculture.
2. We acknowledge that at the time of MDWS' letter, the Commission on Water Resource Management (CWRM) had not yet issued its final decision in the Interim Instream Flow Standards (IIFS) contested case proceeding. CWRM has since issued its Findings of Fact, Conclusions of Law, & Decision and Order (D&O) on June 20, 2018. For the purposes of this EIS, diversion quantities allowable under the CWRM D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area.
3. Since your early consultation letter, Hawaiian Commercial & Sugar Co. (HC&S) has ceased all operations and the Central Maui agricultural fields have been sold to Mahi Pono. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. Section 2.1.4 of the Draft EIS provides a description of Mahi Pono's farm plan for the agricultural fields in Central Maui. The farm plan is based on the water available after compliance with the CWRM D&O.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Mr. Jeffrey T. Pearson, Director  
Page 2  
September 23, 2019

4. Chapter 4 of the Draft EIS includes an assessment of the existing environment, impacts of the Proposed Action and mitigation measures, including the modification or removal of diversion structures in streams designated for full or partial restoration by the CWRM D&O, including discussion of groundwater hydrology in Section 4.2.2 and Appendices A and C of the Draft EIS.
5. Economic impacts of the Proposed Action and alternatives, including a scenario where no Water Lease is issued, are analyzed in the various technical studies appended to the Draft EIS, including an Economic and Fiscal Impact Study (See Appendix H) and an Agricultural and Related Economic Impacts report (See Appendix I). These economic, fiscal, and agricultural impacts are also addressed in Sections 4.7.3 and 4.7.4 of the Draft EIS and also in Chapter 3 of the Draft EIS.
6. Chapter 3 also discusses alternative ownership of the EMI Aqueduct System.
7. Pursuant to HAR § 11-200-17(h), the Draft EIS in Chapter 5 discusses the Proposed Action's consistency with various plans and policies, including the County of Maui land use plans and policies in Section 5.4, including the Countywide Policy Plan and Maui Island Plan, and the community plans relevant to the Proposed Action in Section 5.7.
8. As described in Chapter 3 of the Draft EIS, Mahi Pono's plan includes designing a high-efficiency irrigation system to reduce water usage.

Your letter and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your agency's interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



10238-02  
September 23, 2019

Ms. Pamela Townsend, Planner VI  
Water Resource & Planning Division  
County of Maui, Department of Water Supply  
Pam.Townsend@co.maui.hi.us

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Townsend:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. You provided an early consultation comment by email dated December 15, 2016, which was prior to the publication of the Environmental Impact Statement Preparation Notice (EISP) on February 8, 2017. The Department of Water Supply did not provide written comments on the EISP. We acknowledge those comments and concerns which were considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A copy of your letter and this response has been appended to the Draft EIS in Appendix J.

We acknowledge that you requested a clean copy of Figure 3 that was included in the early consultation notice. Figure 3 to the consultation notice has been reproduced in the Draft EIS as Figure 2-2. Please note that Mr. David Taylor on behalf of your Department provided early consultation comments dated December 20, 2016. A copy of our response to Mr. Taylor's comments has been appended to the Draft EIS in Appendix J.

It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your agency's interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**From:** Pam Townsend [mailto:Pam.Townsend@co.maui.hi.us]

**Sent:** Thursday, December 15, 2016 2:10 PM

**To:** Wilson Okamoto Corporation

**Subject:** A&B/EMI Water License EISP

Please direct this email to Earl Matsukawa.

Aloha Mr. Matsukawa:

We will be commenting on the EISP.

However, is possible to get a clean copy of Figure 3 in the consultation notice? It may be useful to include in our Water Use and Development Plan.

Mahalo, Pam

Pamela Townsend, Planner VI  
County of Maui Dept. of Water Supply  
Water Resources & Planning Division  
2200 Main St. Suite 102 (One Main Plaza), Wailuku, HI 96793  
808-463-3101  
pam.townsend@co.maui.hi.us

<http://mauicounty.gov>

Office Hours: M-F 8:00 a.m. - 4:30 p.m.





**ALAN M. ARAKAWA**  
MAYOR  
OUR REFERENCE  
YOUR REFERENCE

## POLICE DEPARTMENT COUNTY OF MAUI

55 MAHALANI STREET  
WAILUKU, HAWAII 96793  
(808) 244-6400  
FAX (808) 244-6411



**TIVOLI S. FAAUMU**  
CHIEF OF POLICE  
**DEAN M. RICKARD**  
DEPUTY CHIEF OF POLICE

December 21, 2016

*EM*

Mr. Earl Matsukawa  
Project Manager  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, HI 96826

Dear Mr. Matsukawa:

**SUBJECT:** Early Consultation for the Preparation of an Environmental Impact Statement Preparation Notice, Proposed Lease for the Nāhiku, Ke'anae, Honomanu, and Huelo License Areas, East, Central, and Up-Country Maui, Hawaii

Thank you for your letter of November 23, 2016, requesting comments on the above subject.

We have reviewed the information submitted and have no comments or recommendations to make at this time. Thank you for giving us the opportunity to comment on this project.

Very truly yours,

*[Signature]*

Acting Assistant Chief Sterling Kiyota  
for:  
Tivoli S. Faaumu  
Chief of Police



10238-02  
September 23, 2019

Mr. Tivoli S. Faaumu  
Chief of Police  
County of Maui, Police Department  
55 Mahealani Street  
Wailuku, HI 96793

**Subject:** Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanu and Huelo License Areas

Dear Chief Faaumu:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanu, and Huelo License Areas. On behalf of the Police Department of the County of Maui (MPD) you responded to our request for early consultation comments by letter dated December 21, 2016, which was prior to the publication of the Environmental Impact Statement Preparation Notice (EISPN) on February 8, 2017. MPD did not provide written comments on the EISPN.

We acknowledge that the County of Maui Police Department did not have any comments or recommendations in response to our request for early consultation.

Your letter and this response will be reproduced in Appendix J of the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your agency's interest and participation in this environmental review process.

Sincerely,

*[Signature]*

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

ALAN M. ARAKAWA  
Mayor  
WILLIAM R. SPENCE  
Director  
MICHELE CHOUTEAU McLEAN  
Deputy Director



COUNTY OF MAUI  
**DEPARTMENT OF PLANNING**

December 22, 2016



Wilson Okamoto Corporation  
Attention: Mr. Earl Matsukawa, Project Manager  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

**SUBJECT: "PROPOSED LEASE FOR NAHIKU, KEANAE, HONOMANU, AND HUELO LICENSE AREAS," RESPONSE TO EARLY CONSULTATION FOR THE PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT (RFC 2016/0218)**

The Department of Planning (Department) is in receipt of your request for comments in preparation of an Environmental Impact Statement for the above subject proposed water lease, which has been applied for by Alexander and Baldwin, Inc. and the East Maui Irrigation Company, Limited. From your letter request of November 23, 2016 the Department understands that "the application seeks a long-term lease pursuant to Hawaii Revised Statutes (HRS) Section 171-58(c) for the 'right, privilege, and authority to enter and go upon,' the Nahiku, Keanae, Honomanu, and Huelo license area 'for the purpose of developing, diverting, transporting and using government-owned waters.'"

As it is particularly pertinent to this response letter, the Department further understands the Proposed Action and Purpose and Need for the action to be as follows, as described in the "Early Consultation Summary" dated November 23, 2016 and included with your letter.

**Proposed Action**

The proposed action constitutes the issuance of one long term (30 years) Water Lease from the Board of Land and Natural Resources (BLNR) for the "right, privilege, and authority to enter and go upon" the Nahiku, Keanae, Honomanu, and Huelo license areas for the "purpose of developing, diverting, transporting, and using government owned waters," through the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease will also require the Lessee to continue to go on lands owned by the State in order to maintain and repair existing access roads and trails used as part of the EMI Aqueduct System. The Water Lease will allow continued operation of the EMI Aqueduct System to deliver water to the Maui County Department of Water Supply

Mr. Earl Matsukawa, Project Manager  
December 22, 2016  
Page 2

(DWS) for domestic and agricultural water needs in Upcountry Maui, including agricultural users at the Kula Agricultural Park. It will also allow the continued provision of water to approximately 26,600-acres of agricultural lands (formerly in sugarcane) in Central Maui owned by A&B and farmed and managed by Hawaiian Commercial & Sugar Company, a division of A&B (See Figure 3). The Water Lease will not allow more water to be diverted than allowed by the IIFS decision that is currently pending before the CWRM.

The terms of the long term Water Lease will be subject to all applicable requirements under HRS § 171-58(c), and will also be subject to the Department of Hawaiian Home Lands' (DHHL) rights to reserve water sufficient to support current and future homestead needs as provided by Section 221 of the Hawaiian Homes Commission Act.

**Purpose and Need**

Existing domestic and agricultural water demands in Central and Upcountry Maui are currently served by the EMI Aqueduct System. The purpose and need for the Water Lease is to continue service for agricultural and domestic purposes, as well as to ensure that future water demands, such as those considered for DHHL, may be met.

Moreover, the proposed Water Lease will ensure that the EMI Aqueduct System that enabled the cultivation of naturally non-arable lands in Central Maui will be maintained to continue to serve the community, continue Maui's rich agricultural heritage, and to enhance the sustainability and diversity of Maui's economy.

Based on the foregoing, the Department provides the following comments as pre-consultation in preparation of the (EIS/OEIS):

1. As stated in the Maui County Charter, as amended in 2002:

"The General Plan shall indicate desired population and physical development patterns for each island and region within the county; shall address the unique problems and needs of each island and region; shall explain the opportunities and the social, economic, and environmental consequences related to potential developments; and shall set forth the desired sequence, patterns, and characteristics of future developments. The general plan shall identify objectives to be achieved, and priorities, policies, and implementing actions to be pursued with respect to population density, land use maps, land use regulations, transportation systems, public and community facility locations, water and sewage systems, visitor destinations, urban design, and other matters related to development."



The County of Maui 2030 General Plan Countywide Policy Plan, adopted by the Maui County Council (Council) on March 19, 2010, is the first component of the decennial General Plan update. The Countywide Policy Plan acts as an over-arching values statement and umbrella policy document for the Maui Island Plan and the nine (9) Community Plans that provides broad goals, objectives, policies, and implementing actions that portray the desired direction of the County's future.

Please address how the Proposed Action could affect the following provisions of the *County of Maui 2030 General Plan Countywide Policy Plan* (Policy Plan) that can be found at <http://www.co.maui.hi.us/DocumentCenter/View/11132>.

- Policy Plan Key Strategy I states: "I. **Improve Physical Infrastructure** - New and old sustainable approaches for the delivery, use, and conservation of water and energy resources, along with new ways of thinking about the recycling and disposal of waste, are among the opportunities upon which Maui County can capitalize."

The Policy Plan also includes the following relevant combinations of goals, objectives, and policies:

I. Improve Physical Infrastructure

Goal: Maui County's physical infrastructure will be maintained in optimum condition and will provide for and effectively serve the needs of the County through clean and sustainable technologies.

Objective:

1. Improve water systems to assure access to sustainable, clean, reliable, and affordable sources of water.

Policy:

- a. Ensure that adequate supplies of water are available prior to approval of subdivision or construction documents.
- c. Ensure a reliable and affordable supply of water for productive agricultural uses.
- h. Seek reliable long-term sources of water to serve developments that achieve consistency with the appropriate Community Plans.

2. The Maui Island Plan was adopted by the Council on December 28, 2012. The Plan provides direction for future growth, the economy, and social and environmental decisions through the year 2030. The Plan looks

comprehensively at many factors that influence the physical, social and economic development of the island. In addition to establishing a directed growth strategy to identify areas appropriate for future urbanization and revitalization, the Plan also identifies and addresses key environmental, housing, and economic development issues relevant to Maui's current and future generations. The Plan is intended by the Council, Department, and Maui Planning Commission (Commission) as a policy foundation for day to day decisions and is specifically intended to be used to assist in reviewing discretionary permits.

Please address how the Proposed Action could affect the following provisions of the *County of Maui General Plan 2030 Maui Island Plan* (Island Plan), which includes the following relevant combinations of goals, objectives, and policies. The Island Plan can be found at <http://www.mauicounty.gov/1503/Maui-Island-Plan>.

Goal:

- 6.3 Maui will have an environmentally sustainable, reliable, safe, and efficient water system.

Objective:

- 6.3.2 Increase the efficiency and capacity of the water systems in striving to meet the needs and balance the island's water needs.

Policies:

- 6.3.2.a Ensure the efficiency of all water system elements including well and stream intakes, water catchment, transmission lines, reservoirs, and all other system infrastructure.

Objective:

- 6.3.3 Improve water quality and the monitoring of public and private water systems.

Policies:

- 6.3.3.a Protect and maintain water delivery systems.

3. Please address how the Proposed Action could affect the following provisions of the *Pala-Haiku Community Plan*, which includes the following relevant combinations of goals, objectives, and policies. This community plan can be found at <http://www.mauicounty.gov/423/Community-Plans>.

Water

Goal:

An adequate supply of potable and irrigation water to meet the needs of the region.

Objective:

2. Ensure that adequate water capacity is available for domestic and agricultural needs of the region.
5. Improve the existing potable water distribution system and develop new potable water sources prior to further expansion of the State Urban District boundary or major subdivision of land in the State Agricultural or Rural Districts.
4. Please address how the Proposed Action could affect the following provisions of the *Hana Community Plan*, which includes the following relevant combination of goal, objective, and policy. This community plan can be found at <http://www.mauicounty.gov/423/Community-Plans>.

PHYSICAL INFRASTRUCTURE

Goal:

Timely and environmentally sensitive development and maintenance of infrastructure systems which protect and preserve the safety and health of the Hana region's residents and visitors, including the provision of domestic water, utility and waste disposal services, and effective transportation systems which meet the needs of residents and visitors while protecting the region's rural character.

Objectives and Policies

Water:

7. Improve water sources and delivery facilities to ensure that water supplied to the region's residents and visitor is of the highest quality.

Thank you for the opportunity to comment. Should you require further clarification, please contact Current Planning Supervisor Jeffrey Dack by e-mail at [jeffrey.dack@mauicounty.gov](mailto:jeffrey.dack@mauicounty.gov) or by telephone at 270-6275.

Sincerely,



WILLIAM SPENCE  
Planning Director

xc: Dave Taylor, Director, Department of Water Supply  
Clayton I. Yoshida, AICP, Planning Program Administrator (PDF)  
Jeffrey P. Dack, Current Planning Supervisor (PDF)  
Project File  
General File  
WRS:JPD:ela  
K:\WP\_DOCS\PLANNING\RFC\2016\0218\_Nahiku\_Kaanae\_Honomanu\_Huelo\_EISEIS\_Preconsultation.doc



10238-02  
September 23, 2019

Michelle Choteau McLean  
Director, Planning Department  
County of Maui  
One Main Plaza Building  
2200 Main Street, Suite 315  
Wailuku, Maui 96793

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Director McLean:

Thank you for your agency's participation in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas. The County of Maui Planning Department provided early consultation comments from William R. Spence dated December 22, 2016, which was prior to the publication of the EISP on February 8, 2017. Your agency did not provide written comments on the EISP. We acknowledge the early consultation comments and concerns which were considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A copy of the Planning Department's early consultation letter has been appended to the Draft EIS in Appendix J.

We have taken your agency's comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Pursuant to HAR § 11-200-17(h), the Draft EIS discusses the Proposed Action's consistency with various plans and policies in Chapter 5 of the Draft EIS, including the County of Maui land use plans and policies in Section 5.4, including the Countywide Policy Plan and Maui Island Plan, and the community plans relevant to the Proposed Action in Section 5.7.

10238-02  
Letter to Michelle Choteau McLean, Director  
Page 2  
September 23, 2019

Your agency's written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your agency's interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



LW

From: Leina Wender  
Subject: Proposed Lease for the Nahiku, Ke'anae, Honomani, and Huelo License Areas  
Date: December 26, 2016 at 1:40 PM  
To: woe@wilsnorkamolo.com  
Bcc: Leina Wender, alan.murakami@nhichi.org, camille.kelams@nhichi.org, summer.sylvia@nhichi.org, skippy.hau@hawaii.gov

The following comments are submitted for the early consultation phase for the preparation of an Environmental Impact Statement Preparation Notice (EISP/N) for the above-named proposed lease.

The residents of Ke'anae-Wailuanui have been demanding that an EIS be prepared for 35 years. As I assume that representatives of East Maui residents and communities will also be submitting comments, I will address only some important issues which I believe need more attention than they have been given in the past. I will not discuss the absence of legal basis for granting these leases nor the devastating effects that the water diversions have caused and would continue to cause, if a new lease were granted, as I believe others will address these issues. I will discuss some of the effects of the recent, wholly inadequate, so-called "restoration" of streamflow.

The Early Consultation Summary of November 23, 2016 states that Waioakamilo Stream was "fully restored in 2007", and that several other streams are "planned for full and permanent restoration." The dictionary definitions of "restore" include "to return...something to a former condition..."; "to repair or renovate...so as to return it to its original condition"; and "to give something previously stolen, taken away, or lost back to the original owner or recipient." EMI has not restored Waioakamilo or any other stream.

EMI apparently no longer utilizes water from Waioakamilo. But this is not the same as restoration. EMI formerly diverted water not only from the main flume at Kikokiko, but also from numerous tributaries of various sizes which, before the existence of the ditch, eventually found their way into Waioakamilo Stream. This water was collected via about two dozen diversions consisting primarily of concrete catchment basins with pipes. EMI has cut these pipes so that the water no longer goes into the ditch. Instead, it now drips or flows onto the ditch road, creating a muddy mess and additional habitat for invasive plants. Most of this water never makes its way off of the road, much less back into the stream. When they were built, the ditch and the ditch road cut into and altered the natural terrain. Nothing has been done to return this terrain to its original condition or to ensure that the water not diverted actually gets into the stream.

In addition, EMI has abandoned and no longer maintains the ditch road in the Waioakamilo area, resulting in its present hazardous condition. They also no longer monitor the area for miconia, which I have frequently encountered there in recent years. EMI has abandoned any responsibility for stewardship of the watershed areas they no longer utilize. Even in the areas they still use, banyan trees, clidemia and other invasive plants grow unlettered.

The EIS should discuss the alternative solutions. One could be to restore the area to its pre-diversion landscape without causing additional environmental damage. If that is not feasible, an alternative could be to allow the ditch road to remain, and to require that it be maintained, and also that a means be provided to ensure that the previously diverted water finds its way to the stream.

On some streams which EMI no longer uses, a continuous mauka / makai flow has still not been reestablished. For instance, at West Wailuaka, the water is diverted and then put back into the stream so that the flow is interrupted at the ditch road. None of the massive, ugly concrete infrastructure has been removed. In short, the streams and their surroundings have not truly been restored.

If any new lease is considered, first restoration of the abandoned areas should be completed, and the lease should contain strict provisions requiring true watershed restoration, not simply

cessation of water diversion, at the end of the lease period. There should also be a requirement that a bond be posted in a sufficient amount to carry out this work.

All of these issues must be discussed in the subject EIS.

I have one additional comment regarding Figure 1 of the preconsultation request, "EMI Aqueduct System". The key indicates that the areas colored green are "EMI lands." This would lead one to believe that EMI wholly owns these lands, which is untrue. I am familiar only with the lands in the Ke'anae-Wailuanui area, which are hui lands, obtained from the Kingdom of Hawai'i in the 19th century by groups of owners and never partitioned or subdivided. EMI claims an interest in these hui, but so do scores or even hundreds of other people, including myself. Such deceptive images and labels should not be permitted.

Thank you for this opportunity to comment.

Sincerely,

Elaine Wender



10238-01  
February 8, 2017

Ms. Leina Wender  
[REDACTED]

Subject: Early Consultation for the Preparation of an  
Environmental Impact Statement Preparation Notice  
Proposed Lease for the Nāhiku, Keʻānae, Honomanū,  
and Huelo License Areas

Dear Ms. Wender:

Thank you for your comment letter on the subject Early Consultation for the Environmental Impact Statement Preparation Notice (EISP/N) pertaining to the Proposed Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas. Your comments will be considered and a copy of your comment letter will be appended to the EISP/N.

Public scoping meetings in conjunction with the thirty-day public review and comment period on the EISP/N will be conducted on the island of Maui. The purpose of the meetings is to provide an overview of the EIS process and solicit input pertaining to the scope of the Draft EIS. The meetings will be held on: Wednesday, February 22, 2017 from 5:00 p.m. to 7 p.m. at the Maui Electric Company Community Meeting Room (210 W. Kamehameha Avenue), and Thursday, February 23, 2017 from 5:00 p.m. to 7 p.m. at the Hālikū Park and Community Center (2830 Hāna Highway - Hāna Highway at Piliāloha Street).

We appreciate your interest in this environmental review process and will continue to invite your participation.

Sincerely,

Earl Matsukawa, AICP  
Project Manager

Enclosures

cc: Suzanne Case  
Jeffrey Pearson  
Daniel Yasui  
Garret Hew  
Department of Land and Natural Resources  
Commission on Water Resources Management  
Alexander & Baldwin  
East Maui Irrigation Company

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277



10238-02  
September 23, 2019

Ms. Elaine Wender  
[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻānae, Honomanū  
and Huelo License Areas

Dear Ms. Wender:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas. During the EISP/N comment period, you provided oral comments at the February 23, 2017 EIS Scoping Meeting, and written comments dated March 9, 2017. We also appreciate your early consultation comments provided by email dated December 26, 2016. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix J (as to your early consultation comments) and Appendix M (as to your comments at the public scoping meetings and your written comments in response to the EISP/N).

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui that are now owned by Mahi Pono and planned for diversified agriculture.
2. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

3. CWRM, pursuant to the D&O issued in June 2018, stated that its intention was to allow for the continued use and viability of the EMI Aqueduct System and that it would not require the complete removal of diversions unless complete removal was necessary to achieve the IIFS.
4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. The Chapter 4 of the Draft EIS includes an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). The CWRM D&O considered objectives and management strategies in setting the IIFS. Chapter 1, Section 1.3.3 and Chapter 4 of the Draft EIS discusses diversions and restoration related to Waiokamilo Stream, which was ordered for full restoration by the CWRM D&O.
6. Various technical studies are appended the Draft EIS and provide detailed examinations or resources and potential impacts, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)
7. Chapter 3 of the Draft EIS includes an evaluation of the reasonable alternatives to the Proposed Action.
8. The EMI Aqueduct System Collection Area is shown on Figure 1-1 of the Draft EIS. This figure, which is not to scale, also indicates broadly the lands owned by the State of Hawai'i within the Collection Area and the lands owned by A&B and/or Mahi Pono within and adjacent to the Collection Area.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

ISAAC DAVIS HALL

ATTORNEY AT LAW

2087 WELLS STREET

WAILUKU, MAUI, HAWAII 96793

(808) 244-9017

FAX (808) 244-6775

December 27, 2016

Via Email and U.S. Mail  
woc@wilsonokamoto.com  
Mr. Earl Matsukawa

Project Manager

Wilson Okamoto Corporation

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Re: Early Consultation for the Preparation of an EISPN for Proposed Lease for the  
Nāhiku, Keānae, Honomanu, and Huelo License Areas,  
East, Central and UpCountry Maui, Hawaii

Dear Mr. Matsukawa:

This letter is written on behalf of the Maui Tomorrow Foundation, Inc. ("Maui Tomorrow"). Maui Tomorrow joins in and incorporates by reference the contents of the comment letter written to you by the Native Hawaiian Legal Corporation dated December 26, 2016.

Thank you for your attention to these important matters.

Sincerely,

Isaac Hall

IH/gr

Cc: Clients



WILSON OKAMOTO  
CORPORATION  
INNOVATORS • PLANNERS • ENGINEERS

10238-02

September 23, 2019

Mr. Albert Perez, Executive Director  
Maui Tomorrow Foundation  
55 North Church Street, Suite A-4  
Wailuku, HI 96793

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keānae, Honomanu,  
and Huelo License Areas

Dear Mr. Perez:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keānae, Honomanu, and Huelo License Areas, by providing your written comments on the EISPN, dated March 10, 2017, and your oral comments at the February 22, 2017 scoping meeting. We also appreciate Maui Tomorrow Foundation's early consultation comments provided by letter dated December 27, 2016 from Mr. Isaac Hall, Esq., on behalf of Maui Tomorrow Foundation, wherein he stated that Maui Tomorrow Foundation joined in the early consultation comments made by Native Hawaiian Legal Corporation (NHLC) dated December 26, 2016. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments and the NHLC comments have been appended to the Draft EIS in Appendix J (Pre-Assessment Consultation Correspondence) and Appendix M (Scoping Meeting and EISPN Comments and Responses). We have also enclosed a copy of our response to NHLC's comments.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keānae, Honomanu, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

002030

2. Section 1.4 of the Draft EIS explains that in 2016, the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. Chapter 1 of the Draft EIS discusses the purpose and need of the Proposed Action.
4. Chapter 4 of the Draft EIS discusses the existing environment, impacts of the proposed action and mitigation measures. As relevant and appropriate, the discussion of impacts includes those pertaining to conditions before and after the closure of sugar cultivation in 2016.
5. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including alternative duration and diversion volume, as well as a No Action alternative. Section 3.1.1 of the Draft EIS discusses water source alternatives. Section 3.1.2 of the Draft EIS discusses alternative aqueduct ownership.
6. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
7. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action and alternatives on indigenous freshwater species, terrestrial flora and fauna, and invasive mosquitoes. The Draft EIS discusses the impacts of the Proposed Action to freshwater species in Section 4.2.1 and impacts to terrestrial flora and fauna in Sections 4.4.1 and 4.4.2. Both reports are appended to the Draft EIS (See Appendix B and Appendix C).
8. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full or partial restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of Streams and the Ocean Water Chemistry (See Appendix A); Terrestrial and Flora and Fauna Report (See Appendix B); Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using

- the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix C), Historical Structure Assessment (See Appendix D), Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).
9. Figure 1-1 in the Draft EIS illustrates the EMI Aqueduct System overlaid on the Department of Land and Natural Resources (DLNR) Division of Aquatic Resources (DAR) geographic information system (GIS) data of streams. An electronic drawing of the EMI Aqueduct System was georeferenced by Akinaka & Associates, Ltd. to depict major diversions on East Maui streams on a United States Geological Survey (USGS) GIS base map. Due to the complexity of the EMI Aqueduct System and the level of detail shown on the map, not all of the minor diversions could be associated with a stream or tributary. The stream names shown are from the DAR GIS database but a few of those stream names may differ from how some East Maui residents may refer to them. Moreover, certain streams that were identified during certain proceedings before the Commission on Water Resources Management (CWRM) do not have associated GIS data and therefore could not be precisely located on the map. Table 1-2 in the Draft EIS reconciles discrepancies between stream names used in the February 2017 EIS Preparation Notice and the D&O.
  10. Section 2.1.4 of the Draft EIS includes a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on estimates of available surface and ground water. Information from the D&O was used to estimate the maximum amount of water that can be diverted by the EMI Aqueduct System from the License Area. Section 2.1.1 discusses the Department of Hawaiian Home Lands' water reservation.
  11. Section 1.3.4 of the Draft EIS discusses the D&O and the authority of the BLNR to issue a Water Lease for non-instream uses pursuant to HRS § 171-58, that is subject to the IIFS set by CWRM.
  12. Section 2.3.1 of the Draft EIS discusses the Maui Department of Water Supply (MDWS) system, including water sourced from the EMI Aqueduct System. Figure 2-4 depicts the MDWS surface water supply system.
  13. Section 2.1.3.2 of the Draft EIS discusses water needs for the Kula Agricultural Park.
  14. Section 1.3 in the Draft EIS incorporates additional historical information from the Archaeological Literature Review and field inspection report (Appendix E).
  15. Section 4.3.1 and 4.3.2 of the Draft EIS discuss climate change and sea level rise, respectively as well as the Assessment of Streams and the Ocean Water Chemistry (See Appendix A).
  16. Section 4.9 of the Draft EIS discusses Visual Resources.
  17. Section 4.8 of the Draft EIS discusses recreational resources and park facilities.



18. Section 4.14 and Section 4.15 of the Draft EIS discuss how the amount of water available through surface water diversion may impact public services and facilities; and, infrastructure and utilities, respectively.
19. Section 4.13 of the Draft EIS discusses potential traffic impacts of Mahi Pono's proposed diversified agricultural operations.
20. Section 1.3.4 of the Draft EIS discusses the D&O.
21. Section 4.2.2 of the Draft EIS discusses groundwater hydrology, including in East Maui.
22. Sea Engineering, Inc. and Marine Research Consultants, Inc. prepared an assessment of streams and the ocean water chemistry in support of the Draft EIS. The Draft EIS summarizes this assessment in Section 4.2.3. The report is also appended in the Draft EIS (Appendix A).
23. Cultural Surveys Hawai'i, Inc. prepared an archaeological report as well as a cultural impact assessment, which are summarized in Section 4.5 and 4.6 of the Draft EIS, respectively. These reports are also appended in the DEIS (Appendices E and F, respectively).
24. Earthplan prepared a social impact assessment which is summarized in Section 4.7.1 and 4.7.2 of the Draft EIS. The report is also appended in the Draft EIS (Appendix G).
25. Implementation of the D&O through modifications and adjustments to the EMI Aqueduct System is independent of the Proposed Action, which is the issuance of a Water Lease. Section 1.3.4 of the Draft EIS discusses the D&O.
26. Section 4.16 of the Draft EIS discusses secondary and cumulative impacts of the Proposed Action.
27. Section 5.8 of the Draft EIS discusses the permits and approvals related to the Proposed Action.

Your written and oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant  
Isaac Hall, Esq.

Enclosure (NHLC response letter)



# Native Hawaiian LEGAL CORPORATION

1164 Bishop Street, Suite 1205 • Honolulu, Hawaii 96813 • www.nhlchi.org  
Phone (808) 521-2302 • Fax (808) 537-4268



December 26, 2016

Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
Attention: Mr. Earl Matsukawa, Project Manager  
[woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

Re: Early Consultation for the Preparation of an EISP/N Proposed Lease for the  
Nahiku, Ke'anae, Honomanu, and Huelo License Areas East, Central and Up-  
Country Maui, Hawaii

Dear Mr. Okamoto,

Mahalo for the opportunity to provide comments prior to the issuance of an  
Environmental Impact Statement Preparation Notice for the use of water from four license areas  
consisting of 33,000 acres of lands and waters in East Maui. Our office represents Nā Moku  
Aupuni o Ko'olau Hui and other farmers, fishermen and women, and gatherers of native plants  
and stream animals in the East Maui region. These comments are preliminary in nature and are  
not intended to represent the entirety of our clients' concerns regarding the proposed use of the  
license areas.

In general, the EIS should consider impacts to and along: (1) each diverted stream, (2)  
each individual license area, and (3) the entire 33,000 acres of license area. In addition, the  
discussion of diversions should include all structures, designs, and mechanisms that either  
remove water from streams **or** prevent water from entering into streams.

First, Alexander & Baldwin's Environmental Impact Statement should provide at a *minimum*  
the following:

- Full disclosure of every single diversion along the East Maui Irrigation system (including  
photographs and descriptions as to how the diversion operates, how much water it diverts  
from the stream daily (on average and at minimum and maximum), and its precise  
location);
- Maps indicating all maintenance and/or access roads for the diversion system including  
identification of all access points at public roads and/or highways;

*Services made possible with major funding from the Office of Hawaiian Affairs*  
Nāho, Upehihi, straight, steady, far and straight as a ree without branches, clearly peaked, as mountains. Fig., - ngahous, correct.

Wilson Okamoto Corporation  
December 26, 2016  
Page 2 of 3

- Maps that show every single stream within East Maui, including all tributaries from ma  
uka to ma kai, identified by name; and
- Alternative proposed uses including one that involves the use of water from less than all  
four license areas and no diversion of water from East Maui.

Second, the EIS should disclose the following information for *each* alternative analyzed in  
the EIS:

- the amount of water proposed to be taken from each stream daily (on average and at  
minimum and maximum);
- the amount of water proposed to be taken from each license area daily (on average and at  
minimum and maximum);
- the total amount of water proposed to be taken from the entire license areas daily (on  
average and at minimum and maximum).

Finally, the EIS should provide an analysis of the following:

- the degree to which leasing of the land interferes with access to the license area -  
including a discussion as to who controls the various gates that prevents access to these  
lands;
- the impact of diverting water from East Maui streams on aquatic life;
- the impact of diverting water from East Maui streams on native plant species;
- the impact of diverting water from East Maui on invasive species, including the creation  
of mosquito breeding grounds;
- the impacts of diverting water from East Maui streams on outdoor recreational activities,  
the maintenance of ecosystems, and aesthetic values such as waterfalls and scenic  
waterways; and
- the impacts of diverting water from East Maui streams on traditional and customary  
Hawaiian practices (including kalo farming, gathering of native stream flora and fauna,  
and recreation).

The discussion of alternatives should also include a no diversion alternative or licensing less than  
the full 33,000 acres for the diversions. In any discussion of alternatives that involve the use of  
less than the full diversion system and all four license areas, analysis of how the existing system  
will be removed and the watersheds restored should be included.

002033

We look forward to the publication of the EISP/N as soon as possible so this long awaited process can finally begin. Should you have any questions regarding the above, please call us at (808) 521-2302.

Sincerely yours,

  
Camille Kalama  
Summer Sylva  
Staff Attorneys



10238-02  
September 23, 2019

Ms. Camille Kalama and Ms. Summer Sylva, Staff Attorneys  
Native Hawaiian Legal Corporation  
1164 Bishop Street, Suite 1205  
Honolulu, HI 96813

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Ms. Kalama and Ms. Sylva:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas. You provided early consultation comments by letter dated December 29, 2016, which was prior to the publication of the EISP/N on February 8, 2017. You also provided written comments on the EISP/N dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix J (as to the early consultation comments) and Appendix M (as to the EISP/N comments).

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Chapter 4 of the Draft EIS discusses the existing environment, impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O), and mitigation measures. As relevant and appropriate, the discussion of impacts includes those pertaining to conditions before and after the closure of sugar cultivation in 2016. Various technical studies are appended the Draft EIS and provide detailed examinations,

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

September 23, 2019

including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

3. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, terrestrial flora and fauna and invasive mosquitos. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).

4. The Draft EIS includes in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

5. Figure 1-1 in the Draft EIS illustrates the EMI Aqueduct System overlaid on the Department of Land and Natural Resources (DLNR) Division of Aquatic Resources (DAR) geographic information system (GIS) data of streams. An electronic drawing of the EMI Aqueduct System was georeferenced by Akinaka & Associates, Ltd. to depict major diversions on East Maui streams on a United States Geological Survey (USGS) GIS base map. Due to the complexity of the EMI Aqueduct System and the level of detail shown on the map, not all of the minor diversions could be associated with a stream or tributary. The stream names shown are from the DAR GIS database but a few of those stream names may differ from how some East Maui residents may refer to them. Moreover, certain streams that were identified during certain proceedings before the CWRM do not have associated GIS data and therefore could not be precisely located on the map. Table 1-2 in the Draft EIS reconciles discrepancies between stream names used in the February 2017 EIS Preparation Notice and the CWRM D&O.

6. For the purposes of the Draft EIS, diversion quantities from the CWRM D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

September 23, 2019

7. For purposes of this Draft EIS, the list of streams assessed as part of the License Area is taken from the D&O. The Draft EIS discusses impacts to hydrology associated with the Proposed Action in Section 4.2 of the Draft EIS as well as the reports various technical reports prepared for the Draft EIS, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

8. The impacts of access into the License Area are discussed in the SWCA report and the Archaeological Literature Review and Field Inspection report (See Appendices B and E, respectively). These impacts are also discussed in the Draft EIS in Section 4.4 pertaining to the natural environment and Section 4.5 on historic and archaeological resources.

9. The Cultural Impact Assessment (See Appendix F) includes a tabulation and evaluation of traditional cultural practices, including those provided through interviews and declarations from the CWRM's proceedings on the IIFS.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant





10238-02  
September 23, 2019

Nanua Kuloloio Puaoi

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Kē'anae, Honomanū  
and Huelo License Areas

Dear Ms. Puaoi:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Kē'anae, Honomanū, and Huelo License Areas. You provided early consultation comments by email dated December 9, 2016, which was prior to the publication of the Environmental Impact Statement Preparation Notice (EISPN) on February 8, 2017. You did not provide written comments on the EISPN. We acknowledge your comments and concerns, which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix J.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Kē'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui, which are not owned by Mahi Pono and planned for diversified agriculture. The environmental impacts of the potential Water Lease have been assessed in the Draft EIS.
2. The Commission on Water Resource Management issued a decision on June 20, 2018, setting the Interim Instream Flow Standards for numerous East Maui streams. This decision also ordered full restoration of the taro streams in East Maui. The Proposed Action (issuance of a Water Lease) will be in full compliance with the diversions as permitted under the Commission on Water Resource Management's decision and order.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

From: Pua Puaoi [redacted]  
Sent: Friday, December 09, 2016 9:15 AM  
To: Wilson Okamoto Corporation  
Cc: [redacted]  
Subject: I strongly oppose A&B water sheds on East Maui

Aloha,

My name is Napua Kuloloio Puaoi, I am from Wailuku, Maui and I have strong family roots on the East side of Maui. I am writing because I strongly oppose A&B's control of East Maui's 33,000 acres of water she'd land. I am in support of Kalo farmers & the livelihood of East side residents who rely on that water. A&B has no right to that water it should remain where it is and not diverted or in what I like to call STOLEN from generations of Kalo farmers & residents that for decades depends on that water. It's not right! Let the water flow from mauka to maika'i! Show our keikis that the people can win over corporate greed like A&B!

Mahalo  
Napua Kuloloio Puaoi

002036



10238-02  
Letter to Ms. Napua Puaoi  
Page 2  
September 23, 2019

Your written and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



PUBLIC ACCESS TRAILS HAWAII  
2525 KAHEKILI HIGHWAY  
WAILUKU, HAWAII 96793-9233  
davidhbrown@hawaiiintel.net  
808 244-5721

8 December 2016

Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

Public Access Trails Hawaii (501(c)(3) (publicaccesstrailshawaii.org) takes no position on the water lease to A & B at this time.

HOWEVER, Public Access Trails Hawaii demands that ALL Hawaii State leases require the following paragraph:

"All roads, trails, beach accesses and other public accesses on this leased property must be open at all times to the public".

Sincerely yours,



David Henderson Brown

Executive Director, Public Access Trails Hawaii

002037



10238-02  
September 23, 2019

David Henderson Brown  
Executive Director, Public Access Trails Hawaii  
2525 Kahekili Highway  
Wailuku, HI 96793-9233

Subject: Environmental Impact Statement  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Brown:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. You provided early consultation comments by letter dated December 8, 2016, which was prior to the publication of the EISP on February 8, 2017; you did not provide written comments on the EISP. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments and this response has been appended to the Draft EIS in Appendix J.

We acknowledge that your organization did not take a position on the Proposed Action (the Water Lease), but demanded that all State lease include the following paragraph: "All roads, trails, beach accesses and other public accesses on this leased property must be open at all times to the public." The terms and conditions of the proposed Water Lease will be established by the Board of Land and Natural Resources. We note that public access to the License Area is discussed throughout Chapter 3 and Chapter 4 of the Draft EIS.

It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

002038

---

**APPENDIX K:**  
Scoping Meeting For the Water Lease for the Nāhiku,  
Ke'ānae, Honomanū, and Huelo License Areas EISPN  
Transcript of Proceedings Wednesday, February 22, 2017

SCOPING MEETING FOR THE  
 WATER LEASE FOR THE  
 NAIHIKU, KEANAE, HONOMANU, AND HUELO  
 LICENSE AREAS EISP  
 APPLICANT: ALEXANDER & BALDWIN INC. /  
 MAUI IRRIGATION COMPANY, LIMITED  
 TRANSCRIPT OF PROCEEDINGS  
 February 22nd, 2017  
 5:00 p.m. - 7:30 p.m.  
 Maui Electric Company Community Meeting Room,  
 210 W. Kanehameha Avenue, Kahului, Hawaii 96732  
 BEFORE: SANDRA J. GRAN, CSR NO. 424  
 Registered Professional Reporter

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

SPEAKERS  
 Page  
 3, 99  
 8  
 20  
 22  
 24  
 25  
 27  
 29  
 31  
 32  
 33  
 35  
 39  
 42  
 45  
 46  
 47  
 50  
 52  
 53  
 58  
 60  
 63  
 66  
 69  
 70  
 73  
 77  
 79  
 81  
 85  
 87  
 90  
 92  
 94  
 97

Berna Cabacungan Senelly, Facilitator  
 Father John Tomoso  
 Earl Matsukawa, Wilson Okamoto Corporation  
 Joe Chesledon  
 Brenden Balthazar  
 James Coon  
 Nalani Kaninau  
 Darrell Tanaka  
 Lloyd Fischel  
 John Gelert  
 Darren Strand  
 Martha Martin  
 Edwin Young  
 Michael Pasco  
 Moke Kahiamoe  
 Kahikina Kahiamoe  
 Alex Franco  
 Brian Wittman  
 Alice Lee  
 Dianne Shimizu  
 Albert Perez  
 Cody Nemet  
 Frank Caprioni  
 Adriane Raff Corwin  
 Tiare Lawrence  
 Diane Hakamaku  
 Justin Tombe  
 Zack Williams  
 Kamalani Pahukia  
 Alohalani Smith  
 Elaine Wender  
 Tom Blackburn-Rodriguez  
 Larry Koss  
 Stacey Sills  
 Joycelyn Costa  
 Mikiala Puaa-Freitas  
 Sesame Shim

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

## P R O C E E D I N G S:

FACILITATOR SENELLY: Aloha, everybody, and welcome to our meeting on the proposed lease for the Nahiku, Keanae, Huelo, and Honomanu lease areas. And this is a scoping meeting for the environmental impact statement that's being done. Okay? Before -- my name is Berna Cabacungan Senelly and I'm -- I'll be helping to facilitate the meeting.

And Earl Matsukawa here from Wilson Okamoto is -- he's going to be doing a presentation and it's going to be short, not that long.

And two people that you saw when you came in, Rebecca and Keola, they're still working back there. So that's us.

I am privileged to also introduce Father Tomoso, Father John Tomoso, and he will be doing our pule tonight.

FATHER TOMOSO: Just so you know, Berna and I went to Catholic school, so we figured it out that we come from the same strain.

(Statement in Hawaiian.)

Almighty God, in your hands is everything that we see, in your care and blessing for us, all that we see comes from you. Almighty God, we know that you gift us with many things. First of all, the gift of life and within that abundant life, you give us water, an abundance of water, the abundance of water that reflects the perfection that we

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

journey to, which is your perfection. As an island people, you know our needs of and for water. As an island people, you have surrounded us with water, water that is reflective of life that comes from you. Therefore, Almighty God, we know that water is you, literally water breathes you, literally water feeds us with your life-giving breath, with your life-giving presence, with your life-giving abundance.

Almighty God, it is within this abundance that we gather as community. It is within this abundance that we are thankful for the gift of water, for the gift of who we are with and in and through that water. And we thank you most, most graciously, most thankfully for today, for this meeting, and for all that will come out of it.

We ask this in the name of (Hawaiian word), Jesus, your Son, our Lord and Savior. Amen.

AUDIENCE: Amen.

FACILITATOR SENELLY: All right. Everybody got an agenda? The meeting is going to be in five parts. Most of the meeting is going to be you folks talking. Okay? So the purpose of the meeting is -- I'm sorry.

Okay. The purpose of the meeting is pretty -- like we have three: One is we're going to talk about the environmental impact statement, the purpose and kind of an overview of the process.

Second is we're going to talk -- you're going to see

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com



1 "EISPN" all the time and that's what this meeting is about,  
 2 it's about the environmental impact statement preparation  
 3 notice, and so we're going to talk about that and what's in  
 4 it. And that has already been released and we'll talk about  
 5 what's in it.

6 And third, we're going to ask you for scoping  
 7 comments -- and I'll explain what that is -- that will be  
 8 included in the draft EIS and that will actually guide the  
 9 draft environmental impact statement.

10 Okay. So the proposed action was published over  
 11 here in the "Environmental Notice," in the -- from the Office  
 12 of Economic -- Office of Environmental Quality Control. And  
 13 they put out bulletins and so this project was -- notice was  
 14 in the bulletin, published in the bulletin on February 8th.

15 So it -- what scoping is, scoping starts once the  
 16 public -- the preparation notice is released, okay, or is  
 17 published and what scoping is it's -- it determines the scope  
 18 or the content or what's inside the environmental impact  
 19 statement. So the meeting tonight is for you to guide us and  
 20 to tell us and to share with us what you think the  
 21 environmental impact statement should -- should address. Now,  
 22 the law, actually, Chapter 343 HRS really does require scoping  
 23 in every process; however, it does not -- the meetings  
 24 themselves are optional. And in this project we have two  
 25 meetings so -- because we want to sort of optimize

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

opportunities for folks to provide input.

Okay. So we've got 30 days from when the -- it was  
 published and so it was published February 8th, we have until  
 March 10th to provide comments. And all of the scoping

comments will be documented in the draft environmental impact  
 study. So there's going to be a draft EIS that's going to be  
 done and the comments that come out of the scoping process  
 will be included in that. Okay? There's three ways to

provide comments: First is oral testimony, so you can do that  
 tonight or this afternoon and, you know, plenty of you guys,  
 when we asked if you wanted to speak, a lot of people went  
 kind of (inaudible), yeah. So if you have time, you want to  
 sign up to speak tonight, you can, okay, or this afternoon.

The second way is everybody has a paper for their  
 comments, okay, you can turn this in tonight if you want. You  
 can also mail it, because it's a mailer, so you have to put a  
 stamp on it and send it in.

And the third way you can do it is by emailing it.

Now, I have to say this: If you're going to email it, you  
 really need to -- we're going to let you know that we received  
 it by email. If you do not receive an email, you've got to  
 call, there's a number up here, you have to let us know so  
 that we can make sure we have your comments.

So now I'm going to turn it over to Earl Matsukawa  
 from --

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 Yes.

2 UNIDENTIFIED SPEAKER: I don't see the email address

3 on this.

4 FACILITATOR SENELLY: It's on the bottom.

5 UNIDENTIFIED SPEAKER: Thank you.

6 FACILITATOR SENELLY: You're welcome.

7 Okay. I'm going to -- oh, you know what -- oh,

8 yeah. Okay, okay. We -- Maui Electric was gracious enough to

9 let us use this room because we needed a place to meet, but

10 they are in no way connected to what we're doing, so just to

11 let everybody know.

12 And you know what we're going to do, Earl is gonna

13 speak for about 15 minutes, he's going to present what we're

14 here about today. I'm going to ask you to really hold your

15 comments and questions until he's pau, because after that,

16 that's when we're going to open it up. Okay? So if you let

17 him speak, then you kind of get the whole picture of the kind

18 of stuff that's in the EISP and then after --

19 FACILITATOR SENELLY: About 15 minutes, yeah?

20 MR. MATSUKAWA: Yeah.

21 FACILITATOR SENELLY: Yeah. And so when he's pau --

22 and he's going to have -- you know, he's going to show you all

23 kinds of maps and stuff, when he's pau, then you -- we'll open

24 it up. However, I'm going to --

25 Do you mind waiting just a couple minutes? We have

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 some folks coming in, so we're going to wait just a couple

2 minutes. Okay?

3 UNIDENTIFIED SPEAKER: You know, they may not know

4 that there's seats up front.

5 FACILITATOR SENELLY: Oh, I've got seats up here.

6 MR. MATSUKAWA: By the way, there is water back

7 there and cookies, so help yourself. And the restrooms are

8 out this door and turn left and then it'll be on your right.

9 (Short pause in proceedings.)

10 FACILITATOR SENELLY: Okay. So as I said, so I'm

11 just going to repeat some things for the people who came in

12 real quick. This is a meeting for the environmental impact

13 statement, it's a scoping meeting that -- and what we're doing

14 is trying to get your comments on what should be included in

15 the EIS or the environmental impact statement. Okay? And we

16 have until March 10th to provide comments and we have three

17 ways: You can email it, you can give us a paper or mail it

18 back, or you can talk tonight.

19 MR. MATSUKAWA: Thank you, Berna.

20 Okay. I'm just going to overview the EIS, what it

21 is and how it's processed, and then talk about the EIS

22 preparation notice which is part of the entire process. So

23 first I want to emphasize that the EIS is an information

24 disclosure document that documents the impacts of a proposed

25 action. So in this case the proposed action is the issuance

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 of a water lease by the Board of Land and Natural Resources.  
 2 The EIS is not a permit, it is an information document, and it  
 3 is not an approval to go ahead and do something. It allows  
 4 the -- it is the information document that will be used for  
 5 the processing -- for the decision on the water lease.

6 So acceptance of the final EIS, the last thing  
 7 that's done, the acceptance of the final EIS by the Board of  
 8 Land and Natural Resources means that the content, and I'll be  
 9 talking about content today, and the processing, and I'll be  
 10 talking about the processing today, that the content and  
 11 processing requirements that are set forth in state law and  
 12 the administrative rules have been met and now they can be  
 13 accepted and used for the -- making that decision on the water  
 14 permit.

15 And I also want to make clear, although we are hired  
 16 by Alexander & Baldwin to prepare this EIS, the documents that  
 17 we prepare are turned in to the Department of Land and Natural  
 18 Resources and they need to find that it is acceptable and they  
 19 need to -- this is the DLNR, they need to file it in order to  
 20 continue the processing of these documents.

21 So let me briefly go over the -- some of the items  
 22 that are in the EIS. This is the content part that I'm  
 23 talking about and, again, this is the content part which this  
 24 scoping speaks to, so this -- whatever comments we get in  
 25 here, we will look at it in terms of how it can fit in the

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 EIS, if it's appropriate.

2 So some of the content of the EIS includes the  
 3 general description of the proposed actions: technical,  
 4 economic, social, cultural, and environmental characteristics.  
 5 So we do talk about what is the proposed action in the  
 6 concept -- context of these things and we state what the  
 7 purpose and need for the action is and then what are the goals  
 8 and objectives.

9 We also have in there, and this is the -- the bigger  
 10 part of the EIS, it's a description of the existing  
 11 environment. And there are a number of topics and the next  
 12 slide will kind of show the number of topics that will be  
 13 covered by the EIS, so we will talk about the existing  
 14 environment in these topic areas, the impacts of the proposed  
 15 action, as well as some of the alternatives, and then  
 16 potential mitigation measures that can be implemented so that  
 17 it can reduce the significance of impact.

18 There's also a section relating to the -- how the  
 19 project relates to land use plans and plans in general, like  
 20 the state plans, as well as other policies and controls. It  
 21 will also describe and discuss alternatives to the proposed  
 22 action -- and I will be discussing this a little later what  
 23 the alternatives are -- and it will document the consultation  
 24 process for the EIS, which includes this meeting.

25 So I was talking about the topic areas, these are

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 the topic areas that will be covered by the EIS in terms of  
 2 the existing environment impacts and mitigation measures.  
 3 Okay. So the EIS preparation notice has been  
 4 formally published, so the purpose of that is to notify  
 5 interested parties that an EIS will be prepared for the  
 6 proposed action and, again, the proposed action is the  
 7 issuance of a water lease. It -- the EIS preparation also  
 8 begins the scoping process for receiving comments on the  
 9 contents of the draft EIS, as Berna mentioned, so the next  
 10 document to be prepared is the draft EIS and the comments  
 11 received here will aid us in scoping that document. And it  
 12 also includes a general discussion of impacts and it discusses  
 13 potential technical studies that may be prepared for the draft  
 14 EIS.

15 Okay. Now, this is the process part of the EIS. It  
 16 began with early consultation and this is -- this actually was  
 17 not required for the type of EIS preparation notice that we  
 18 prepared, but it provides an opportunity to notify potentially  
 19 interested parties that the process has started and to allow  
 20 early comments on the process and the EIS preparation notice.  
 21 Then we -- then we prepared the EIS preparation notice, which  
 22 was published, like Berna said, on February 8th, and we're now  
 23 in the 30-day comment period which ends on March 10th.

24 Now, in taking into consideration comments that we  
 25 receive during scoping, we will begin to prepare the draft

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 EIS, but there's another critical thing that we need before we  
 2 can actually finish the draft EIS and this is the interim  
 3 instream flow standards and these will be issued by the  
 4 Commission on Water Resources Management. The IIFS is going  
 5 to determine how much water actually can be diverted through  
 6 the East Maui Irrigation system, aqueduct system. So that  
 7 decision is a separate decision and is actually not tied to  
 8 the EIS process, but we need to know what those standards are  
 9 so we need to know what's going to be flowing in the streams,  
 10 what's going to be flowing in the aqueduct system, so that  
 11 information is needed so that we can determine what kind of  
 12 impacts are going to occur. So the maximum amount of water is  
 13 what the IIFS decision is going to be and then the technical  
 14 studies will be conducted based on the IIFS decision and then  
 15 they'll be incorporated in the draft EIS.

16 So once the -- once we're completed with the draft  
 17 EIS, it'll be up to the Department of Land and Natural  
 18 Resources to publish it in the "Environmental Notice" that we  
 19 showed you earlier. And once it's published, it starts a  
 20 45-day comment period where people may review it and comment  
 21 on draft EIS. And then we will take in those comments and at  
 22 that stage we will do a point-by-point response to all the  
 23 comments that are received and then we'll prepare a final EIS.  
 24 And that will be turned into the Department of Land and  
 25 Natural Resources and they will review it and if they accept

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 it, then they will publish it in the "Environmental Notice"  
 2 again. And once that's done, then it can be taken before the  
 3 Board of Land and Natural Resources to formally accept the  
 4 final EIS. And once that's done, it can be used as a basis  
 5 for the issuance of the decision on the water lease.  
 6 Okay. So the EIS preparation notice is in the  
 7 public now, you can download it from the OEPC website. I'll  
 8 just give a brief summary of that, what that document  
 9 contains.

10 So this was published on February 8th and some of  
 11 the main parts that I think it includes is the proposed action  
 12 and in this case the proposed action is the issuance of a  
 13 water lease. The maximum amount available through that water  
 14 lease will be determined by the IIFS. It also includes the  
 15 right to access state land in order to maintain the aqueduct  
 16 system and the service roads.

17 And there's two key points, really, with regard to  
 18 the proposed action: The amount of water that the Board of  
 19 Land and Natural Resources can put in the water lease, the  
 20 amount that's in the water lease doesn't have to be the full  
 21 amount available through the IIFS decision. The board can  
 22 say -- give less than what is in the IIFS.

23 Another part of this is that once that permit is  
 24 issued -- well, once they -- this permit, once it's  
 25 determined, will go before public auction. So even A&B is the

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 very much involved in this, through the public auction process  
 2 it is possible that it is not awarded to Alexander & Baldwin.  
 3 So two points on that.

4 Okay. This is the map of the four license areas:  
 5 Huelo, Honomanu, Keanae, and Nahiku. It covers about 33,000  
 6 square miles of state owned land. 33,000 acres, sorry.  
 7 (Inaudible.)

8 UNIDENTIFIED SPEAKER: Yeah. I was gonna say, is  
 9 Maui that big?

10 MR. MATSUKAWA: And this is the overlay with the  
 11 four license areas and it shows the aqueduct system through  
 12 the area as well as land owned by East Maui Irrigation Company  
 13 which is shown in the green. The water that is presently  
 14 collected through the aqueduct system goes to several user  
 15 groups. One is the County of Maui DWS which receives the  
 16 water at their Kamaole treatment facility, the water is then  
 17 treated and becomes potable water and is distributed through  
 18 their system to Upcountry Maui. The DWS also treats that  
 19 water and services portions of the Nahiku community, the  
 20 portion that lies below the Hana Highway. And then untreated  
 21 water goes directly to the Kula Agricultural Park for  
 22 irrigation purposes. And then there is about 30,000 acres of  
 23 former sugar land that will receive that water, that is  
 24 presently receiving that water although sugar has now ceased.

This is a map basically of the users. The black

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com



1 line, the black dotted line is basically the transmission  
 2 mains that DWS operates to provide potable water to the  
 3 Upcountry Maui area. This is the lower portion of Nahiku that  
 4 is served also by the DWS. This is the Kula Ag. Park and this  
 5 is the 30,000 acres of former sugar land in Central Maui.  
 6 Again, the maximum amount of water that can be  
 7 provided through the water lease will be determined by the  
 8 IIFS and, again, the amount could be reduced by the Board of  
 9 Land and Natural Resources and, again, the permit will go  
 10 before public auction. But for whatever amount of water that  
 11 is made available through the water lease, there will be a  
 12 reservation of that amount that will be dedicated to the  
 13 Department of Hawaiian Home Lands, although the amount of that  
 14 reservation has yet to be determined.

15 Okay. The objectives as stated in the EIS  
 16 preparation notice, the reason for the water lease will be to  
 17 continue to meet the domestic and agricultural water needs for  
 18 Upcountry Maui, similarly for the portion of the Nahiku  
 19 community below Hana Highway, and to continue to provide water  
 20 for agricultural purposes, likely diversified ag, in Central  
 21 Maui and to protect -- preserve and maintain the EMI aqueduct  
 22 system.

23 So this is a map of the license area, the streams in  
 24 the license area, and there are 39 identified streams. Forty  
 25 by some count, but my understanding is that 40th one is

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 actually a waterfall within a stream, so 39 or 40, most of  
 2 which are subject to the IIFS. And of these 39 or 40 streams,  
 3 A&B has historically diverted 37 streams. Then in nineteen --  
 4 in 2007 Alexander & Baldwin abandoned all diversions in one  
 5 stream and they have plans to remove all diversions from  
 6 another five streams. These are streams that have been  
 7 identified as so-called taro streams because they are used in  
 8 the lower reaches to irrigate taro and other crops.

9 Okay. So we also identified in the EIS preparation  
 10 notice what we think will be the alternatives that will be  
 11 assessed in the draft EIS. And the first one is the amount of  
 12 water that can be available if they award the full amount  
 13 given by the IIFS, so whatever the IIFS decision, the water  
 14 that becomes available with that decision.

15 The second is the no action decision, no action  
 16 alternative, where the Board of Land and Natural Resources  
 17 issues no water lease, so no state waters would be part of  
 18 that license.

19 And the final option is a situation where, we had  
 20 mentioned before, the board could provide less water than  
 21 allowed by the IIFS. And so we haven't determined exactly  
 22 what that point is at this time, we will need that IIFS  
 23 decision, but it's sort of the middle between the first two.

24 Okay. That summarizes the EIS. Now I'll turn it  
 25 back to Berna.

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

FACILITATOR SENELLY: Thanks, Earl.

Okay. So now we're part -- we're part of the -- we're in the section and we have an hour and a half for this next section, or hour and mostly and a half and the purpose of this is to receive your oral comments. And as I said earlier, the oral comments will be included in the EIS, in the draft EIS. And Sandra here is our transcribing, so when we speak, I'm going to ask you to speak really clearly and stuff.

Okay. So we're going to spend -- can you change the -- yeah. Sorry.

All right. We have -- I'm asking you to follow some protocol, okay, because we have a lot of people here and stuff and I -- people are -- feel strongly about this, I know, so what we'd like to do is really make sure we have safe haven. So what that means is you feel safe in coming up and speaking your mind and what you think and that people will listen.

Okay. So -- oh, and especially because Sandra is taking notes, one person at a time, okay, and also we respect each other. Now, I know sometimes I go to meetings and you clap for each other, which is cool, but, please, no booing, okay, so --

And so that we can have everybody speak, if you can summarize your comments and try not -- okay. Because we want -- we really want a wide range of input, so if you heard somebody or if you heard a couple people say what you were

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

gonna say and if you can think of something else, then bring that other stuff up. Okay. But there's no holds on what you can say either, so it's up to you.

Okay. The meeting is scheduled for two hours, it is now about 5:35, 5:33, the way -- what I will do is -- we want as much as possible for everyone to stay at the meeting so you can hear everybody else's manao, yeah. So if it looks like we're going towards the end and still have a lot of people that want to talk or some people or a couple people that want to talk, I will ask you, "Is it okay if we go ten more minutes?" And we will do that for maybe about a half an hour. Okay? But just so that -- it kind of respects your time too, because if you came here expecting it to be a certain amount and it goes on too long, then, you know, some people, they just want to go home and they won't get to hear the whole thing. Okay.

Okay. So we had a sign-in order -- I need the comment sheet.

So we're going to take it in the order that you signed up and so everybody who signed up gets to speak first. Now, let's say we have some more time and you have some thoughts you really want to share, we'll ask you to sign up, somebody will bring you the sign-up sheet, and then, you know, we'll just keep going. Okay. As I said, though, when we reach the time, I will ask you guys if we can keep going. And

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 remember, the other thing is you can always submit written  
2 comments too if you don't speak at the meeting.

3 UNIDENTIFIED SPEAKER: If we submitted a written  
4 comment already and signed up to speak, not to be redundant,  
5 should we just give up our spot to speak since we already have  
6 written comments in?

7 FACILITATOR SENELLY: It's up to you.

8 UNIDENTIFIED SPEAKER: Okay.

9 FACILITATOR SENELLY: We will bring -- now, I don't  
10 know if you noticed, but I really am asking us as a group  
11 to -- there is no time limit because part of it is if you give  
12 a time limit, then you feel rushed or you kind of feel -- so  
13 I'm going to ask everybody at some point to summarize if you  
14 can, so it'll give everybody a chance. And you can still come  
15 back if there's time. Okay.

16 We're going to bring you the microphone because the  
17 place is kind of crowded, so rather than having to move chairs  
18 and everything, we will -- Rachel -- Rebecca, sorry, Rebecca  
19 and Keala will come by, okay, so be patient with us, please.  
20 And when you come up, if you can speak your name, tell us your  
21 name very -- really clearly.

22 All right. So remember, now, scoping is telling us  
23 what should be covered in the environmental impact statement.  
24 Earl showed you a list of all the topics that are going to be  
25 covered -- that are going to be discussed, but what they

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 actually discuss is what we're asking you here. So this is a  
2 sentence: "The EIS should address..." You can say what you  
3 want, but every now and then I'm going to ask you or maybe all  
4 the time I may ask you, "Can you please clarify? Is this what  
5 you want in the EIS?"

6 Okay. So first person, who has been here a long  
7 time, Joe. What's your last name?

8 MR. CHESLEDON: Chesledon.

9 FACILITATOR SENELLY: Okay. Joe Chesledon.  
10 Chesledon.

11 MR. CHESLEDON: Hello, my name is Joe Chesledon, but  
12 I am here presenting this statement on behalf of many  
13 generation Hawaiian neighbor, Alvin Kalehuawehe. Alvin cannot  
14 miss work to be here tonight, but sends this statement as a  
15 message.

16 "As a Native Hawaiian from both family sides, I say  
17 to you aloha. Generations ago big sugar and pineapple  
18 companies including Alexander & Baldwin of the mainland  
19 imposed upon Hawaiians a valuable and irreplaceable water  
20 takeaway which has deprived Hawaiians of water and land to use  
21 for subsistence farming to feed our ohana and greatly improve  
22 our lives and restore what we once enjoyed: stream flow, fish  
23 populations, and our agriculture. As a result we have gone  
24 from a subsistence ohana to a dependent ohana.

25 "In sharing our water resources to big sugar by

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 means of what I understand to be 165 million gallons of water  
 2 per day to 33,000 acres, Hawaiians have been shared out of the  
 3 ability and right to a self-sustaining way of life. It is my  
 4 understanding that Maui currently imports more than 90 percent  
 5 of its food; meanwhile, the Hawaiian farmer, at the expense of  
 6 big sugar, is deprived of rights to work with the land, to  
 7 sustain and feed our ohana. We have lost the right to teach  
 8 our young that we can love our Mother Island and she will take  
 9 care of us. We need a return of the water rights to us and  
 10 our ohana. We do not need another theft of water by big  
 11 sugar, Alexander & Baldwin.  
 12 "Mahalo nui loa, Alvin Kalehuawehe."  
 13 (Applause.)  
 14 FACILITATOR SENELLY: Okay. So what -- what my  
 15 understanding is, is he wants to see the cultural impact study  
 16 in terms of just the water, what happened with the water. He  
 17 wants to see it from a cultural standpoint, but he -- I also  
 18 heard that he wants to make sure it's available for  
 19 sustainable agriculture.

20 MR. CHESLEDON: Like the concept of -- on the -- on  
 21 the mainland there's a concept in cities where they share  
 22 little pea patches and stuff, but larger maybe on a larger  
 23 scale for the locals to have places to have gardens in that  
 24 farmlands using the agricultural water.

25 FACILITATOR SENELLY: Okay. Thank you.

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 Brendan Balthazar. Mr. Balthazar, you've been here  
 2 a long time.

3 MR. BALTHAZAR: I know. I've gotta go back and pump  
 4 water yet, like everybody else.

5 I just wanted to say, you know, my father said that  
 6 we all need water. I've been in several of these hearings and  
 7 testimonies. I believe that nobody can have it all, I think  
 8 it's a shared thing. We really need to know how much water is  
 9 needed by the people who want to plant taro. As a kid I used  
 10 to stand by the pine fields and granted, yes, things were done  
 11 150 years ago that none of us in this room is accountable for;  
 12 however, I believe everybody needs the water. Like myself, I  
 13 live Upcountry and I depend on that water coming up out of my  
 14 pipe, so does my animals, so does my lifestyle. I'm retired  
 15 from the fire department, I ranch, and I'm also on the board  
 16 of the Farm Bureau and the Cattleman's Association. And to  
 17 just (inaudible) what the last gentleman said about us being  
 18 able to be sustainable, with all of that land available for  
 19 ag. and I -- and I emphasize the word "ag."

20 At the last testimony I did before DLNR, one of my  
 21 things that I think was the wrong place, but I did say that if  
 22 this water is earmarked for ag, that amount that is now used  
 23 for potable water, like Upcountry, should be kept. I don't  
 24 think any future subdivision should be coming up and tap into  
 25 that ag. water and that's really my concern. I'm here

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 representing ag. and the fact -- the part of ag. that I  
2 represent is the livestock industry.

3 I know some of the things that I heard some of the  
4 people from Sierra Club and some of the friends that I have  
5 from Keanae say, "Yeah, I mean, they want all this water, what  
6 for?" I don't know how much sorghum will take, how much corn  
7 will take, I can tell you how much if -- if we need to  
8 irrigate the pastures, right now the grasses that works down  
9 in that area would take about 4100 gallons per day per acre,  
10 that's what it takes to keep that thing in grass. Pending no  
11 rain now, I'm just saying just on the bottom line. Of course,  
12 it will be less with the rain and, of course, more with  
13 evaporation. Cattle drink 15 to 20 gallons per day, that's  
14 20,000 gallons on a thousand acre pasture. A thousand acres  
15 of irrigated pasture, you can probably a head per acre.

16 So I can only speak from the livestock side, I, on  
17 my end Upcountry, a lot of the kids now that should be in  
18 ranching and farming are not. I'd like to see that land stay  
19 in ag. and I believe the water really should be shared. And  
20 like he was saying, I think once they found out what the  
21 stream flows is, then it should be adjusted as to what  
22 everybody can have so everybody can share the water. I mean,  
23 without water, there's no ag, I mean, nobody can disagree with  
24 that.

25 So I'm saying also that if EMI -- and I'm not

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 partial to them, but if EMI, who has been taking care of the  
2 ditch system for all these years, gets out of it, the county  
3 has no way in hell to take care of that ditch, they don't have  
4 the resources nor the funding. So it is essential for us, for  
5 our environment to have this water come out and have somebody  
6 take care of it.

7 FACILITATOR SENELLY: Okay. So my understanding is  
8 I did hear you say that you wanted to see some quantification  
9 of what the taro, the kalo needs are for water.

10 MR. BALTHAZAR: Exactly.

11 FACILITATOR SENELLY: You want to see the impact of  
12 the proposed action on the agricultural lands from your  
13 perspective, it's from ranching. And you also -- oh, you also  
14 want to see -- to make sure, you want the EIS to show what  
15 some of the future uses might be if it's not ag., because you  
16 don't want to see it developed.

17 MR. BALTHAZAR: I'm really concerned that this water  
18 that is earmarked for ag. stay as ag.

19 FACILITATOR SENELLY: Okay. You want it ag. Okay.  
20 (Applause.)

21 FACILITATOR SENELLY: Thank you, Mr. Balthazar.

22 James Coon. Okay, Mr. Coon.

23 MR. COON: Aloha. Aloha kakou. My name is Jim Coon  
24 and I'm speaking as a concerned citizen. I've lived on Maui  
25 for almost 45 years and I've lived in Kula for over three

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com



1 decades. My home's on ag. land and I maintain a small orchard  
 2 on my land. I believe as time goes on, more and more  
 3 individuals need to plant edible crops to help Maui be more  
 4 food sustainable. I do believe that EMI is the best entity to  
 5 manage the EMI ditch system. In my opinion, it'd be a  
 6 nightmare to turn this valuable resource over to the county or  
 7 state.

8 I also want to see A&B have enough water to ensure  
 9 that diversified agriculture can be viable on their vast  
 10 lands. What will happen to Maui if there's no agricultural  
 11 there? Not enough water means less ag. How can we ever meet  
 12 our needs of energy and food sustainability if there's not  
 13 enough water? Will it go to development? What about us  
 14 Upcountry residents if EMI somehow gets taken out of the  
 15 picture? How will we get our water? EMI must have a lease  
 16 from the state that ensures that the rest of us continue to  
 17 receive the water we need.

18 As you prepare this EIS, please ensure that all  
 19 parties that need water have an adequate supply, keep EMI as  
 20 the managing entity, make sure A&B has enough to continue  
 21 farming instead of massive development.

22 FACILITATOR SENELLY: Thank you. Thank you.

23 (Applause.)

24 FACILITATOR SENELLY: Nalani Kaninau.

25 MS. KANINAU: Okay. Aloha kakou. My name is Nalani

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 Kaninau. Mahalo for everyone to have my voice heard today.  
 2 For me, it is no coincidence that today, a day water  
 3 protectors from Standing Rock are being forcibly removed from  
 4 the Oceti Camp trying to protect the water, that I, a Native  
 5 Hawaiian, am here to testify to protect water. And this is my  
 6 first time, so (inaudible).

7 I would like the EIS to address agricultural needs  
 8 and that sustainable crops are found with any combination of  
 9 co-op farmers. I would love A&B to be transparent in their  
 10 plans for whatever mass farming that they're wanting to get  
 11 into. I'd also like that there is no action until actual  
 12 stream data -- stream flow data is gathered for all of the  
 13 streams proposed to be diverted and that the repair and  
 14 maintenance of the diversion system is cared for, cared for by  
 15 charging of market rates for water to generate sufficient  
 16 funds to keep that repair and maintenance going.

17 I'd like the EIS, EIS statement to look at impacts  
 18 on aquatic life, native plant species, and traditional and  
 19 customary Hawaiian practices, kalo farming, gathering native  
 20 plants, and kahua dancers, recreation, et cetera. I believe  
 21 we need real farmers, not rich gentleman farmers. If you go  
 22 to the A&B website, there's -- you can become an investor of  
 23 their gentleman farmers. I need to know that A&B truly has  
 24 the interests of Maui at heart. I need A&B to honor the  
 25 tradition of taking only what you need and not taking all that

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 you can. Mahalo.

2 FACILITATOR SENELLY: Thank you very much.

3 (Applause.)

4 FACILITATOR SENELLY: Darrell Tanaka.

5 MR. TANAKA: My name is Darrell Tanaka. As far as

6 the EIS goes, I'd like to -- them to include if there --

7 there's no water coming from EMI, if EMI is to shut down, if

8 the existing wells can handle supplying the Upcountry with

9 water. And in the long term, you know, 10, 15, 20, 30 years

10 from now, can those wells sustain us? I don't think so.

11 As a fishermen, you know, I'd like to see the water

12 returned to the ocean, yes, but I would be wholeheartedly

13 against all the streams being restored, too much has changed

14 in our climate in the past 150 years. Stream flow needs to be

15 constant, more or less. So I support the taro streams being

16 given water, but if the stream is not being used for taro, I

17 cannot see returning water to that stream when we need it in

18 Central Maui. In order for diversified ag. to happen, there

19 has to be water present or no farmer is going to want to his

20 invest his time, effort, and money into trying to make a farm

21 when there's no guarantee that there's enough water,

22 especially if there is a drought.

23 I come from a farming family, I -- ever since my

24 great grandfather came here we raised vegetables in Happy

25 Valley. My grandfather was a farmer up in Kula and I can tell

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 you if there's no water, there is no farm. So the water

2 coming through EMI has to reach Central Maui or we're not

3 going to see diversified ag. But I can tell you one thing is

4 that the only people that have money to drill wells and

5 maintain them are developers and the last crop, in farming

6 termination, is always called a subdivision.

7 Okay. So bring the water here, keep EMI in place

8 because our county can't even run our parks, our beach parks,

9 they can't even run that properly, how are they gonna run the

10 ditch system? So we need EMI. Thank you.

11 FACILITATOR SENELLY: Okay, sir. I heard to keep

12 the EMI system and part of it is also that efficiency of the

13 system in terms of what it's doing now and also getting it to

14 agriculture. And you said something in the very beginning

15 about Upcountry and I just --

16 MR. TANAKA: The wells.

17 FACILITATOR SENELLY: Yes. Whether or not the wells

18 could sustain needs in the future without this -- the system?

19 MR. TANAKA: Yeah.

20 FACILITATOR SENELLY: Okay. So thank you.

21 (Applause.)

22 FACILITATOR SENELLY: Mahealani Wendel.

23 MS. WENDEL: I'm going to waive my time.

24 FACILITATOR SENELLY: Okay. Mahalo.

25 Lloyd Fischel. Lloyd.

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 MR. FISCHEL: Thank you. Thank you, ma'am.  
 2 Just a few, a few things I'd like to see the EIS  
 3 address. Of course, I'm a farmer and we all have to recognize  
 4 that most of the food that we eat, maybe even more than 90  
 5 percent is imported. And being where we are, given the  
 6 problems in the world today, given what could happen to the  
 7 cost of petroleum, of oil, of energy, this decision must  
 8 reflect an understanding of the importance of small farms  
 9 growing food for Maui.

10 (Applause.)

11 MR. FISCHEL: It's insanity to think of giving all  
 12 that water to one company, one company that has not been a  
 13 good partner with small farmers over the years, one company  
 14 that has spewed lots and lots of chemicals into the air, into  
 15 the ground. One company that's in partnership with who?  
 16 Monsanto. It's insanity to think that they would get this  
 17 water and that we would call it the people's water, that we  
 18 would think that the water then would be used for growing  
 19 crops. As Mr. Balthazar said, it's so important that this  
 20 water must be used for agriculture and not developments.

21 And the second thing I want to mention is in the --  
 22 in the documents that have been put forward up to this point,  
 23 as in the screen presentation earlier, the word "state owned  
 24 land" was used. The EIS should address: What does that mean,  
 25 state owned land? Who is the state? And where are the

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 Hawaiian rights within that concept of state owned land? And  
 2 any of you working on this EIS that can talk about having  
 3 Hawaiian friends and loving Hawaiian people and loving  
 4 Hawaiian culture that don't then address this issue, it's  
 5 really a (inaudible).

6 And the second thing is in this -- words that have  
 7 been used here in these papers and in the screen as well,  
 8 "government owned waters." It said government owned waters.  
 9 I'd like the EIS to define what does that mean, government  
 10 owned waters? Thank you.

11 (Applause.)

12 FACILITATOR SENELLY: Okay. You had two things.  
 13 The first one was -- the first one was make sure that the --  
 14 you want the EIS to address having the water go to small  
 15 farmers or, you know, like diversified and small farmers and  
 16 not just industrial type; right?

17 And the second thing is define what state owned  
 18 lands means and also define what state owned water means.  
 19 Okay.

20 MR. FISCHEL: I'd like to add one more thing to  
 21 that, please.

22 FACILITATOR SENELLY: Okay.

23 MR. FISCHEL: And I think it should address what is  
 24 happening to the water today? From the time that the farming  
 25 of sugar cane stopped to today, what is happening to that

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 water? Is it being dumped? In a world where water -- people  
2 die for water, is it being dumped? We should know.

3 FACILITATOR SENELLY: Okay. Thank you.

4 John Gelert. Yes. Yes, sir.

5 MR. GELETT: Hello. My name is John Gelert and I'm  
6 a resident of Kihei. I've been a Maui resident for seven  
7 years.

8 I would like the IIFS to address the needs of Native  
9 Hawaiian farmers and also the environmental concerns. So I  
10 believe that every stream should allow at least some water to  
11 go to the ocean to take care of the needs of these -- so that  
12 the environment is healthy and that the Hawaiians have more  
13 than enough for taro and other needs. As far as the rest of  
14 the water that is diverted, I fully support use for only  
15 agriculture with the exception of what is needed already for  
16 Upcountry.

17 And also the court did say that -- that the water is  
18 not allowed to be diverted any more, but then A&B and their  
19 lobbyist got the legislature to overturn that, so that is --  
20 that is wrong and this water should not be going to A&B. This  
21 is the people's water and we need to have more sustainable  
22 agriculture here in Hawaii, so I would say whatever amount  
23 that is determined by the IIFS, it should be subject to review  
24 as more and more farming is actually done, but never to  
25 totally divert all of the water from any stream.

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 FACILITATOR SENELLY: Thank you. And just for  
2 clarification, the EIS and the IIFS process are parallel  
3 processes. So there's things that found in the EIS, the --  
4 actually, the IIFS will be -- that decision is not going to  
5 depend on what the EIS is.  
6 Am I correct?  
7 But we also understand the things that you said you  
8 want to see studied in the -- we'll just make sure it's in the  
9 EIS, that portion of it.

10 MR. GELETT: Thank you.

11 FACILITATOR SENELLY: Okay. Darren Strand.

12 MR. STRAND: Okay. Thank you.

13 I'm Darren Strand. I'm one of the owners and  
14 operators of Maui Gold Pineapple Company in a farm of about a  
15 thousand acres below Makawao Town and above Halimaile. All  
16 of our property, the ditch borders -- the upper ditch borders  
17 every single acre that we farm and we use absolutely none of  
18 the water from the ditch and we haven't since the very first  
19 instream flow standard was set and I guess that's been several  
20 years.

21 And, you know, I worry mostly about the farmers at  
22 the end of the system that are in Kula Ag. Park. And I see  
23 the ditch every day, there's not much water running through  
24 it, it's already in a state of disrepair and it needs to be  
25 maintained already or we're going to lose the capacity to get

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 water to the last reservoir at the end of that that the  
2 farmers in the ag. park use.

3 I -- before I moved to Maui I was -- I worked at  
4 Del Monte Pineapple on Oahu in 2004 and 2005 when the Waiahole  
5 Ditch situation was going on and it was -- I was new to Hawaii  
6 at that time, I'd just finished at UH, and it was a  
7 contentious issue, but they were able to come to an  
8 understanding or some kind of agreement, a compromise. And  
9 there were -- at that time Del Monte closed and there was  
10 Larry Jeff, Saloon Farm, a seed corn company, and no other  
11 farmers using the system, but there was a cooperative that  
12 maintained it. And if you go to that area now, it's been, you  
13 know, maybe 10, 12, 15 years, it's amazing how many farmers  
14 are on that land and using that system. And so I'd like to,  
15 you know, see us come to a balance, a compromise, and have the  
16 foresight to think about what that area might look like in 10  
17 or 15 years and not make a decision that's just based on what  
18 we think we want today.

19 FACILITATOR SENELLY: Thank you.

20 (Applause.)

21 FACILITATOR SENELLY: Martha Martin. Yes, ma'am.

22 MS. MARTIN: Thank you. I appreciate all of the  
23 work that is being done on the EIS. I think it's going to be  
24 a very interesting document. And some of my comments that I  
25 have I think go -- should be directed to the Department of

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

Land and Natural Resources, not to the EIS.

I have -- I've lived on Maui for 50 years and I see  
that agriculture is changing on Maui. We're not going to have  
a big mono crop cultivation of sugar that we -- and pineapple  
that we used to have. And so what I would like added to the  
EIS is for the EIS to address the condition of the ditches and  
the amount of water leases that exists today. It may be in  
there, but in my hurried look at it on the computer, I didn't  
see anything that reported that, the condition of the ditches  
and the amount of leakage in the ditches.

Also I would like the EIS to recognize what the  
priority is for water use. To me, that land that they're  
drawing water from is watershed and the primary use of the  
water should first be watershed and stream protection and  
forest preserve.

And the -- for me, the second priority should be the  
farmer taro users of the streams and restoring flow of the  
water in the streams which maintains animal and reef life in  
the ocean.

And then I think the third user that should have  
priority should be the county.

And then No. 4, I think the small farmers, both old  
and new, should get priority because we don't produce enough  
of our food locally. And when sugar and pineapple were grown,  
they didn't support our state with enough diversity.

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com



1 And then No. 5, the last bidder allow -- the last  
 2 bidders allowed to bid I think should be corporations and I  
 3 think they should get only short-term leases, not -- not  
 4 30-year leases.  
 5 (Applause.)  
 6 MS. MARTIN: And I think bidders who are working to  
 7 make Hawaii more self-sustaining in food and energy should be  
 8 given priority over private profit.  
 9 And so thank you for this chance to speak and I hope  
 10 we're going to make a good decision on this.  
 11 FACILITATOR SENNELLY: Thank you.  
 12 (Applause.)  
 13 FACILITATOR SENNELLY: Those five things will be  
 14 addressed in the EA.  
 15 Edwin Young. Hi, Mr. Young.  
 16 MR. YOUNG: Hi. My name is Edwin Young and I agree  
 17 with that EMI should have some water, but they cannot take all  
 18 of the water. Because I'm a uni fisherman, yeah, and from  
 19 1990 is when EMI started taking all the water from all the  
 20 ditches. I mean, Makapipi -- I live in Hana. Makapipi was  
 21 bone-dry for years all the way up until when the sugar cane  
 22 closed and then they let go a little bit of water. And  
 23 Honomanu was bone-dry and no akule came inside those bays.  
 24 Hana Bay, Honomanu, we used to fish all the way, all the way  
 25 to Kaupo. And when EMI took all the water, then the akule

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 would come inside Hana Bay maybe about once every three  
 2 months, once every four months. And before that, akule used  
 3 to come inside Hana Bay every week when all the rivers were  
 4 flowing prior to 1990. And since they let go of the water,  
 5 like when EMI -- HC&S closed, when they let go of the water,  
 6 we would -- right now we're catching akule like pretty much  
 7 every other week in Hana and Honomanu too. Because I used to  
 8 fish Honomanu all the way to Kaupo to Nuu.  
 9 And I went to Honolulu Institute of Marine Biology  
 10 for one year as a biologist technician for Makai Pacific,  
 11 yeah, and wherever the fresh water enters the ocean, it's  
 12 known as an estuary. These are all estuaries and estuaries  
 13 are all nurseries for all your baby fishes and all your baby  
 14 fishes lives on phytoplankton and zooplankton. Phytoplankton  
 15 is one-cell vegetables and zooplankton is one-cell animal.  
 16 And that's what the akule like to eat and all your baby  
 17 fishes, they come inside to eat that. And since EMI started  
 18 taking all the water, about 90 percent of our fish in Hana has  
 19 disappeared, 90 percent. And, you know, I can tell you  
 20 because plenty people in Hana notice this too, I hardly see  
 21 any uu anymore.  
 22 And the HRS -- the HRS on the water code, yeah, the  
 23 water code for the HRS -- and I asked my cousin, who's a judge  
 24 in Honolulu, and I said, "What does HRS stand for, Greg?"  
 25 And he goes, "Hawaii Revised Statute."

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 I said, "Is that law?"

2 He said, "Yeah, that's the law."

3 And I forgot the -- the code for HRS, you know,  
4 which law it is, but it says you can take water from the  
5 stream, yeah, but you cannot take all the water from the  
6 stream, you have to leave water in the stream for hihiwi,  
7 opae, oopu, and stuff like that. But the water commission  
8 gave EMI permission to take all the water from Honomanu  
9 bone-dry and from Makapipi bone-dry and to me that's -- the  
10 law is the law. But the water commission make excuses to  
11 bypass that law to give A&B all the water, to me that's  
12 totally wrong and how can a big corporation with all the money  
13 and everything like that -- well, for one thing, what's her  
14 name, Meredith Ching was on the water commission, that's --  
15 and she's an employee.

16 And then last, but not least, you guys should have  
17 this meeting in Hana for people that (inaudible) --  
18 (Audience response.)

19 MR. YOUNG: You know, 'cause the Hana people can't  
20 come out here and -- you know, I was out here, so I was  
21 fortunate to come over here and talk.

22 And one, the -- you know, your EMI man over there,  
23 yeah, first thing he should do is make sure that there is  
24 water in all the rivers and, secondly, to help protect our  
25 environment, you know. I -- the taro farmers, I agree with

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 all what the taro farmers are doing, but nobody's speaking up  
2 for the fishermen. And the people in Hana, we live off the  
3 fish, yeah. When we catch akule, we invite everybody to come  
4 down and help take the fish out of the net, because I'm not  
5 gonna take 5,000, 6,000 fish out of the net, I'll be there for  
6 two days. But the people come down and they take the fish out  
7 of the net and we give the fish away, we don't sell any fish  
8 in Hana, we just give it away to the people. Like you, maybe  
9 for a pretty average size catch, you're gonna get eight, your  
10 husband gonna get eight, you got two kids, they get half  
11 share, they're gonna four each, so that's eight, that's 24  
12 fish you're taking home, that's like about 20 pounds of fish.  
13 And when you don't -- when you don't have this, then that's  
14 why we -- we don't have our supply of fish, yeah, and we gotta  
15 go store. Okay. Anyway, that's all I have to say.

16 FACILITATOR SENELLY: Okay. No, no, no. So my  
17 understanding would be --

18 (Applause.)

19 FACILITATOR SENELLY: What I heard was two -- and  
20 you gave a lot, but the two main things I heard that you want  
21 to see in the EIS is the impact of the stream diversion on the  
22 shoreline, the shoreline environment, and the second thing I  
23 heard was you -- how much water is being taken out of the  
24 stream. Because you said a couple things and so kind of like  
25 having a better idea of how much water is being taken out of

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 each stream or the streams. Is that correct?

2 MR. YOUNG: They take all the water.

3 FACILITATOR SENNELLY: Okay.

4 MR. YOUNG: Not leaving any water.

5 FACILITATOR SENNELLY: Okay.

6 MR. YOUNG: Only when there's rain, it overflows.

7 When the dams overflow, I've seen the dams, that's the only  
8 time we have water. But now we have water all the time  
9 because -- since HC&S closed, then I guess they opened up some  
10 of the dams, yeah.

11 FACILITATOR SENNELLY: Thank you, Mr. Young.

12 MR. YOUNG: Okay. Thank you very much.

13 FACILITATOR SENNELLY: Michael Pasco.

14 MR. PASCO: Aloha mai kakou.

15 AUDIENCE: Aloha.

16 MR. PASCO: I'm Michael Pasco. I want to save some  
17 of the comments about the taro farmers and about the  
18 agriculture, those -- those remarks were spoken for it seems  
19 like well today. But touching on a little bit the minimum  
20 flow standards, I know that's part of the CWRM process, but I  
21 just want to make sure that when we're looking at the  
22 ecosystems here, the CWRM process, that it's ecosystem based  
23 and not the needs of A&B based about what can be taken from  
24 the -- taken from the streams.

25 And I echo those comments about maintaining mauka to

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 makai connectivity not just for the health of the fishes for  
2 the fishermen, but, you know, I just want people to make sure  
3 we're keeping track of the fact that the fishes that are  
4 produced on East Maui side, they don't just stay and effect  
5 East Maui, you know, that affects the entire island and even  
6 neighbor islands. And especially when we have like 80 percent  
7 or so of our modern economy based on visitor industry and  
8 stuff like that, a lot of us here have jobs that are connected  
9 to the visitor industry and we need to make sure that we're  
10 protecting those resources also for our economy.

11 The other thing I want to talk about is the  
12 ecosystem-based flow standards, I want to make sure that we're  
13 also keeping enough movement in the water to keep the mosquito  
14 populations down because the mosquitos, when the -- when the  
15 stream flow gets too low, the mosquito populations come up and  
16 that affects the native birds. And we need to make sure we're  
17 protecting all of the native resources, the native plants, the  
18 native birds, you know, with the -- without those native  
19 animals or plants, you have no Native Hawaiian culture and we  
20 need to sure to be protecting those things.

21 The other thing that we're talking about with the --  
22 with the water is we're talking about this being such a --  
23 such a cherished resource, so I want to make sure the EIS is  
24 addressing the management of that resource. We're seeing, you  
25 know, like 20 percent or so leakage and seepage and that

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 doesn't sound like treating this resource like the valuable  
 2 resource that it is.  
 3 And the last thing I want to say, the -- when we're  
 4 talking about sustainable local agricultural for food  
 5 production, I want to make sure that we're looking at it with  
 6 the -- with the aspect of what's happening in the other parts  
 7 of the world. Like the other gentleman was saying, there's --  
 8 particularly California, you know, we're looking at the  
 9 Oroville dam situation and I know that impacts so much of the  
 10 food that is produced in Southern California. And they're  
 11 talking about -- worrying about that dam failing and what  
 12 that's gonna do to all of the food prices that all of us pay  
 13 since we're not producing enough food on island. So I hope  
 14 that that's factored into this decision-making process about  
 15 where we're going to be getting our food if events in the  
 16 world make it so that we were not getting as much from across  
 17 the ocean.  
 18 And I guess lastly I just want to state that, you  
 19 know, because over the years we've seen that A&B has been such  
 20 poor stewards of the -- of the resource, flushing stuff out to  
 21 sea when they're not use it, I want to make sure that we have  
 22 public access to the -- to the ditches so that way some  
 23 verification can take place, because we haven't been able to  
 24 count on the words and actions of A&B over time to manage our  
 25 resources. So that's all I want to say.

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 (Applause.)  
 2 FACILITATOR SENELLY: So that last point actually is  
 3 related to the -- your second point where you talked about the  
 4 condition of the system itself, yeah?  
 5 MR. PASCO: Yeah, yeah.  
 6 FACILITATOR SENELLY: Thank you.  
 7 UNIDENTIFIED SPEAKER: But be more transparent;  
 8 right? You got that point?  
 9 FACILITATOR SENELLY: Okay. More transparent.  
 10 Okay.  
 11 UNIDENTIFIED SPEAKER: Because they have not been.  
 12 FACILITATOR SENELLY: Thank you.  
 13 Moke Kahiamopu.  
 14 MR. KAHIAMOE: Kahiamoe.  
 15 FACILITATOR SENELLY: Kahiamoe. Moke Kahiamoe.  
 16 MR. KAHIAMOE: My name is Moke Kahiamoe. I come  
 17 from Huelo. I live by the stream. My family all from there  
 18 from way back when they started doing the ditches.  
 19 The thing I like you guys to remember when you  
 20 looking at all this, everybody, the county (inaudible). I --  
 21 for right now, the -- you trying to take care of your --  
 22 there's so much to take care of this world going on, but I  
 23 only can take care so much and the first thing is my ohana.  
 24 So because now your parents getting older, sick, this, that,  
 25 you get pulled away from the actual water situation going on.

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 So the thing that I want to address is that this 30-day  
 2 window, we gotta come in and make one decision, you know,  
 3 that's pretty quick, yeah.

4 FACILITATOR SENELLY: Actually, it's not to make a  
 5 decision, what --

6 MR. KAHIAMOE: But either way --

7 FACILITATOR SENELLY: Yeah, yeah, yeah.

8 MR. KAHIAMOE: We pick out points because what we  
 9 talking about, 30 days is nothing, yeah.

10 FACILITATOR SENELLY: So what's going to happen is  
 11 what you guys tell us during these 30 days is what they have  
 12 to study, which will probably take months. So the things you  
 13 bring up, that is the basis for the studies that they're going  
 14 to look at. Your comments will be in the EIS and it'll help  
 15 frame what is in the EIS.

16 MR. KAHIAMOE: Okay.

17 FACILITATOR SENELLY: Yeah.

18 MR. KAHIAMOE: Okay. That's what I was --

19 FACILITATOR SENELLY: Okay.

20 MR. KAHIAMOE: -- gonna bring you back to here.

21 Because we've been going through this problem for way hell a  
 22 long time. And probably me, I'm gonna (inaudible) before this  
 23 thing get done, because there's other people, our parents,  
 24 going, my grandparents going. Our cousins, they leave Keanae.  
 25 They (inaudible) started all this stuff. We're talking about

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 the same kind of things going on. But you know what, the  
 2 water has been going. I live by 'em, I go up, I check all the  
 3 time, yeah.

4 Things are changing, the environment change, the  
 5 trees not growing because they took the water away, you know,  
 6 and something else that stay inside the land right now that we  
 7 found out -- I went up and I seen something that is -- that  
 8 is -- I have never seen in my -- since I was born stay in the  
 9 stream. Now, whether or not it came -- if people threw it and  
 10 it went in the water or the water wasn't there, that's why it  
 11 grew up, I don't know. It's lot of stuff. So one we need to  
 12 look at is that not only the streams that carry the water, but  
 13 the places where the water do reach, but it's through spring,  
 14 not necessarily on that water -- I mean that river itself,  
 15 need to look at.

16 And then the next thing is when we dam stuff --  
 17 because I see the water come, go, come and goes, so I don't  
 18 know where the thing going. I think -- I don't see 'em  
 19 coming, yeah.

20 FACILITATOR SENELLY: So we've heard this before  
 21 too, you want to know what the flows are and that -- how it's  
 22 managed and stuff, yeah, where the flow goes.

23 Are you signed up?

24 MS. KAHIAMOE: No, but I'm his daughter. Can I say  
 25 something really quickly?

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com



1 FACILITATOR SENELLY: You gotta talk like him then.  
 2 (Laughter.)  
 3 FACILITATOR SENELLY: No, no, no. Tell us your  
 4 name. Tell us your name.  
 5 MS. KAHIAMOE: I can talk like him.  
 6 FACILITATOR SENELLY: Okay.  
 7 MS. KAHIAMOE: My name is Kahikina Kahiamoe. I live  
 8 in Huelo. And I think the EIS should address the people that  
 9 actually gets the water.  
 10 FACILITATOR SENELLY: Okay.  
 11 MS. KAHIAMOE: As far as -- I see the environmental  
 12 issues as far as the fishermen and the farmers, but I'm  
 13 talking about the people like myself, because I -- these  
 14 clothes that I'm wearing, I wash them from that water that  
 15 comes from that stream. We bathe in that water, you know, we  
 16 wash our dishes, everyday use comes from that water. So I  
 17 would like them to address the people and their normal daily  
 18 lives that they need to do and that water that comes to their  
 19 house.  
 20 FACILITATOR SENELLY: The social part.  
 21 MS. KAHIAMOE: Exactly. The modern day living.  
 22 FACILITATOR SENELLY: Okay. Everybody, I diverted,  
 23 'cause I let her talk, but we will still try to stay in order.  
 24 Okay?  
 25 MS. KAHIAMOE: Okay. Thank you.

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 FACILITATOR SENELLY: Thank you.  
 2 (Applause.)  
 3 FACILITATOR SENELLY: Alex Franco.  
 4 MR. FRANCO: Right here.  
 5 FACILITATOR SENELLY: In the back.  
 6 MR. FRANCO: Thank you.  
 7 My name is Alex Franco. I'm with Maui Cattle  
 8 Company. A number of years ago a group of ranchers got  
 9 together to form the company in an effort to try and keep our  
 10 cattle home for the local marketplace. For a number of years  
 11 our cattle has been shipped to the mainland to supply the  
 12 markets there and the local ranchers felt that, gees, we  
 13 should try and keep our cattle home to try and develop a local  
 14 market. And we were very fortunate that as we got into the  
 15 local market, there was quite a bit of demand for our product  
 16 and people sought after our local products. Unfortunately,  
 17 one of the things that happened five years into our company is  
 18 we hit a six-year drought that really impacted the ranching  
 19 community here on Maui as well as the rest of the state. And  
 20 what that did is it pretty much diverted the market share of  
 21 cattle coming into the marketplace back to the mainland again  
 22 because we couldn't sustain those animals here.  
 23 And with water being available to come to the  
 24 central valley, it does provide an opportunity for the  
 25 potential of irrigated pasture that we could keep more of

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 these cattle here at home. But at the same time, we feel it  
 2 is very important to have a shared use for the water and  
 3 realize the importance of what the taro farmers need, but,  
 4 again, just here expressing the concerns of the drought for  
 5 our industry and the need to supply water for all of us that's  
 6 in agriculture here in Hawaii. Whether we're small farmers or  
 7 larger farmers, we all need the water, so I'm here to try and,  
 8 you know, ask for support for water being supplied to bona  
 9 fide farming.

10 FACILITATOR SENELLY: Okay. So -- and you want to  
 11 see the impacts of the proposed action on the Central Maui  
 12 side?

13 MR. FRANCO: That's correct.

14 FACILITATOR SENELLY: Okay. Thank you.

15 MR. FRANCO: Thank you.

16 FACILITATOR SENELLY: Brian Wittman.

17 MR. WITTMAN: That's me.

18 As I'm talking if -- I'm Brian Wittman. I live in  
 19 Huelo on Hanehoi Stream near Moke.

20 Earl, could you put up a map that says "Use Area"?  
 21 It's about, I don't know, ten slides back.

22 I notice almost all of these comments are about  
 23 socioeconomic because we're people and we have to make a  
 24 living and we have families. And we care about the individual  
 25 species, but we're pretty much all talking about ourselves and

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

our family and our history.

FACILITATOR SENELLY: Is this the map?

MR. WITTMAN: That's a good map.

FACILITATOR SENELLY: Okay.

MR. WITTMAN: That's a good map. Thank you.

I think that A&B is asking for too much and they're  
 too big. So I think when you guys are making the EIS, you  
 should make it with a more reasonable request in mind, not the  
 request for all that water for 30 years. I think they're  
 asking for too long a time and I think also, unfortunately,  
 they're not giving back enough.

And I think one of the things that maybe all of us  
 should realize, all these ditches are up here, right, these  
 were built by steam shovels back before diesel. Right? They  
 were built by Chinese labor, German engineers. We still have  
 German Hawaiians, Chinese Hawaiians. Right? Huelo is a  
 community that actually came from EMI development, it was a  
 fringe area in Hawaiian times, but it became kind of a central  
 part of EMI and it's in Kailua where they maintain the  
 ditches.

And I know some of those ditches, I don't know all  
 of them, but they go around here, right, and they come over  
 here and this is all A&B's land. Now, me, I just have about  
 four acres there, so I'm not even talking about me. I'm on  
 rain catch, so I'm talking about all you guys, the whole

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 island. I think if A&B wants to make a reasonable request,  
 2 they should think about, first of all, where are we gonna put  
 3 the water we're asking for? As it is, what they're doing is  
 4 they're asking to just have the water, have the water, have  
 5 the water, put it in the field and let it run down in the  
 6 ocean.

7 Now, wouldn't it be smarter for them to take some of  
 8 their 30,000 acres -- that's a lot. I've got four, they've  
 9 got 30,000, okay, 30,000 acres. Why not build a reservoir?  
 10 Okay? I drive around here like below Haliimaile, it looks  
 11 like there's kind of a scoop, below Pukalani there's a kind of  
 12 a scoop. I think that they -- if they were smart, they would  
 13 say, Okay, we have a lot of land, we should build a reservoir  
 14 and we should just ask for the overflow.

15 FACILITATOR SENNELLY: Okay.

16 MR. WITTMAN: Instead of asking for the main flow,  
 17 we should say, You guys can have all the main flow and when  
 18 you get storms in East Maui, when there's too much water,  
 19 that's when we take ours and we put our water in a reservoir  
 20 and then we can have what we need and you guys can still have  
 21 everything you need.

22 FACILITATOR SENNELLY: Okay. So it's a matter of  
 23 distributing, of storing and distributing differently than  
 24 what is -- so it's another --

25 MR. WITTMAN: A&B needs to invest. They haven't

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 invested since the 19th Century.

2 FACILITATOR SENNELLY: Okay.

3 Alice Lee. Hi.

4 MS. LEE: Thank you.

5 Good afternoon. Aloha, everyone. My name is Alice  
 6 Lee and I'm a lifelong resident and community volunteer in  
 7 Maui County.

8 I think it is of the utmost importance that the EIS  
 9 be fair, balanced, and representative of a wide range of  
 10 interests that will benefit the community as a whole. These  
 11 are my concerns.

12 What will be the impact on the over 35,000 residents  
 13 in Upcountry who rely on EMI for water? Will Upcountry water  
 14 rates be raised if the county cannot get water from EMI? How  
 15 will the county be able to provide additional water to  
 16 Upcountry due to normal population growth?

17 With Nahiku, will Nahiku water rates go up if the  
 18 streams are restored?

19 Flood control is a significant problem now that the  
 20 Iao Stream or Wailuku River has been substantially restored.  
 21 With water constantly running in the stream, it is difficult,  
 22 almost impossible to maintain the streambeds and control  
 23 vegetation which allows the water to rise in the stream and  
 24 increasingly pose a threat to human lives and property damage  
 25 especially in times of heavy rains as we experienced in

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 September. Will the restoration of East Maui streams cause  
2 the same problems?

3 For over 100 years the stream diversions have  
4 contributed to the recharge of Maui's aquifers. What will be  
5 the impact of reducing recharge? What will happen to A&B  
6 land, over 30,000 acres, with and without stream diversion?  
7 If the central plains no longer receive surface water from  
8 East Maui, will this not cause an environmental catastrophe in  
9 Central Maui, such as serious erosion problems, dust storms,  
10 fire hazards? Native birds and animals who thrive in the cane  
11 fields, what will become of them?

12 How will our largest economic driver, the visitor  
13 industry, be impacted if much of the land becomes arid and a  
14 blight on the formerly lush slopes of Haleakala?

15 Finally, I strongly believe diversified ag. is the  
16 best use of the former cane lands.

17 Thank you for your consideration.

18 FACILITATOR SENELLY: Okay. You said a lot, so I  
19 want to make sure I understand. A lot of it was what happens  
20 to the users, the communities, if it's not -- if they don't  
21 have that water, yeah? And what happens to water rates and  
22 things like that?

23 The other thing I heard was if it -- if you don't  
24 irrigate the Central Maui part, is it going to be dry, you  
25 know, and arid?

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 And the third thing I heard -- I mean, you said a  
2 lot of things, but I'm trying to like put it in my head.

3 Okay? One of them was also flood control, that if -- can we  
4 handle flood control with -- if all the streams were the other  
5 way?

6 Okay. Thank you.

7 Dianne Shimizu.

8 MS. SHIMIZU: Good --evening. My name is Dianne  
9 Shimizu and I'm a concerned citizen and also a member of O  
10 Maui, Inc., a nonprofit organization that advocates for  
11 affordable workforce housing, water, good-paying jobs, and a  
12 healthy economy for Maui County's residents.

13 I've lived on Maui for 66 years. For over 35 years  
14 my husband and I and my two boys lived in Upcountry Maui. We  
15 were able to build our home and raise our family because we  
16 had water for our domestic water needs. The EMI system  
17 supplied water for Nahiku and irrigation water for ag. users  
18 at the Kula Ag. Park. The possibility that these users will  
19 not continue to have that water is frightening. What will  
20 happen to the families, farmers, businesses, and schools in  
21 Upcountry Maui and in the Nahiku if EMI is not allowed to  
22 continue to deliver water? EMI needs enough water to continue  
23 to meet the domestic and agricultural needs of our Upcountry  
24 and Central Maui residents.

25 I would like to see the EIS assess the impacts on

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 housing and on our families who are struggling to find homes  
 2 if there's no water, on farmers and ranches in Upcountry and  
 3 Central Maui who depend on the EMI system for their  
 4 livelihood, on HC&S's lands without the sugarcane, and on our  
 5 hopes of food sustainability if the Central Maui lands cannot  
 6 be cultivated? Please consider these factors in your  
 7 preparation of a well-balanced EIS.

8 FACILITATOR SENNELLY: Thank you.

9 Albert Perez. Albert Perez? Oh, okay.

10 MR. PEREZ: Aloha, Albert Perez.

11 FACILITATOR SENNELLY: Aloha.

12 MR. PEREZ: I have a lot of comments and I'm not  
 13 going to read them all because I'm going to submit written  
 14 testimony, but I did want to talk about what I consider to be  
 15 A major flaw in the initial premise of the EIS preparation  
 16 notice. So there are many places where it says the proposed  
 17 action will maintain existing conditions subject to the  
 18 pending stream flow decision and those significant impacts are  
 19 anticipated for various topic areas of like geology and things  
 20 like that. To me, that is a flawed premise, you are -- sorry.  
 21 Currently HC&S is using very little water and it may be years  
 22 before they use much more. In terms of the environmental  
 23 impacts of the proposed action, it does not matter what their  
 24 stated future intent is, we have to evaluate from the existing  
 25 situation, which is that opae and other stream life are

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 currently using habitat that currently exists. The proposed  
 2 action will reduce or eliminate this habitat and that is an  
 3 impact that must be analyzed. Kalo farmers currently have  
 4 water available that will be reduced or eliminated by the  
 5 proposed action and this is an impact that must be analyzed.  
 6 So your -- I think if you -- if you go ahead on this basis,  
 7 that the entire EIS will be flawed.

8 I also wanted to say that no one is talking about  
 9 either/or, you know, it's not either Central Maui gets water  
 10 or East Maui gets water, it could be both. There's plenty of  
 11 water, but it should be used wisely. I'm hopeful that some of  
 12 the people here today will share what positive impacts they've  
 13 already seen from the increased water flow, and we have heard  
 14 some of that.

15 We need to insist that this EIS has real information  
 16 about real impacts and not just gloss over what has happened  
 17 in the past, because we can learn from that and incorporate  
 18 that into the EIS. And then I'm not going to go into detail  
 19 about what should be discussed, I'm going to leave that out,  
 20 but I did want to talk about some alternative actions that  
 21 could reduce harm to the environment and to cultural users  
 22 such as:

23 Leaving more water in the streams than A&B has  
 24 requested, using other water sources like wells or streams  
 25 that A&B already diverts outside of this lease area. Maybe

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com



1 they have enough already, maybe they don't need this, this  
2 lease.

3 Making sure that the water is used for agriculture.  
4 A&B does not have clear plans for agriculture. They keep  
5 changing it and the land is being sold, so what assurance do  
6 we have that leasing this thing for 30 years, that the water  
7 is going to be used?

8 How about growing crops that are appropriate for the  
9 environment out there in Central Maui that -- I mean, you  
10 don't have to grow mangos in the middle of the arid part of  
11 the island. Using less thirsty crops that would use less  
12 water.

13 Currently 42 million gallons per day is lost from  
14 the ditch system and the reservoirs. How about the  
15 alternative of reducing ditch system and reservoir losses?  
16 How about allowing more access to public lands so that we can  
17 see what's actually going on there?

18 Do you want stop me?

19 FACILITATOR SENELLY: I'm going to -- you said that  
20 you were going to turn something in?

21 MR. PEREZ: I am.

22 FACILITATOR SENELLY: Because it's still gonna be on  
23 record. Is that okay?

24 MR. PEREZ: That's fine.

25 FACILITATOR SENELLY: All right. And here's what

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 I'm saying, here's what I'm saying, we do have limited time  
2 and --

3 MR. PEREZ: I'm almost pau.

4 FACILITATOR SENELLY: Okay.

5 MR. PEREZ: I think it would be very important that  
6 we get actual stream flow data. We just participated in  
7 the --

8 FACILITATOR SENELLY: No, no. I'm acknowledging  
9 that.

10 MR. PEREZ: Okay. I'm just watching that finger.  
11 (Laughter.)

12 FACILITATOR SENELLY: No, no. Because I --  
13 we've heard that and I'm just acknowledging.

14 MR. PEREZ: Okay. We don't have stream flow data  
15 for each stream that's proposed to be diverted and we should  
16 have.

17 We should explore alternatives and shorter lease  
18 terms, an alternative of just leasing the ditches and roads  
19 instead of the entire 30,000 acres.

20 What about the possibility of state acquisition and  
21 repair and maintenance of the diversion system and charging of  
22 market rates for water to generate enough money for that  
23 repair and maintenance?

24 (Applause.)

25 MR. PEREZ: And then it can be administered in

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 accordance with the public trust instead of -- I mean, let's  
 2 face it, the county relying on a private corporation for its  
 3 Upcountry water system is really, really risky. What if they  
 4 change their minds, what are we going to do Upcountry?

5 And then, finally, I'd like to ask about if the EIS  
 6 could analyze -- and I don't know if this is appropriate or  
 7 not because A&B is applying for a lease, DLNR is evaluating  
 8 the impact of that lease to them, but what about the  
 9 possibility of having other bidders for a lease on these  
 10 waters?

11 FACILITATOR SENNELLY: There -- actually, that is  
 12 going to be happen.

13 MR. PEREZ: Okay, Good. And I'll wrap up here.

14 There's also a problem with the analysis in the EIS  
 15 preparation notice. It says that the -- the no action  
 16 alternative says that no entity, including A&B, would have the  
 17 right to use waters derived from state lands if they don't get  
 18 the lease, but this is not true. Downstream riparian and  
 19 appurtenant users would have that right. The water's gonna  
 20 flow and people can use it, so its incorrect to say that  
 21 nobody would have the right to use that water.

22 The other thing that I found odd was that the  
 23 preparation notice raises the possibility that continued  
 24 maintenance of the ditch system outside of the leased areas  
 25 might not be economically feasible. I don't understand why

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 that would be true outside, but not inside the leased area.  
 2 FACILITATOR SENNELLY: Okay. I'm going to -- and  
 3 we'll make -- we have your oral and you're going to turn in  
 4 your written and I -- is that okay?

5 MR. PEREZ: I am actually done.

6 FACILITATOR SENNELLY: Mahalo.

7 (Applause.)

8 FACILITATOR SENNELLY: Okay. Here's why -- I know  
 9 I'm acting of ants, so here's why. Okay? We have 15 people  
 10 who signed up and I'd really like to get through them. And  
 11 we're going to try and pau at 7:00. And as I said, what  
 12 happens is as we get closer to the time, I'm gonna ask you for  
 13 permission to extend, 'cause I really want everybody to hear  
 14 each other. Okay?

15 Cody Nemet. Nemet.

16 MR. NEMET: Aloha kakou. I'm born and raised here  
 17 and I've been a resident and active member of our community.  
 18 I'm here today to express my views and to inquire that we make  
 19 sure we are provided with a thorough and proper EIS survey.

20 I do believe in restoring our rivers from mauka to  
 21 makai and sustainability for the future of our native and  
 22 local farmers. It is also important to me that we revitalize  
 23 the life that connects mauka to makai as well for our  
 24 sustainable future. We, as a community, have concerns. The  
 25 EIS should address full disclosure to see all diversions,

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 roadways, public access areas pertaining to the East Maui  
 2 Irrigation, including maps representing the names of streams  
 3 and diversion amounts being taken for each licensed area, the  
 4 average, maximum, and minimum amount. It is important that  
 5 the community has access to this information and that we are  
 6 given facts, not generalized ideas.

7 With such a valuable resource at stake, I feel we  
 8 need to explore all options besides those proposed. But  
 9 alternatives may be using -- uses including one that involves  
 10 the use of water from less than all four license areas, a  
 11 proposal to look to shorter term leases how much -- as a much  
 12 safer way to monitor and manage compared to the proposed  
 13 30-year lease. There needs to be access for cultural and  
 14 gathering purposes, access for restoration and maintenance,  
 15 including what the future impacts will be for the future of  
 16 these purposes.

17 I see a window of opportunity to make a great change  
 18 to benefit the number one provider, not the corporations, not  
 19 the employers, but the aina. Action and reaction is the key  
 20 when dealing with so much disturbance and change. Let us be  
 21 mindful for the future and learn from our past. Mahalo.

22 FACILITATOR SENNELLY: Mahalo.

23 (Applause.)

24 FACILITATOR SENNELLY: Frank. Frank Caprioni.

25 Frank.

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 MR. CAPRIONI: Aloha mai kakou. My name is Frank  
 2 Caprioni.

3 FACILITATOR SENNELLY: Aloha.

4 MR. CAPRIONI: I'll try to keep it pretty simple,  
 5 but a couple things I think this EIS should definitely address  
 6 is all the history of Alexander & Baldwin and their connection  
 7 with the native taro farmers. And I've been fortunate enough  
 8 to be out in (inaudible) and work in the fields and hear the  
 9 frustration directly from the farmers and to see it and to see  
 10 all of these promises that Alexander & Baldwin says that  
 11 they're going to do and they never, ever do. I think that  
 12 that's crazy, craziness, you know. I can feel the frustration  
 13 from them.

14 I also think the EIS should also address alternative  
 15 measures to have somebody else maintain that ditch. I mean,  
 16 God, East Maui Irrigation, how many times are we gonna let  
 17 these guys get away with what they're done? You know, they're  
 18 obviously not good stewards, why give -- why are we gonna give  
 19 it to them? Why can't the state -- I mean, there needs to be  
 20 other options that need to be looked into, you know. And  
 21 again, I completely understand that water is life, everybody  
 22 needs water. I don't -- I'm pretty sure, I don't think any of  
 23 the kalo farmers (inaudible) are asking for all of the water.  
 24 I'm pretty sure that they've made that pretty clear, you know,  
 25 and so to throw that out there is kind of crazy. I'm pretty

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 positive they're not asking for all the water.

2 And another thing is the uncle talked about, you  
3 know, with the akule and stuff and, you know, the hihiwi and  
4 that's where all the fish spawn and stuff like that, you know.  
5 And I was fortunate enough to go down to the Wailuaiki, it's  
6 the bay east of Wailuanui, that one has two rivers that flow  
7 inside there, one of them on the far side is diverted, the  
8 other one isn't. I mean, it's night and day difference, night  
9 and day difference, the one side there has got hihiwi, which  
10 you rarely see around Maui, all the way up to the shoreline,  
11 the other one has got nothing, no reef right in front, nothing  
12 on the one. It's common sense, it doesn't take a rocket  
13 scientist, you know.

14 Another thing I'd like to say too, I think there  
15 needs to be mediation between East Maui Irrigation and the  
16 Hawaiian community, 'cause, again, there is a lot of -- a lot  
17 of lies that have been told, a lot of things, a lot of  
18 promises that haven't been up kept. And I think in order to  
19 be able to move forward, that stuff needs to be sealed up. I  
20 mean, it's just -- it's crazy. So I really hope that you guys  
21 will look into the history and really go and talk. I know  
22 there is some of the East Maui taro farmers in here and go and  
23 talk to them because they have a lot of manao to share.

24 So thank you guys for your time.

25 FACILITATOR SENELLY: Okay.

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

(Applause.)

FACILITATOR SENELLY: You know, I want to say the  
EIS will cover those topics, but the mediation effort in and  
of itself is -- is parallel.

MR. CAPRIONI: Oh, one more thing.

FACILITATOR SENELLY: Yeah, yeah.

MR. CAPRIONI: What I'd like to say too is that  
there's no -- like who -- who oversees East Maui Irrigation?  
You know, we -- on the west side where I'm from, we're dealing  
with some stuff up in streams and it's -- it's incredible to  
try and talk to somebody.

FACILITATOR SENELLY: Okay.

MR. CAPRIONI: I mean, so really quickly I want to  
say there needs to be some oversight. You know, East Maui  
Irrigation is kind of -- and, you know, one last thing too  
that kind of blew my mind, sorry, is that the East Maui taro  
farmers that have gotta get -- they've gotta get permission to  
go drive up and they only get the key one day of the month,  
this is (inaudible) and they've been there forever. Like how  
is East Maui Irrigation able to go up there all the time, but  
the local people who are from there, they've gotta ask  
permission and they only got a certain window period to go up  
there. I think that's ridiculous. I think that is  
ridiculous.

FACILITATOR SENELLY: Sir, access has been brought

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 up before.

2 (Applause.)

3 FACILITATOR SENNELLY: Okay. Adriane Raff Corwin.

4 MS. RAFF CORWIN: Here.

5 FACILITATOR SENNELLY: Thank you.

6 MS. RAFF CORWIN: Aloha kakou.

7 AUDIENCE: Aloha.

8 MS. RAFF CORWIN: My name is Adriane Raff Corwin.

9 I'm with Sierra Club Maui Group. We will also be submitting  
10 written comments, but I'll just provide a little bit of what  
11 we want to say here.

12 I'd like to say I agree with Albert Perez's comments  
13 that spoke earlier.

14 One of the main things we want to bring up is that  
15 the community has been asking for this EIS for decades and we  
16 know that that's not your fault as the consulting company that  
17 this hasn't been done, but just that there's a lot in here to  
18 address. Because the EIS should have been done so long ago,  
19 we don't have a track record, an official record of the  
20 environmental impacts that have already happened and so we  
21 need an accounting of that as to the damage that has been done  
22 by the previous diversions over all these years and so we  
23 would like to have that history and that understanding in this  
24 document.

25 Another thing is that, as Albert mentioned, that

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 there's a lot of things that are in the preparation notice  
2 that claims that there aren't environmental impacts, but I  
3 would like to just draw attention and lot of our comments will  
4 come from at the end of the preparation notice -- and I  
5 recommend everyone look at this -- the United States  
6 Department of Interior's Fish and Wildlife Service submitted  
7 comments on this preparation notice that has many, many, many  
8 excellent points as to things that this EIS needs to address,  
9 one of them being currently A&B is only taking 25 million  
10 gallons per day from the diversions when, in fact, they could  
11 take up four hundred something and in the past they took about  
12 170 per day, 170 million gallons per day during sugarcane  
13 growth. So they're only taking 25 right now and we are seeing  
14 many of the streams come back and the wildlife in those  
15 streams. And we need to have an understanding of if we -- if  
16 they start taking more than just 25 and those streams start  
17 disappearing again, that's a major environmental impact  
18 because we've gotten some restoration and we -- so we need  
19 that addressed.

20 There's a lot of other great points and, again, I  
21 recommend everyone read this document that's at the end of the  
22 preparation notice including, yes, different --

23 FACILITATOR SENNELLY: You mean the letters?

24 MS. RAFF CORWIN: Yes, the letters. So the letter  
25 from U.S. Department of the Interior, Fish and Wildlife

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com



1 Service.

2 Different lengths of the lease is another thing we'd

3 love you to address. There's a lot in here, but, yeah, I

4 would say, again, my major points, because I know everyone

5 else needs to speak, is we need to have a full understanding,

6 a true full environmental impact statement with primary,

7 secondary, tertiary, etc., impacts, cultural impacts,

8 environmental impact, social impacts, and the current

9 preparation notice as written is not addressing much. It is

10 skirting over the majority of these issues and so we would

11 like you to completely readdress this and look at what your

12 preparation notice is missing on these factors.

13 FACILITATOR SENELLY: Okay. Just a couple of

14 clarifications.

15 MS. RAFF CORWIN: Sure.

16 FACILITATOR SENELLY: The prep notice really cannot

17 come to conclusions about significance.

18 MS. RAFF CORWIN: Oh, I don't mean -- I don't mean

19 conclusions, but there's many things in the preparation notice

20 that it looks like you're not even going to address because

21 you claim there's no significance.

22 FACILITATOR SENELLY: Oh, that's why we're here.

23 MS. RAFF CORWIN: Right. So that's what we're

24 saying, we want to make sure that doesn't happen.

25 FACILITATOR SENELLY: Yeah. And my only point is

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 that the level or whatever of significance has not been

2 determined because the studies have -- are not being -- have

3 not been done. So I take -- I get your point, though, you

4 want it -- you want it -- I think the gentleman here says you

5 want it to be transparent and put a lot of stuff in.

6 MS. RAFF CORWIN: Well, for time reasons, I will

7 leave it at that, but it's a lot more complicated than that.

8 FACILITATOR SENELLY: I know, I know. Okay. Thank

9 you.

10 Tiare Lawrence. Okay. Are you --

11 MS. LAWRENCE: Aloha. Tiare. Over here. I'll

12 stand up.

13 FACILITATOR SENELLY: I'm sorry. No, no, no. I'm

14 the one who -- I'm short too. Sorry.

15 MS. LAWRENCE: Aloha. My name is Tiare Lawrence.

16 FACILITATOR SENELLY: Aloha.

17 MS. LAWRENCE: I'm here from. I'm a lineal

18 descendant of Keanae. My tutu wahine was from there.

19 I enjoy the bountiful akule that come in when my

20 friend Healoa gives me bags of akule, so I know that since

21 the -- since the restoration of some of the streams, that

22 akule have been coming in more frequently. And it's been mind

23 blowing for a lot of the residents out there that they get to

24 experience that. A lot of them thought they wouldn't be able

25 to experience this bounty that's been happening over the past

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 few months.

2 I'll go into details. I'd definitely like the EIS  
3 to include interviews of kapuna makua and opio from East Maui,  
4 their moku. I'm pretty sure many people in this room are  
5 willing to participate in that.

6 I would also like to request an additional meeting  
7 be held in Keanae and Hana. The kapuna go to work so they  
8 couldn't drive the two hours to be here. I believe that their  
9 voices are being left out and they should be given the  
10 opportunity to speak.

11 I would like the EIS to provide the benefits of  
12 short-term versus long-term leases.

13 The EIS should detail the impacts of the diversion  
14 of each stream, not a generalized view of the entire  
15 watershed.

16 The EIS should consider a range of alternatives.  
17 Besides the no diversions at all alternative it should reveal  
18 the impact of just diverting enough for existing county needs  
19 and the alternative of leaving enough water in every single  
20 stream so that they each receive enough to support 90 percent  
21 of stream life.

22 The EIS should disclose those areas that are pumping  
23 from A&B lands.

24 The EIS should include all past impacts such as  
25 kuleana land titles, quiet titles, and a clear explanation on

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 how A&B acquired these lands with records.

2 (Applause.)

3 MS. LAWRENCE: And present impacts to the streams  
4 (inaudible) they have more water than normal which helped  
5 increase habitat right now. If they are given the lease, the  
6 stream habitat will be killed, that is a fact.

7 As well as the impacts of the various broken  
8 infrastructure and leaks along the system.

9 Also I would like the EIS to include a map of  
10 potential lohi that can be restored. This will provide an  
11 opportunity for more kalo cultivation. Kalo farmers are  
12 unable to keep up with the current demand and the kalo  
13 industry is a multimillion dollar industry with so much more  
14 potential.

15 I would also like the draft EIS to include the  
16 following: past and present impacts on aquatic life, native  
17 plant species, invasive plant species, recreational  
18 activities, aesthetic value such as waterfalls and scenic  
19 waterways, traditional and customary practices such as kalo  
20 cultivation and gathering of oopu, hihiki, and opae.

21 I personally believe that no future subdivisions or  
22 gentleman estates should have access to surface water for  
23 development.

24 I also believe the EIS should explore policy, if  
25 passed at the county level, such as allowing gray water use

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 that would allow less use from potable sources.

2 At the very least before any lease is given they  
3 should be required to fix the ditch system and reservoirs  
4 adequately to stop wasting 41 million gallons a day.

5 And I would also like East Maui to get a dedicated  
6 water management area. Mahalo.

7 FACILITATOR SENELLY: Thank you.

8 Diane Hakamatsu. Diane? Oh, over here, over here.

9 MS. HAKAMATSU: Aloha and good evening, everyone.

10 FACILITATOR SENELLY: Good evening.

11 MS. HAKAMATSU: As a lifelong resident of Maui, a  
12 mother of two children, and a member of the Go Maui board, I'm  
13 very concerned about the issue of water for the development of  
14 future affordable housing because we all know that water is a  
15 critical component to providing any future housing. I'd like  
16 to emphasize that what I mean by affordable housing are small-  
17 scale projects that are sold at truly affordable prices, and I  
18 mean all units within the project, so our residents,  
19 particularly those in need, can benefit from home ownership  
20 opportunities.

21 FACILITATOR SENELLY: May I ask you, you're talking  
22 about areas that are already being served by the water?

23 MS. HAKAMATSU: That's correct.

24 FACILITATOR SENELLY: Okay. Thank you.

25 MS. HAKAMATSU: That's correct. And I'd just like

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 to thank you for your favorable consideration of this request.

2 FACILITATOR SENELLY: Thank you.

3 Justin Time. Is that -- Justin Time, is that really  
4 your name?

5 MR. TOMBE: People remember that one.

6 FACILITATOR SENELLY: Okay. Just checking.

7 MR. TOMBE: Okay.

8 FACILITATOR SENELLY: Just checking.

9 MR. TOMBE: Justin Tombe. (Inaudible.)

10 FACILITATOR SENELLY: Okay.

11 MR. TOMBE: Water is life and when we're talking  
12 about it here like a lease and we're making agreements, we're  
13 reviewing ones that have been made like it's an economic  
14 commodity and that's okay, but that process is incomplete if  
15 we don't remember, right, that it's more than that. So this  
16 process, I want to invite everybody participating in this  
17 process here all the way through to remember to stretch  
18 further than just the legal considerations; otherwise, we're  
19 failing our responsibility to the generations. Okay? That's  
20 how I feel it in my heart.

21 The vision of how you steward the land and the water  
22 together has to be considered in this process. Right? So  
23 it's not just water goes to someone for 30 years, they get a  
24 sign off and an agreement and a fee. It's like what's the  
25 land use that it's going to be used for? Specifically how is

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 that vision articulated? I think 30 years, again to echo, is  
 2 too long of a process. Five years, one year at a time if  
 3 that's what it takes to figure it out. And you can't do that  
 4 without accountability of the past, what has happened. Now  
 5 someone step away from the awaas in the shape that they're in  
 6 and now that it's kind of falling apart and they've made their  
 7 money and they've exported all these crops with the water  
 8 embodied in it and all that wealth off the island, and now  
 9 they're gonna step away, no responsibility to take care of  
 10 what's behind? No. That should be addressed, that should be  
 11 a part of this as well. Okay? So accountability.

12 And then for me, like I got a little chance living  
 13 over in Huelo on the Hoolawa to do a little pilot project, an  
 14 eco village in an ahupuaa kind of style. Right? And so what  
 15 that was, what is that, it's a vision of how the land should  
 16 be organized and used, how to steward the water all the way  
 17 through. Okay? So if it's going to end up being in a golf  
 18 course and there's nitrate fertilizers being dumped on there  
 19 and there's organophosphate pesticides sprayed on it and  
 20 they're gonna end up in the ocean and the fish, is that --  
 21 like if we can't address that here in the use process, then  
 22 we're not really doing the job.

23 And so I want to know from A&B what's their 30-year  
 24 vision, what do they see, where is this going, how is this  
 25 going to get used much more articulated. And I love

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 hearing -- thank you so much -- like stream-by-stream impact.  
 2 That's the kind of granularity, that's the kind of attention  
 3 to detail, that's the kind of responsibility that this EIS  
 4 process really needs to try and address even though it's  
 5 beyond its scope a little bit.

6 FACILITATOR SENELLY: Okay. Future uses, you  
 7 mentioned, to my -- there is no golf course. I mean, you  
 8 mentioned that and it's just I kind of want for the record  
 9 that, you know, we're talking about existing uses in the  
 10 central plains and all that kind of stuff.

11 MR. TOMBE: So diversified agriculture.

12 FACILITATOR SENELLY: And diversified agriculture.

13 MR. TOMBE: Right. So that's poly-culture, no more  
 14 mono-crop, monolithic institution. I'd like to see some  
 15 addressing of what the land use looks like that makes room for  
 16 small-time agriculture producers. I'd like to echo that  
 17 again.

18 FACILITATOR SENELLY: Okay.

19 MR. TOMBE: For sure. Yep. And put a plug in also,  
 20 you know, if there is a place for a pilot project for  
 21 industrial hemp to find its place on Maui here as a medicine,  
 22 as a food source, as an industrial product, then that's  
 23 something that really ought to be part of that looking forward  
 24 too.

25 FACILITATOR SENELLY: So different types of

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 agriculture, not monolithic. Okay.

2 MR. TOMBE: Yeah. Absolutely.

3 FACILITATOR SENNELLY: You pau?

4 MR. TOMBE: Absolutely. Mahalo.

5 FACILITATOR SENNELLY: Okay. Zach Williams. Sir.

6 MR. WILLIAMS: Hi, everyone. Aloha. I'm Zach

7 Williams. I'm from Lower Nahiku. I'm just here to say a

8 couple of things really quick about the EMI and what I would  
9 like in the EIS.

10 So starting from the beginning, A&B, their  
11 subsidiaries HC&S and East Maui Irrigation Company have been  
12 very deceitful in what they're saying their uses are. They  
13 said right now they've restored 100 percent of Makapipi  
14 Stream. I walked up, because we cannot drive and I'm a  
15 residence of Nahiku, I walked up to their diversion yesterday,  
16 their eastern boundary diversion because they have multiple  
17 diversion at different layers of each stream so they can take  
18 not water from one place, but multiple places in each stream  
19 and they have pumps as well, they can pump water out of the  
20 streams.

21 So on their eastern most diversion, they said they'd  
22 give us 100 percent stream flow, but I have a video showing  
23 they've opened a little door and it's about four or six inches  
24 deep where the water flows out the door and then their flume,  
25 which is right on the inside of their diversion, has as much

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 water as they could be possibly taking still flowing into  
2 their diversion. And I have video evidence of this from  
3 yesterday. And that's what they call 100 percent stream flow,  
4 they get more than 50 percent of our water. Well, I'm a new  
5 kalo farmer, but I'm a lifelong resident of Lower Nahiku. I'm  
6 struggling to get my rhodes going, but that's just wind, Kona  
7 winds for the last two weeks. And for the first time since  
8 July we've lost mauka to makai connectivity. We've had that  
9 since July of this year. So yesterday I went up to the  
10 diversion, then I went down to the bridge at the bottom of the  
11 road and into the ocean to check the mauka to makai  
12 connectivity.

13 My neighbors, the (Hawaiian name), were getting opae  
14 and because the water stopped flowing at Wahine Mo, which is  
15 about -- a pond 300 yards up from the ocean, they had to go  
16 above there to even get opae in their ponds because it was all  
17 neko, because HC&S and EMI are not giving us our fair share  
18 and they're saying they're giving us 100 percent. So I want,  
19 I guess, the definitions of 100 percent water restored to  
20 actually be 100 percent. They're like falsifying this to  
21 everybody in Maui County and the State of Hawaii saying  
22 they're giving us our water and I still no more water.

23 And as far as Auntie saying, "Oh, we're worried  
24 about (inaudible) guys paying for the water," hey, don't worry  
25 us, we'll take care, so --

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com



1 And one more thing too about the opae, the hihiwi,  
 2 the pipiwai, the (Hawaiian word), the moi, all these things  
 3 are all interdependent on that fresh water connectivity into  
 4 the ocean. But we also need accountability, we need (audible)  
 5 to come down and count the opae, count the hihiwi, count the  
 6 pipiwai, the opu. And we need this above and below the  
 7 diversions on every single river and then we can decide who  
 8 gets to take what. But until we have a precedent to preserve  
 9 our animals and our people and everybody who lives in Maui  
 10 (Hawaiian word), then I don't -- I don't see -- I don't know  
 11 where the future is going with EMI, but they need to come  
 12 forward and be way more transparent.

13 And also their water lines are all bust, they call  
 14 them broken water lines, they're just leaking water yesterday,  
 15 buried under gingers. And the EMI guys are driving by in  
 16 their trucks, there's no way they would hear that. I'm  
 17 walking by, I heard the thing, I un- -- dug under gingers and  
 18 ahui for like ten to fifteen feet with my cane knife to find a  
 19 four-inch water line completely ruptured, just busting water  
 20 they've diverted from Makapipi Stream straight into the  
 21 bushes. Where's the accountability? How long has this been  
 22 busted? I just found it yesterday, it was buried a foot  
 23 underground. If I wasn't walking, I wouldn't have heard it.

24 And lastly, I talked to Uncle Frank James, who is a  
 25 lineal descendent of (Hawaiian name) in East Maui. And I

1 think Kuihewa, Maui Land and Pine, they used to have on  
 2 Kuihewa, but they don't take surface water from Kuihewa, but  
 3 they do take water, they pump it, because it's one of the  
 4 largest aquifers we have in East Maui. And since 1990 when  
 5 they put in that pump, Uncle Frank told me that the pond, what  
 6 they call Blue Pond, is actually only running for two or three  
 7 weeks after a big storm and then it dries up completely dry.  
 8 His whole life that never happened, but since 1990 when they  
 9 put in that pump, that's been happening. And what effect did  
 10 that -- these pumps and these pumps stations have an effect on  
 11 other ahupuaas? What about the next ahupuaa in Koolau? But  
 12 we're all connected and there's been no scientific study or  
 13 research to see how our aquifers are connected. When you take  
 14 from one place, people are affected somewhere else. So they  
 15 cannot just say, Oh, this and that. We need way more, way  
 16 more scientific impact statements and, I don't know, research.  
 17 Anyway, that's all I have to say.

18 FACILITATOR SENELLY: You want more data.

19 Okay. It's seven o'clock. We have, I think, 11  
 20 more people, so can we go on to 7:10?

21 AUDIENCE: Yeah.

22 FACILITATOR SENELLY: Is that okay?

23 All right. Kamalani Pahukoa. Kamalani.

24 MS. PAHUKOA: Aloha.

25 AUDIENCE: Aloha.

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

MS. PAHUKOA: My name is Kamalani Pahukoa. Mahalo for everyone for coming and I respect everyone's comments from our country farmers to, you know, our residents and commercial users and everybody. I'm from East Maui, I'm from Keanae. I mainly come here today to give specifics on what I think the EIS should address, so I'll get to it.

So East Maui streams holds one of the worlds most diverse ecosystems and native species, mollusks to arthropods and vertebra. I ask that you honor the recommendations of our state biologists, scientists, Hawaiian practitioners, and Maui community. It is crucial that habitat mapping would be incorporated into the environmental study.

I'd like to see the estimated amount of water that is wasted from the diversions. The leakage of the water from diversions have proven to contribute to landslides in some areas of the Hana Highway. Without these studies it's hard to explain to our highways engineer the detrimental effects of waste water from these diversion pipes, the effects it can cause to erosion and landslides and whatnot. The erosions of some areas along the Hana Highway are from natural material like water; however, they are caused by unnatural waterways also known as EMI's diversions. Maintaining the natural patterns of water flow and streams is the single most important requirement for protection of native Hawaiian stream animals. So I guess what I'm saying is I'd like you to be

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

very specific and broad in your habitat mapping for the EIS. I'd like --

FACILITATOR SENELLY: What do you mean, "specific and broad"?

MS. PAHUKOA: Everything.

FACILITATOR SENELLY: Okay.

MS. PAHUKOA: I'd like to see that -- I know there's random -- it's called random --

FACILITATOR SENELLY: Sampling?

MS. PAHUKOA: -- sampling, yeah, and random insect monitoring and whatnot, but I'd also like you to consider our ecosystems, the forests, oopu, hiihiwi, and everything that flows upstream. I'd like you to conduct the EIS not just below the water diversions, but above.

FACILITATOR SENELLY: Okay.

MS. PAHUKOA: And so to wrap it up, I hope that everyone can come out to tomorrow's meeting because I know there's a lot more East Maui residents that will be able to attend tomorrow's meeting as opposed to today 'cause it's kind of far and (inaudible) and whatnot.

But I ask that all records of the EIS and data collection regarding East Maui streams be made public and updated weekly as important data collection become available. So if that's something that can be done, I'd like that to be done, you know, as soon as that data becomes available, as

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 soon as possible.

2 Other than that, I just wanted to state that I don't  
 3 support EMI obtaining this lease. I think that the county has  
 4 the resources to manage these diversions on our own. I think  
 5 that the community has the power to manage the diversions on  
 6 our own. And for people to be relying on A&B and EMI is kind  
 7 of a -- you know, we should just have more -- we should have  
 8 more -- we should more respect to those who have been managing  
 9 these ahupuaas since -- for several generations. I mean,  
 10 sustainability has been out there since the beginning and in  
 11 these streams from Koolau, from Hana to Haiku and Huelo. So  
 12 for people to say that we have to only rely on A&B is kind  
 13 of -- it's not right, yeah, because Hawaiians have been  
 14 managing our water resources since the beginning.

15 So I just wanted to say that and thank you guys for  
 16 your time. Thank you, everyone, for coming.

17 FACILITATOR SENNELLY: Thank you.

18 (Applause.)

19 FACILITATOR SENNELLY: Alohalani Smith.

20 MS. SMITH: Aloha, everybody. I'm Alohalani Smith.  
 21 I live out in Kaupo and I have also lineal descendantcy in the  
 22 (Hawaiian name) side, we grew up outside there. I am the Aha  
 23 Moku Kaupo representative. I've worked in the national parks  
 24 and DOFA in the natural resources management, but as well as  
 25 it goes with that, development is needed, you know, I'm not

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 against it. I support it, I was a carpenter too and that, I'm  
 2 looking for smart development. But before we even start with  
 3 development, we need water and we need to settle the water  
 4 issue.

5 Now, it was mentioned on the state owned land in the  
 6 40 license areas the EIS study alternative, okay, I want to  
 7 them to study, which I'm going to propose a solution: To  
 8 cancel the lease, okay, because the DLNR and the state can  
 9 take back the water system from A&B. The restoration to the  
 10 irrigation system too can be worked on. Now, they can also  
 11 work with partnerships. Just like what Kamalani was saying,  
 12 is that the people can do it. We have a lot of partnerships  
 13 right before us. Also the ohanas, okay, the ohanas can help.  
 14 And by doing this we can save money for the state by having  
 15 stewardship which was number one in the beginning.

16 Now, for example, we have this aha moku system and  
 17 it is every ahupuaa that we take care of our kuleana from  
 18 mauka to makai, even to the (Hawaiian word) where fishermen  
 19 can also benefit. Now, all of this will benefit everybody,  
 20 especially the communities that can take better care of our  
 21 own, yeah, resources, our kuleana. So the state in the  
 22 meantime will save money and make money back. Now, this would  
 23 support our water system as Maui grows, it's that simple. But  
 24 if A&B will really wants to take care of Maui, A&B should  
 25 donate the restoration of the irrigation system and train the

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 state workers or the partners as a tax write-off for the  
 2 deduction and give back to the people. There's nothing wrong,  
 3 it's that simple.

4 So thank you very much for your time.

5 FACILITATOR SENELLY: Thank you, Alohalani.

6 Elaine Wender.

7 MS. WENDER: Wender.

8 FACILITATOR SENELLY: Wender. I'm sorry.

9 MS. WENDER: My name is Elaine Wender. My

10 involvement in this issue began over 35 years ago.

11 Figure 1-1 of the EISPN shows in green what are  
 12 deceptively called EMI lands. In fact, many of these lands  
 13 have multiple owners. For instance, many people, including  
 14 myself, have interests in TMK-1-8-11 by in Waiokamilo Stream  
 15 in Keanae. These maps should be labeled accurately.

16 I submitted timely substantive comments for the  
 17 early consultation phase for the preparation of the EISPN and  
 18 received a letter from Earl stating, quote, Your comments will  
 19 be considered and a copy of your comment letter will be  
 20 appended to the EISPN, unquote. However, they were not  
 21 appended. I have not even received a reply to my written  
 22 request made a week ago that an amended EISPN be published  
 23 including my comments as well as others that were excluded and  
 24 that my comments immediately be sent to all those from whom  
 25 you originally solicited comments as well as those who made

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 unsolicited comments. I still have not received a reply. I'm  
 2 renewing that request. It is not an adequate remedy to  
 3 include in the draft EIS my comments made in the consultation  
 4 phase.

5 It's taken us over 35 years to get here. In  
 6 November of 1981 residents of Keanae and Hana through their  
 7 counsel Isaac Hall first petitioned DLNR to prepare an EIS in  
 8 this case. For 35 years A&B has fought tooth and nail to defy  
 9 this legal requirement. It took citizen activism and court  
 10 action to finally require them to adhere to the law and  
 11 prepare an EIS. So here we are, 35 years later. In that time  
 12 we've lost two generations of kupuna who fought for water  
 13 restoration and our watershed has continued to be degraded by  
 14 EMI's failure to exercise proper stewardship.

15 A&B apparently no longer utilizes water from  
 16 Waiokamilo, but this is not the same as restoration. EMI  
 17 formerly diverted water not only from the main flume at  
 18 Kukahiko, but also from numerous tributaries of various sizes  
 19 which, before the existence of the ditch, eventually found  
 20 their way into Waiokamilo Stream. This water was collected  
 21 via over two dozen diversions consisting primarily of concrete  
 22 catchment basins with pipes. EMI has cut these pipes so that  
 23 the water no longer goes into the ditch, instead it now drips  
 24 or flows onto the ditch road, creating a muddy mess and  
 25 additional habitat for invasive plants. Most of the water

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 never makes its way off the road, much less back into the  
 2 stream. When they built, the ditch and the ditch road cut  
 3 into and altered the natural terrain. Nothing has been done  
 4 to return this terrain to its original condition or to ensure  
 5 that the water not diverted actually gets into the stream.  
 6 In addition, EMI has abandoned and no longer  
 7 maintains the ditch road in the Waiokamilo area, resulting in  
 8 its present hazardous condition. They also no longer monitor  
 9 the area for miconia which I have frequently encountered there  
 10 in recent years. EMI has abandoned any responsibility for  
 11 stewardship of the watershed areas they longer utilize. Even  
 12 in the areas they still use, banyan trees, pyaemia, and other  
 13 invasive plants grow unfettered. These conditions must be  
 14 addressed in the EIS.

15 FACILITATOR SENELLY: Okay.

16 MS. WENDER: No. I'd like to finish.

17 FACILITATOR SENELLY: No, no, no. That's what I was  
 18 going to ask you and you just said it, so I'm fine. I was  
 19 going to ask you what of that you wanted in the EIS.

20 MS. WENDER: Could I please finish?

21 FACILITATOR SENELLY: Please.

22 MS. WENDER: The EIS require rules require, quote, a  
 23 description of the environmental setting including a  
 24 description of the environment in the vicinity of the action  
 25 as it exists before commencement of the action, unquote.

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 Throughout the EISPN the phrase, quote, maintain existing  
 2 conditions, unquote, is repeated. This cannot be the starting  
 3 point. We have experienced what EMI's lack of stewardship  
 4 over these past 35 years while they illegitimately held this  
 5 land without an EIS and without a valid lease, not to mention  
 6 the previous decades has gotten us a seriously degraded  
 7 watershed. There has to be some accountability and discussion  
 8 of alternative what true restoration would mean which means  
 9 that the condition of the watershed before these diversions  
 10 existed has to be considered.

11 On some streams which EMI no longer uses a  
 12 continuous mauka-makai flow has still not been reestablished.  
 13 For instance, at West Wailuaiki, the water is diverted and  
 14 then put back into the stream so that the flow is directed at  
 15 the ditch road. None of the massive ugly concrete  
 16 infrastructure has been removed. In short, the streams and  
 17 their surroundings have not truly been restored.

18 The EIS should discuss the alternative solutions.

19 One could be to restore the area to its prediversion landscape  
 20 without causing additional environmental damage. If that is  
 21 not feasible, an alternative could be to allow the ditch road  
 22 to remain and to require that it be maintained and also that  
 23 means be provided to ensure that the previously diverted water  
 24 finds its way to the stream.

Since EMI is no longer using the water from the

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com



1 Nahiku or Keanae areas and since A&B has more than enough well  
 2 water and water arising from their own lands to serve their  
 3 needs, there's no justification to include all of these areas  
 4 in the new license application; however, the EISPEN includes  
 5 all 388 diversion points. If any new lease is considered,  
 6 first restoration of the abandoned areas should actually be  
 7 completed and the lease should contain strict provisions  
 8 requiring true watershed restoration, not simply cessation of  
 9 water diversion at the end of the lease period. There should  
 10 also be a requirement that a bond be posted in sufficient  
 11 amount to carry out this work.

12 I also endorse the comments made by Forestry and  
 13 Wildlife and Na Ala Hele Divisions of DLMR, the Native  
 14 Hawaiian Legal Corporation, and the U.S. Fish and Wildlife  
 15 Service. And I encourage people here to read the EISPEN and  
 16 submit written comments. Thank you.

17 FACILITATOR SENELLY: Thank you, Elaine.

18 (Applause.)

19 FACILITATOR SENELLY: Okay. We have eight more  
 20 people. You want to go ten more minutes?

21 AUDIENCE: Yes.

22 FACILITATOR SENELLY: Okay. Let's go.

23 Tom Blackburn-Rodriguez. Are you here? Oh, okay.  
 24 Thank you.

25 MR. BLACKBURN-RODRIGUEZ: Hello. Thank you very

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 much for the opportunity to speak to you tonight and also to  
 2 see so many of my friends and neighbors that I haven't had a  
 3 chance to see in a while, so aloha, everyone.

4 My name is Tom Blackburn-Rodriguez. I live in  
 5 Kihei. My family has lived in Hawaii since 1870, that's the  
 6 Blackburn side of the family, the Rodriguez family got here  
 7 before the wall was built and we were refugees from the  
 8 revolution in Mexico and it wasn't a pretty process to be a  
 9 refugee.

10 I'm representing Go Maui, Incorporated. Go Maui is  
 11 a nonpartisan, nonprofit organization with a focus on  
 12 affordable workforce housing, water, and a healthy economy  
 13 with good-paying jobs and benefits, among other issues.

14 There are many issues to consider in the development  
 15 of this EIS and it is a challenging task. There are five  
 16 questions I would like to highlight for your consideration and  
 17 which should be answered in the EIS.

18 Briefly, first: Will the EIS cover and assess what  
 19 would happen to Central Maui if there were no agriculture  
 20 there because there's not enough water.

21 Number two, second: Will the EIS cover what can  
 22 happen to our hopes of energy and food sustainability on Maui  
 23 if the Central Maui lands cannot be cultivated?

24 Third: What about Upcountry residents? The EIS --  
 25 farmers, ranches, etc. The EIS should address where they will

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 get their water if there's no state lease.

2 Fourth: I have many friends who are in business  
3 Upcountry. Will the EIS address what will happen to them and  
4 the other businesses in Upcountry Maui if there's no more East  
5 Maui stream water?

6 Finally and perhaps most important: Will the EIS  
7 cover what development might occur if there's no agriculture  
8 in Central Maui?

9 These and other questions you will hear and have  
10 heard tonight are important and the answers will have real  
11 consequences for our community which we all love.

12 And, finally, I would just like to endorse the  
13 concept of having a meeting in Hana. Although the Maui County  
14 Council has facilities where you can do remote meetings as  
15 well, I think it's very important for the people of Hana to be  
16 able to participate fully in a meeting of this nature and  
17 strongly endorse that. Thank you.

18 FACILITATOR SENELLY: Thank you very much.  
19 (Applause.)

20 FACILITATOR SENELLY: Larry Koss. Sir.

21 MR. KOSS: Thank you for doing this and for the  
22 manner which you're doing it. It's very supportive.

23 My name is Larry Koss. I live in Wailuku. I'm a  
24 member of the Maui Farmers Union -- the Hawaii Farmers Union,  
25 although I'm not a big farmer. I'm a backyard bachelor

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 farmer. My -- I don't have all the details, the specifics  
2 that some of the people here have, but I would like to draw a  
3 distinction between a couple of things that I think would be  
4 helpful in the process. One is a distinction between  
5 systematic remediation and shifting of context.

6 FACILITATOR SENELLY: Say that again.

7 MR. KOSS: Systematic remediation, which we're doing  
8 here --

9 FACILITATOR SENELLY: Right.

10 MR. KOSS: -- dealing with water. Right? And  
11 addressing the underlying context that's driving this in the  
12 first place.

13 FACILITATOR SENELLY: Okay.

14 MR. KOSS: Because we could be -- we could be  
15 addressing this issue now in February 2017, if we don't deal  
16 with the underlying context, we could be addressing it again  
17 and again and again on the diversions. Right?

18 The other is the notion of sustainability. And when  
19 that concept first came out, I was on Orcas Island in '96 and  
20 I published a journal, a 60-page journal that we delivered to  
21 the entire San Juan Islands of 14,000 people and it draws a  
22 distinction between -- I don't use the word sustainability  
23 anymore. Most people don't know what it means, it's been  
24 manipulated and abused, and truth is: Who gets to be  
25 sustainable? Is it the top 1 percent of 1 percent? And do

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 sustain all the people that are -- all the people that are  
 2 homeless or without food, does that number sustain itself and  
 3 keep on going? So the term that I use is whole community  
 4 well-being.

5 FACILITATOR SENELLY: Whole?

6 MR. KOSS: Whole community well-being.

7 FACILITATOR SENELLY: Thank you.

8 MR. KOSS: There's no wiggle room with that. Either  
 9 everybody is cared for and it's all in the funnel, or it's  
 10 not.

11 So I have -- there's a couple of things that come to  
 12 mind for me. Number one, I think water and electricity ought  
 13 to be public trust, period, that handles a lot of issues. I  
 14 think that's a good thing.

15 And the other is -- this may sound really  
 16 outrageous, but I -- and I might get choked up doing it. But  
 17 I have an invitation for A&B that I would like to have it step  
 18 up to or be compelled to, to step up to, and that is given its  
 19 history and given what it's done, it's time to clean up its  
 20 karma and I would like to see that 36,000 acres dedicated to  
 21 public trust for the local farming, organic farming, and for  
 22 affordable housing. And that may sound too wild and crazy,  
 23 but I just need to think that we do one more -- you know, a  
 24 whole continuing series of these kinds of things across a  
 25 number of issues 'cause we're not dealing with the underlying

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 context that drives it, so --

2 FACILITATOR SENELLY: What do you want to see in the  
 3 EIS?

4 MR. KOSS: Pardon?

5 FACILITATOR SENELLY: What do you want to see  
 6 addressed in the EIS of all the things you said?

7 MR. KOSS: Well, I don't know if -- any way that  
 8 that could fit in there, you know.

9 FACILITATOR SENELLY: Okay. I appreciate --

10 MR. KOSS: I just throw it out as a possibility.

11 FACILITATOR SENELLY: Thank you.

12 MR. KOSS: Thank you very much.

13 FACILITATOR SENELLY: Stacey Sills.

14 MS. SILLS: My name is Stacey Sills and I have been  
 15 on Maui for 25 years. And there was -- the two issues that I  
 16 think I'd like to address is the six-year drought for the  
 17 Upcountry cattle farmers was noted as well as you notice  
 18 California had a ten-year drought. The issue I think that you  
 19 need to be looking at and that needs to be studied are the  
 20 actual particles tested in the water, in the people. I think  
 21 the people need to be tested as well because there is a thing  
 22 and it is called geoeengineering and it's being done over Maui.  
 23 It's shut down the Iao Valley. I am the only person in the  
 24 world who documented the bombing of Iao Valley and also the  
 25 bombing of protest -- of the protesters on the Big Island

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 Hawaii. They drop aerosol down bursts, they're filled with  
 2 aluminum, barium, and strontium. I'm sure you're gonna pick  
 3 up those particles in the environment. And I think that needs  
 4 to be studied because they can create six-year droughts,  
 5 ten-years droughts, and now they're creating a flood.

6 I just watched the same down bursts that are  
 7 happening right now in Orville that happened in Iao Valley.  
 8 They're doing the same thing. They're -- that dam's gonna  
 9 blow. Trust me, I know it, because I'm watching them.  
 10 They're exploding the same aerosols that they did here in Iao  
 11 and this is an issue, it needs to be addressed, and you need  
 12 to look at that factor in your environmental impact study.

13 It's not a joke. I know it's top secret, we can't  
 14 talk about it, but, you know what, I'm gonna talk about it,  
 15 because it affects each and every one of you. It's global, it  
 16 happens here, it happens all around the globe. I don't  
 17 know --

18 How many people know about global engineering?

19 Anyone.

20 (Audience response.)

21 MS. SILLS: Okay. That is very few. You're just  
 22 ignorant. Please educate yourself. It affects you, you're  
 23 breathing it. It happened today. It happens every single  
 24 day. They're whiting out the planet. You'll never see a  
 25 light blue sky again. Please check the particles, that's what

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 I'd like you to do on your environmental impact statement, is  
 2 protect the health of these Hawaiian people because they're  
 3 being attacked.

4 FACILITATOR SENELLY: Thank you.

5 (Applause.)

6 FACILITATOR SENELLY: Joycelyn Costa.

7 MS. COSTA: Hi. My name is Joycelyn Costa. I'm the  
 8 moku representative for Hanakualoa, but I'm a descendant of  
 9 Nahiku Mokuula on Makapipi. And my father, I'm sure you're  
 10 going to meet him tomorrow, he's 81, he was from Nahiku, his  
 11 mother was born and raised in Nahiku, her father was born and  
 12 raised in Nahiku, his father was born and raised in Nahiku, he  
 13 was taken to Kalaupapa.

14 I would like to see the original lease, I'm talking  
 15 from the 1800s, if there even is a legitimate lease, before we  
 16 even move forward. I would like to see critical data not of  
 17 today, because we've already had too much damage and  
 18 dewatering of a lot of the streams for you to even begin to  
 19 measure it. So it needs to be from the beginning, not from  
 20 the middle, not from the current, but from the beginning so  
 21 you get accurate data.

22 I have to disagree a little bit with my good friend  
 23 Darrell Tanaka that not every stream should be restored  
 24 because there was a reason in Alexander & Baldwin he found it  
 25 to be a waste which is why he decided he needed to capture all

RALPH ROSENBERG COURT REPORTERS, INC.  
 1001 Bishop Street, #2460, Honolulu, HI 96813  
 808-524-2090 courtreporters@hawaii.rr.com

1 of this water and send it central.

2 And if you go with the rule of nature, with the law  
3 of nature, it is essential when we worry about if we're  
4 underground springs and catchments underground that feeds  
5 wells are going to be able to hold the carrying capacity for  
6 elsewhere, the percolation that will be created through the  
7 restoration, you know, has anybody done a study on that? Can  
8 we -- can we restore the lands again to a more healthy  
9 environment? It's missing.

10 I find it really ironic that we don't have money, we  
11 don't have the resources for something more critical than a  
12 rapid transit rail, but we can find billions to put a piece of  
13 steel and concrete not even halfway around an island. So we  
14 need to reevaluate what is important. Economically, the water  
15 restored to the taro patches will be better for the state.

16 My father equates a bag of rice, a lot of people in  
17 here eat a bag rice, it'll last you maybe -- depending on the  
18 size of your family, a week, week and a half, cost you ten  
19 bucks. Buy a bowl of poi for the same amount, can't even feed  
20 the whole family. So multiply that to feed the family for a  
21 week and a half equivalent to that bag of rice, you've got a  
22 major economic rally, but nobody talks about it. The fish,  
23 the ocean is key if we look at -- 'cause everyone stops at the  
24 taro patch, that's okay, but if you go all the way to the end  
25 user, then at least you have a more thorough assessment.

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 Nobody talks about that.

2 And as far as environmentally conscious, you look at  
3 endangered species, the state considers a Hawaiian person to  
4 be 50 percent. My father is an endangered species, there's  
5 not many left, so you guys need to protect him too. That  
6 needs to be included in the EIS.

7 I love what this young lady said, you need to put  
8 the people, the sense of place, of the people of this place in  
9 that EIS considered, not just -- not just the river, not just  
10 the stream, not just the pohaku, not just the trees, not just  
11 the birds, but the actual human that cohabitates here.

12 FACILITATOR SENELLY: Thank you very much.

13 (Applause.)

14 FACILITATOR SENELLY: Okay. We have three more, so  
15 let's try it. Okay. Kaleikoa Kaeo.

16 UNIDENTIFIED SPEAKER: He left.

17 FACILITATOR SENELLY: All pau? He left. Okay.

18 Mikiala Puaa. Is that you? Okay.

19 MS. PUAA-FREITAS: Aloha.

20 FACILITATOR SENELLY: Aloha.

21 MS. PUAA-FREITAS: Mahalo, you guys, for holding  
22 this meeting and mahalo, you folks, for holding --

23 UNIDENTIFIED SPEAKER: Louder.

24 MS. PUAA-FREITAS: Mahalo, you guys, for holding  
25 this meeting and, you know, hearing our concerns and ideas.

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com



1 My name is Mikiala Puaa-Freitas. I'm a Native Hawaiian and my  
2 ohana has been on Maui for many generations.

3 You know, this meeting should be held in East Maui  
4 so that, you know, everyone here and you folks as well can  
5 look the people of East Maui in the eye and talk about their  
6 resource that we're trying to do all these other things with,  
7 first and foremost. Maybe consider doing an environmental  
8 impact study on the generations of East Mauians that have lost  
9 of a way of life and continue to be oppressed by these  
10 diversions, so let's start there, you know.

11 After 120 years of diverting the water, it's great  
12 that they're doing an environmental impact statement, but  
13 maybe look a little deeper and really look at what's been  
14 going on out in East Maui and not just argue and bicker about  
15 the water that should be out there and the uses that everybody  
16 wants to use their water with, you know. The people -- the  
17 things that don't have voices, you know, the -- like the  
18 natural environment out there that doesn't have voices, you  
19 know, who's going to be speaking for them? So we need to  
20 consider an environmental impact study to be done on, you  
21 know, these people that have been effected, the people and  
22 environment that have been affected for 120 plus years.

23 Secondly, I think, you know, are you guys adequate  
24 enough to do this study for a 30-year lease, you know? I  
25 mean, is that a recommendation that you folks feel comfortable

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 with, doing a study that's potentially going to influence a  
2 lease for 30 years. Maybe you recommend doing year to year  
3 if -- you know, if you can have any kind of input along the  
4 lines of that, you know. Thirty years is a long time and, you  
5 know, will your study be adequate enough for that?

6 More public involvement, oversight, and transparency  
7 and less privatization, you know, I understand the need for  
8 existing homes and businesses and, you know, ranchers and  
9 everybody that's using the water right now, but, you know, why  
10 does the people of East Maui and, you know, the environment of  
11 East Maui have to put future developments and future business  
12 ideas and expenditures on their shoulders? You should be  
13 looking at, you know, alternative water resource -- I mean  
14 alternative water uses, you know, A&B should be looking at  
15 alternative water uses, you know, whether it be catchments or  
16 swales. Yeah, like uphold their end of the bargain and --

17 You know, as a kalo farmer, you know, the reason you  
18 hear so much about kalo farming and whatnot, is, you know, as  
19 a kalo farmer you use the water and then the water continues  
20 to be used. It's not you take the water, use it for one crop,  
21 and it replenishes a different aquifer from where it came  
22 from. So, you know, that's why you hear about the kalo  
23 farmers and the water is they still have that system of  
24 sharing and using the water for, you know, the things that  
25 don't have voices. So, you know, let's really -- yeah, I

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 don't know how to end it, but that's basically my concerns and  
2 you want to follow up with. You got it?

3 FACILITATOR SENELLY: I got it. Thank you. And  
4 actually, yeah, he's writing it down too. And somebody -- you  
5 remember we have a transcriber too.

6 MS. PUAA-FREITAS: Oh, yeah, I guess you got it.

7 FACILITATOR SENELLY: Are you Sesame?

8 MS. SHIM: Yes.

9 FACILITATOR SENELLY: All right.

10 MS. SHIM: Okay. Aloha. My name is Sesame Shim.

11 FACILITATOR SENELLY: Aloha.

12 MS. SHIM: And pretty much the current state of EMI  
13 is take all and use all, that is not a resource management.

14 And it has been this way since the ditches were (inaudible).

15 Resource management is so alien to A&B and there's so much  
16 water being wasted and unaccounted for, we are truly starting  
17 from square one. There's so much to account for to consider  
18 and it affects all the people of East Maui. We shouldn't be  
19 giving all the power to EMI to determine what happens to all  
20 this water. This is a public resource and A&B is a private  
21 entity.

22 There needs to be more transparency and involvement  
23 from the Native Hawaiian community, especially the community  
24 that lives there. The Native Hawaiian community were there  
25 maintaining a communal relationship with the water prior to

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 these ditches. Their lives and future generations have and  
2 continue to be affected by the actions of a private entity to  
3 control the water. The water usage from A&B is the last  
4 priority to any water usage. If there is not enough after  
5 meeting all the kalo farmers needs, the environmental needs,  
6 the current community needs, they should get none. The lands  
7 currently used for sugarcane was never intended to use so much  
8 water. Cultivation farming should return to where it is  
9 naturally intended to be.

10 FACILITATOR SENELLY: Sesame, I must ask you, what  
11 do you want to see the EIS address about that? How do you  
12 want that, what you just say, how do you want --

13 MS. SHIM: To prioritize.

14 FACILITATOR SENELLY: Okay. Thank you.

15 Okay, everybody, we're on the next agenda item. I  
16 really want to thank everybody. I know a lot of you have been  
17 here very early, you've been very patient. You've also been,  
18 I think -- I really appreciate everybody's aloha. I mean, you  
19 folks really did kind of -- we did it. All pau. So I  
20 appreciate that very much. Thank you.

21 And Father Tomoso is going to --

22 Oh, one more thing, you know, if you're gonna email  
23 your comments, just like we said before, make sure that you  
24 get a receipt back in the email, an email receipt; otherwise,  
25 you use the comment sheet and you call us and you let us know.

RALPH ROSENBERG COURT REPORTERS, INC.

1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 Okay?

2 Father.

3 FATHER TOMOSO: (Hawaiian statement.) Almighty God,  
4 we have heard and you have been with us all night as we've  
5 talked about the gifts that we see all around us, that what is  
6 reflected in those gifts is the abundance we have that is  
7 surrounding all of us. Call us now into true stewardship of  
8 this abundance as we go forth as an island community, as an  
9 island people surrounded by water which is reflective of your  
10 own perfection as the Almighty God. Help us to understand  
11 that abundance is for everyone. Bless this island, bless the  
12 land, bless the waters, bless the sky, bless everything around  
13 us, because we are true stewards in that abundance.

14 (Hawaiian statement.) Amen.

15 AUDIENCE: Amen.

16 FACILITATOR SENELLY: Thank you, Father.

17 (The proceedings were adjourned at 7:32 p.m.)  
18  
19  
20  
21  
22  
23  
24  
25

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

1 C E R T I F I C A T E

2 STATE OF HAWAII )  
3 ) SS.  
4 CITY AND COUNTY OF MAUI )

5 I, Sandra J. Gran, Certified Shorthand Reporter for  
6 the State of Hawaii, hereby certify that on February 22nd,  
7 2017, at 5:00 p.m. the proceedings was taken down by me in  
8 machine shorthand and was thereafter reduced to typewritten  
9 form under my supervision; that the foregoing represents, to  
10 the best of my ability, a true and correct transcript of the  
11 proceedings had in the foregoing matter.

12  
13 I further certify that I am not an attorney for any  
14 of the parties hereto, nor in any way concerned with the  
15 cause.

16  
17 DATED this 13th day of March, 2017, in Maui, Hawaii.  
18  
19  
20  
21  
22

*Sandra J. Gran*

Sandra J. Gran, RPR  
Hawaii CSR 424

RALPH ROSENBERG COURT REPORTERS, INC.  
1001 Bishop Street, #2460, Honolulu, HI 96813  
808-524-2090 courtreporters@hawaii.rr.com

---

**APPENDIX L:**  
Scoping Meeting For the Water Lease for the Nāhiku,  
Ke'ānae, Honomanū, and Huelo License Areas EISPN  
Transcript of Proceedings Thursday, February 23, 2017

1 SCOPING MEETING FOR THE  
2 WATER LEASE FOR THE  
3 NAHIKU, KEANAE, HONOMANU, AND HUELO  
4 LICENSE AREAS EISPN  
5  
6  
7 APPLICANT: ALEXANDER & BALDWIN, INC./  
8 MAUI IRRIGATION COMPANY, LIMITED  
9  
10  
11 TRANSCRIPT OF PROCEEDINGS  
12  
13 Thursday, February 23rd, 2017  
14 5:08 p.m. - 8:56 p.m.  
15 Haiku Community Center  
16 137 Hana Highway, Paia, Hawaii  
17  
18  
19  
20  
21 BEFORE: DARCY J. BROKAW, CSR #371  
22 Registered Professional Reporter  
23 Certified Realtime Reporter  
24  
25

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

1

1 SPEAKERS:  
2 Berna Cabacungan Senelly, Moderator/facilitator  
3 Father John Tomoso  
4 Earl Matsukawa, Wilson Okamoto Corporation  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

2



1 PAIA, HAWAII; 5:08 P.M.  
2 -oOo-  
3  
4 MODERATOR SENELLY: Aloha, everyone.  
5 Thank you for coming. So good to see you all here.  
6 You are here for a scoping meeting for the  
7 proposed Keanae, Nahiku, Honomanu, Huelo License  
8 Areas for the proposed water lease.  
9 An Environmental Impact Statement is being  
10 done. It has not been done yet. This is the first  
11 step for it. Because there was a Preparation  
12 Notice, and this is called scoping, what we're doing  
13 here.  
14 My name is Berna Cabacungan Senelly. I'll  
15 be the facilitator tonight.  
16 This is Earl Matsukawa from Wilson  
17 Okamoto. Wilson Okamoto & Associates is doing the  
18 Environmental Impact Statement.  
19 This is Keola. You'll see him running  
20 around.  
21 And you met Rebecca when you came in.  
22 And I also have the privilege of  
23 introducing Father John Tomoso, and he will be doing  
24 our pue tonight.  
25 FATHER TOMOSO: Thank you, Berna.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

3

1 (Whereupon, the opening prayer was given  
2 by Father Tomoso.)  
3 MODERATOR SENELLY: Thank you, Father.  
4 Okay. So here's the purpose of the  
5 meeting. As I said, my name is Berna Cabacungan  
6 Senelly, and there's basically three things we're  
7 doing.  
8 Okay. We're going to talk about the  
9 Environmental Impact Statement, about what it's for  
10 and how it's going to go, the process for it.  
11 We're going to talk about the Preparation  
12 Notice, which actually starts this whole process,  
13 and what that's for and then what's in it. So  
14 you're going to hear some of that tonight.  
15 And then you'll also hear -- the main  
16 thing we're here is we're asking for input on what  
17 should be in the draft EIS.  
18 So the Preparation Notice was published in  
19 the Office of Environmental Quality Control  
20 publication on February 8th. And what that does  
21 is when it's published, it starts the EIS process.  
22 Essentially what scoping is -- and you're  
23 going to hear me ask you sometimes when you talk,  
24 I'm really going to try and clarify.  
25 What scoping does is it tells what should

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

4

1 be in the Environment- -- what should be studied or  
2 addressed in the Draft Environmental Impact  
3 Statement.

4 The law actually requires it. Chapter 343  
5 of Title 11 requires scoping as a process where you  
6 go out and you ask the community what do you think  
7 should be in this document, should be addressed in  
8 the document.

9 However, the meetings themselves are  
10 optional. And in this one, we have two just to kind  
11 of optimize what people -- to give people  
12 opportunities to provide the input.

13 So once it was published, we have -- you  
14 have 30 days to provide comments, and that will end  
15 on March 10th. There's three ways.

16 All the comments that we get will be  
17 documented in the Draft EIS. So Darcy here is  
18 patiently transcribing; so that's why, you know,  
19 when you speak and when we speak, we're going to ask  
20 you to go one at a time and speak so that she can  
21 take all the notes.

22 And at one point, by the way, we're going  
23 to break for the -- I'm just saying this to  
24 remember.

25 At one point, we're going to break from

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

5

1 the agenda, probably about 6:15 or so, between 6:00  
2 and 6:15, for about five minutes so that she can  
3 rest her fingers.

4 So one is that you provide oral comments  
5 tonight. And as we've told you, you know, people,  
6 when you came in, we said if you want to speak, you  
7 sign another paper.

8 The other thing is we gave you -- when you  
9 came in, you had a -- you got a comment sheet. So  
10 you can turn this in tonight or you can mail it. If  
11 you look in the back, you can mail it or turn it in  
12 tonight. And the third way is you can e-mail it.  
13 You can e-mail us your comments, and the e-mail  
14 address is on the bottom.

15 The one thing we ask, and I will stress  
16 this, if you do e-mail it, you're supposed to  
17 receive something back in the e-mail that says we  
18 got it. So if you don't get it, you need to call  
19 us, and the number is at the top of this page.

20 So now I'm going to turn it over to Earl.  
21 He's going to spend about 15 minutes describing,  
22 doing the EIS and the EISP description, as I was  
23 talking about.

24 I will ask you to hold your comments while  
25 he's speaking, because once he's pau, we're going to

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

6

1 open it up to everyone. Okay?

2 MR. MATSUKAWA: Good afternoon. I'm Earl

3 Matsukawa with Wilson Okamoto Corporation, and we've

4 been contracted to prepare the Draft EIS or the EIS.

5 So first question is what is an EIS. And

6 the purpose of the EIS is to disclose impacts for a

7 subsequent decision, and that decision is the water

8 lease permit that is going to be made by the Board

9 of Land and Natural Resources.

10 It is an information document. The EIS is

11 not a permit, and it is not an approval to allow

12 something to go forward. It is always used in

13 conjunction with decisions to go forward with the

14 project so that there is good information on which

15 to base the decision.

16 And again, this is for the water lease

17 permit. And although we were hired to prepare the

18 Draft EIS by Alexander & Baldwin, the documents we

19 prepare are actually all submitted to the Department

20 of Land and Natural Resources; and the Department

21 has to accept those documents and has to file it

22 with the OEC for those publication requirements.

23 So they will actually process the EIS.

24 And in the end, the Board of Land and

25 Natural Resources must accept that final EIS before

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

7

1 they can take the deliberations for the water

2 permit.

3 The EIS content. So there's two things to

4 this. So when an EIS is finally accepted, there are

5 two things that have to be met. It is the content

6 and processing requirements, and those have to meet

7 State law. Berna mentioned chapter 343. And then

8 the administrative rules under Title 11.

9 So the EIS has to meet both content and

10 purpose. And I'll be talking a little bit about

11 both.

12 So this is the content part. And this is

13 what this meeting is about. It's to add scope, to

14 determine scope for the content of an EIS.

15 Listed here are some of the major topics

16 that are covered in an EIS. It is not all of it,

17 because there are other things that we need to put

18 in the EIS, but these are the major ones that relate

19 to impact, including the general description of the

20 proposed action's various technical components,

21 including social, cultural and environmental.

22 It has to state the purpose and need of

23 the proposed action, which is the issuance of the

24 water lease, and the objectives.

25 There's also a description of existing

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

8

1 environment impacts and mitigation measures.  
2 And not yet, but on the next slide, I'll  
3 show you all the topics that are covered under this  
4 section of the existing environment.  
5 There needs to be a discussion of the  
6 action's relationship to the plans, policies and  
7 controls, whether they are consistent and where they  
8 may not be.  
9 And in the case of EIS, it doesn't have to  
10 say everything meets those plans because there could  
11 be some discrepancies.  
12 The purpose of the EIS is to bring up all  
13 the information, positive, negative. So it doesn't  
14 matter. As long as it does, then it meets the  
15 requirements for content.  
16 It also talks about the alternatives that  
17 can achieve the objectives. Are there alternative  
18 ways we can achieve the objective.  
19 And then it documents the consultation  
20 process, including this meeting today, that we dem-  
21 -- we document that this input was received on the  
22 scoping.  
23 And then there's steps that I'll go  
24 through later.  
25 Next slide. And these are the resource

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

9

1 topics that are generally covered in an EIS. And  
2 we'll be going through all of these to see how they  
3 fit in with this particular proposed action.  
4 Next slide. Okay. The EIS preparation  
5 that was published on February 8th is the first  
6 thing that's published, and that was actually filed  
7 by the Department of Land and Natural Resources, and  
8 it basically gives notice that -- to interested  
9 parties that an EIS will be prepared for the  
10 proposed action.  
11 And again, I keep repeating this, it's the  
12 issuance of the water lease.  
13 The Preparation Notice begins this scoping  
14 process that we are in the midst of right here, to  
15 receive comments on scoping the Draft EIS, which is  
16 the next document that's prepared.  
17 It also includes a general discussion of  
18 impacts, but much less than what would be in the  
19 Draft EIS.  
20 It also discusses some of the technical  
21 studies that will be done for the Draft EIS, and  
22 we're still working on trying to figure all that out  
23 and how we approach the technical studies. So that  
24 is also what we are receiving is input on.  
25 Okay. This is the process. So we went

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

10

1 over content. This is the process.  
2 So early consultation, the process began  
3 with early consultation. And this actually is not  
4 required for the type of EIS Preparation Notice  
5 we've prepared, but it is basically to give the  
6 opportunity for potentially interested parties to  
7 learn that we are starting the process and to allow  
8 anybody to give early comments.  
9 Then we prepared the EIS Preparation  
10 Notice, which was published on February 8th, and  
11 we are receiving comments on until March 10th.  
12 When we get all of that information, then  
13 we have to figure out, with all that scoping  
14 information, how we approach what will be included  
15 in terms of what will be covered by the EIS. And  
16 again, we are looking back at the law, what is  
17 required to be in the EIS.  
18 So we will start that process and then --  
19 but before we can actually finish the Draft EIS, we  
20 need a separate decision to be made, because the  
21 Commission on Water Resources Management will need  
22 to make a decision on the interim instream flow  
23 standard. That will determine how much water can be  
24 diverted through the East Maui irrigation system,  
25 aqueduct system, that can be diverted out of the

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

11

1 streams.  
2 So we need to know how much that water is  
3 before we can figure out how much water might be  
4 available through the permits. So that decision has  
5 to be made.  
6 And then based on that decision, technical  
7 studies have to be prepared using that information  
8 so that we can prepare the Draft EIS.  
9 So once we complete that process and we  
10 finish the Draft EIS, we'll turn it into the  
11 Department of Land and Natural Resources. They will  
12 review that document. If they feel that the  
13 document meets the standards for the contents, then  
14 they will file it with the Offices of Environmental  
15 Quality Control; it will be published in the  
16 Environmental Notice, and that starts the 45-day  
17 comment period where we will be soliciting comments  
18 on the Draft EIS.  
19 And then for those comments, too, we will  
20 do a written response to each of the comments and  
21 each of the points raised by comment letters. And  
22 that, we will all document, and we will revise the  
23 final EIS accordingly, and then submit that to the  
24 Department of Land and Natural Resources for  
25 acceptance.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

12



1 And when we file that, they will then  
2 publish that document. Before it is accepted, they  
3 will publish that final EIS, and that will be  
4 available for public review.  
5 And after that, the Board of Land and  
6 Natural Resources can then accept the document. And  
7 once they accept the document, then it is to be used  
8 for the basis for issuing the water lease.  
9 Make sure I've covered everything here.  
10 Okay. Now I'll just kind of go over the  
11 --summarize what was in the -- what is in the Draft  
12 EIS.  
13 First of all, there is a proposed action.  
14 The proposed action is the issuance of the water  
15 lease. The maximum amount that will be available  
16 through the water lease will be determined by the  
17 interim instream flow standard, the IIFS. The  
18 maximum that they can award through the permit will  
19 be determined by the decision made by the Commission  
20 on Water Resources Management.  
21 The proposed action also allows access  
22 through the State land in order to maintain the  
23 aqueduct system and to service roads and other  
24 pertinent things that relate to maintaining the  
25 aqueduct system.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

13

1 Now there's two key points regarding the  
2 proposed action. First of all, although the maximum  
3 amount that can be awarded through the lease is  
4 determined by the IIFS, the Board does have the --  
5 you know, that's part of the deliberation. They can  
6 change the terms of that permit.  
7 So if the board feels they want to award  
8 less, that's a separate decision. So that's a  
9 possibility also.  
10 And once the permit is determined, the  
11 actual issuance will be done through public auction.  
12 So, you know, technically, I guess whoever bids on  
13 that and wins that bid will get the permit. So it  
14 will not necessarily be Alexander & Baldwin. It's  
15 just a point to be cleared. It'll be auctioned,  
16 offered by public auction, awarded by public  
17 auction.  
18 Okay. So this is the -- these are the  
19 license areas. There are four license areas:  
20 Huelo, Honomanu, Keanae and Nahiku. So for  
21 33,000 acres of State land that's covered by the  
22 license area.  
23 And this is another map that shows the  
24 license area, the four license areas. This one also  
25 shows the ditches that are part of the aqueduct

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

14

1 system. There are several ditches and several  
2 elevations capturing water from the streams.  
3 And then these green areas are EMI lands,  
4 which the -- and so the aqueduct system passes  
5 through the EMI land as well as the State land. So  
6 the permit would be for the portions in the State  
7 land.  
8 Okay. What is the water currently used  
9 for?  
10 So these are the four areas that use the  
11 water. One is the Maui Department of Water Supply.  
12 DWS gets water, receives water from the aqueduct  
13 system at their Kamole treatment facility. And it  
14 is treated there so that it becomes potable water;  
15 and then they distribute it to upcountry Maui for  
16 both domestic and agricultural use.  
17 They also supply, similarly -- the  
18 Department of Water Supply takes water, treats it,  
19 and supplies water to the portion of the Nahiku  
20 community below Hana Highway.  
21 And then there's a direct draw that is  
22 nonpotable water, untreated water, that is delivered  
23 to the Kula Agricultural Park.  
24 And then the rest of it would go to the  
25 approximately 30,000 acres of former sugar land that

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

15

1 was in sugar cultivation.  
2 So this is just a map of these user areas.  
3 This dark line shows the distribution of the water  
4 by DWS. Nahiku is over here and would receive  
5 water. And then this is the Kula Agricultural Park.  
6 And then this is the roughly 30,000 acres of former  
7 sugar land.  
8 Again the maximum amount of water that can  
9 be awarded through the lease would be determined by  
10 the IIFS, and it is issued by public auction. And  
11 it could be less than the amount that's determined  
12 by the IIFS.  
13 But there's a normal provision, and that's  
14 whatever amount of water that is finally issued  
15 through the water lease, there is a reservation for  
16 the Department of Hawaiian Homelands that they are  
17 entitled to, and they will get that reservation,  
18 although that actual amount hasn't been determined  
19 yet.  
20 Okay. So we developed these objectives of  
21 the proposed action, the objectives of issuing the  
22 lease, the lease for the purposes of the EIS. And  
23 there are four objectives.  
24 The first is to supply the water that the  
25 upcountry Maui relies on for domestic and

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

16

1 agricultural water. So continuance of that would be  
2 very important.  
3 Similarly for the Nahiku community, that  
4 we continue to serve Nahiku.  
5 And then to provide sufficient water to  
6 the approximately 30,000 acres of sugar land to  
7 develop diversified agricultural to perpetuate  
8 Maui's agricultural economy and lifestyle.  
9 Finally, an objective is to continue  
10 operating and preserve and maintain the EMI aqueduct  
11 system.  
12 Okay. This is a map of the license area  
13 streams. There are 39 or 40 streams, depending on  
14 how you count. Apparently one of the streams, the  
15 40th stream, is actually a waterfall within a  
16 stream.  
17 And out of these -- and most of these  
18 streams are regulated by the IIFS. And of these 39  
19 or 40 streams, Alexander & Baldwin has historically  
20 diverted 37 of those streams. And then in 2007, A &  
21 B abandoned diversions on one of the streams and is  
22 committed to removing all diversions from five more  
23 streams. And these are the so-called taro streams  
24 that in the lower reaches of the stream are used for  
25 taro cultivation and other agriculture.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

17

1 Okay. Moving to the alternatives to be  
2 considered. So these are the main alternatives that  
3 we'll be considering for the Draft EIS. And these,  
4 in this initial phase, after scoping, this could  
5 change.  
6 But the first would be to assume that the  
7 permit, the water lease permit will allow the full  
8 use of the amount available through the IIFS  
9 decision.  
10 The second, second alternative is no  
11 action. So if there is nothing awarded through the  
12 water lease, meaning no state water will be awarded  
13 through the water lease, what will happen as a  
14 result of that.  
15 And then the third one, like I said, the  
16 Board of Land and Natural Resources can award less  
17 than the full IIFS amount. What would be the impact  
18 of that. So that's sort of the middle ground  
19 between 1 and 2.  
20 So that basically summarizes what the EIS  
21 Preparation Notice contains.  
22 And I'll turn it back to Berna.  
23 MODERATOR SENEALLY: Thanks, Earl.  
24 Okay. So now we're in the part where this  
25 is yours. Okay. And so we will basically -- as I

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

18

1 said earlier, the purpose of this meeting is to look  
2 at what should be covered in the -- or addressed in  
3 the Draft EIS.  
4 We are -- your oral comments -- you can --  
5 as I said, you can do paper comments, e-mail  
6 comments, but your oral comments also will be  
7 documented, and so just to keep that in mind as you  
8 speak.  
9 Before we go on to the actual comments,  
10 okay, this should be a safe haven for everybody. So  
11 everybody should feel comfortable to speak and to  
12 speak in a way that they know others will be hearing  
13 them.  
14 One person at a time, please. It's also  
15 very practical so that Darcy can, you know, catch  
16 all of the stuff.  
17 And please respect each other. You know,  
18 I know last night we had clapping, but I always tell  
19 people you can clap but don't boo, okay?  
20 And help us get every -- help us so that  
21 everybody can speak. So summarize as much as you  
22 can.  
23 If you want to turn in written to  
24 supplement, you can, but I'm just saying summarize  
25 to give time.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

19

1 And also try not to repeat. Now people  
2 have different -- they look at the same things and  
3 they see it in different ways. That's cool, too.  
4 But try not to repeat, because the more people speak  
5 about different things, the more different things we  
6 have to look at.  
7 We have two hours scheduled for the  
8 meeting, okay? So that means -- I think we started  
9 like ten minutes late or something. So, you know,  
10 technically, we should go to 7:10.  
11 As I said earlier, we're going to take a  
12 short five-minute break at around 6:15.  
13 But we really would like everybody to stay  
14 as much as possible. I think last night most people  
15 stayed.  
16 And so if we need to extend, when it comes  
17 to like 7:05, 7:10, I will ask you if it's okay.  
18 And we're going to do that every ten minutes, up to  
19 30 minutes, okay? So we're going to really try and  
20 get as many people to speak.  
21 We're going to provide -- you're going to  
22 speak in the order you signed up. And we have the  
23 sign-in sheets. I mean, you know, that one special  
24 paper.  
25 And so I would ask that everybody who did

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

20

1 sign up, to let them speak first; and if you have  
2 stuff you want to add afterwards, if we have time,  
3 you can.  
4 We will bring you the microphones. So  
5 there's two people. Keola and Rebecca will bring  
6 the microphones to you.  
7 So you guys are going to divide up the  
8 room, yeah?  
9 Okay. And before you speak, please tell  
10 us your name. So two things before we start your  
11 comments.  
12 One: The bathrooms are out the door over  
13 there, you know, right over there.  
14 And two, I really want to thank you guys.  
15 I should have said it earlier. I realized -- as I'm  
16 sitting here, I realized this room came up -- the  
17 room was put together like "poof" because everybody  
18 helped. So thank you very much.  
19 Oh, okay. So this is a question. When  
20 you talk, after you -- you know, if I don't -- I'll  
21 always ask you, if it's not really clear, what  
22 should the EIS. So you're going to talk about  
23 something and you're going to have feelings and  
24 stuff, but the end part really is: So this means  
25 that the EIS should cover this.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

21

1 I'm sorry, yes?  
2 UNIDENTIFIED SPEAKER: I have a general  
3 question about the presentation.  
4 MODERATOR SENNELLY: Yes.  
5 UNIDENTIFIED SPEAKER: My main question  
6 is -- as the presenter said, that after the EIS  
7 process is done, there will be a public auction  
8 process.  
9 So my main question is: If A & B might  
10 not win that public auction process, why is A & B  
11 the one that is in charge of commissioning you to do  
12 this EIS versus having DLNR, Department of Land and  
13 Natural Resources, to actually hire the consultant  
14 company to do this?  
15 MR. MATSUKAWA: Okay. Again, I did not  
16 read all of the court-ordered documents and how this  
17 was set up.  
18 But my understanding is that because they  
19 needed to get an EIS prepared, they asked A & B to  
20 commission the preparation of the EIS.  
21 Now, my understanding is that if somebody  
22 else wins the permit through the auction, they will  
23 need to reimburse A & B the amount of this EIS. I  
24 don't know exactly if it's a hundred percent. I'm  
25 not really familiar. But there is a reimbursement

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

22



1 that will go on if they do not win it.  
2 MODERATOR SENELLY: All right. First  
3 speaker, Dr. Pang.  
4 DR. PANG: Thank you.  
5 There's nothing special about speaking  
6 first. I was -- there was a glitch. I wasn't  
7 speaking last night. Not their fault, not my fault.  
8 So I'm really last from last night, I'm not first  
9 from tonight.  
10 MODERATOR SENELLY: It actually was my  
11 fault.  
12 DR. PANG: Okay. That's all right.  
13 The EIS, you know, I think they should  
14 address some real, how shall we say, radical things,  
15 things that we think are impossible, for a couple  
16 reasons that really are good and they're a little  
17 bit far out.  
18 But we shouldn't just look at what we do  
19 now and say, well, you know, these ten guys, let's  
20 give more to him, he'll be happier, he'll be mad,  
21 and throw a bone to the fighting dogs. You  
22 shouldn't look at your status quo and argue about  
23 the money and the water right now.  
24 And to put this in perspective, you know,  
25 I have to give you my background. I'm not from this

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

23

1 side. I'm not fighting for East water. I fought  
2 for the Na Wai 'Eha water.  
3 So this -- I have no conflict of interest  
4 in here. So sometimes people will say, well, then  
5 shut up, you're not a stakeholder. Sometimes the  
6 best people are those who have no conflict of  
7 interest and are interested enough to give a fair  
8 assessment.  
9 You don't think that's true? I have  
10 reports from Big Island people, Kauai people, who  
11 look at this and say, we have no stake in this game,  
12 so let us give an opinion.  
13 My background opinion is, already last  
14 night, they said "share the water," "share the  
15 water," "share the water." You want to know what  
16 share is? Really? To the Big Island people, the  
17 Kauai people and the Na Wai 'Eha impacted people,  
18 they said here's what share is, somebody took our  
19 water for 120 years, they took 95 percent at some  
20 cheap cost. So that's your time. Now it's time to  
21 share. The East Maui guys get it for 120 years, and  
22 then when it's 120 versus 120, let's --  
23 (Audience clapping.)  
24 DR. PANG: Stop that clapping, because  
25 people who don't get clapped for feel bad.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

24

1 So now when it's 120 versus 120, then we  
2 talk about sharing.  
3 But with that in the background, let me  
4 give something kind of practical, some far-out  
5 things which you think are impossible because we  
6 haven't done them for so long, it must be  
7 impossible.  
8 First of all, can we feed ourselves? And  
9 I don't mean ag, ag, ag. I mean food, food, food.  
10 Now if you want to say Maui, Maui. If you  
11 want to say can we kind of feed Oahu, ship some  
12 stuff over there, fine. But Hawaii has to be food  
13 self-sufficient. Okay? That means chemical --  
14 (Incomprehensible due to clapping.)  
15 DR. PANG: The minute we say, oh, look, I  
16 made so much, I shipped it out, and I'm on the world  
17 market; and then the world market gets undercut,  
18 then all the macadamia nuts get buried, et cetera,  
19 et cetera. So feed ourselves first.  
20 Now I know you're going to go through the  
21 details, and, oh, that's so expensive. Well, food  
22 security, security costs a little more money.  
23 Okay. So that's what I wanted to address.  
24 Next thing -- there's only three things.  
25 Next thing I want to say is when we feed

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

25

1 ourselves, can we do it based on smaller farmers,  
2 startup, diversified, no spray.  
3 And if you say, well, gee, I just saw the  
4 report where that's just unfeasible, well, I'm  
5 sorry, I've prepared a report, I'll give it to you.  
6 2011, I visited the Big Island guys called  
7 Wild Tomatoes. That was just a practice to show  
8 that homestead land guys had a terrific operation.  
9 It was published in the on-flight magazine. And  
10 that was just a test to show they could do tomatoes.  
11 They're going to convert to taro,  
12 high-fiber carbs. The guy's wife is off insulin  
13 because she helps a little bit in the garden. They  
14 can do it. The financial is sound. They're hiring  
15 their own family to distribute on Oahu. It can be  
16 done. The technical part is in the report, four  
17 pages.  
18 So look at that. Don't just say, well,  
19 we're going to feed ourselves and the big corporate  
20 guys say we can't do it, so we can't do it. There  
21 are alternatives. We used to. We used to do this.  
22 And the final thing is -- I really have to  
23 say this. And here's something, you say, well,  
24 that's impossible, we never did that before, here's  
25 one we never did before. But outside of Hawaii,

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

26

1 water, fresh water, potable water, water for ag, is  
2 like gold, it's like liquid gold.  
3 And people look at Hawaii, and they say,  
4 oh, look, every time it rains here, the muddy water  
5 chokes the reef, the muddy water chokes the reef.  
6 Why don't you guys catch it. So the  
7 Na Wai 'Eha -- that's the other side, right. The Na  
8 Wai 'Eha report said you catch the 17 rainiest day  
9 of Wai 'Eha -- I'm not talking about just the water  
10 on the east side -- you put it in a big -- I call it  
11 the dam, and my wife said call it the reservoirs.  
12 You put it in three big reservoirs. You don't let  
13 the water dirty the reef.  
14 I checked this with the Sierra Club.  
15 Maybe we should go natural. The water is so muddy  
16 and dirty, it's hurting the reef. Hold it, and  
17 that's more than enough water for everything you can  
18 imagine for the near future.  
19 But you have the 800-pound gorilla. You  
20 got that much water? There's no fighting? I'm  
21 going to move in. I cannot solve the 800-pound  
22 gorilla, but this has some beautiful concepts to it.  
23 Locate the reservoirs where you want, near  
24 the ocean, so when they break, like, you know, the  
25 California dams, you don't flood out people. Put it

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

27

1 low, pump up the water with solar energy. No  
2 battery. Just pump it. When the sun shines, you  
3 pump it up. And you control the damage to our reef.  
4 And what happens to this? How we talking  
5 about the east side water? Technically, now it  
6 comes into play. Now to share your chance to get  
7 it, I feel bad about diverting clear water. Clear  
8 water should flow in the streams when it's driest  
9 and needed.  
10 But if your side here generates dirty  
11 water -- say Haiku is developing, every time they  
12 flood, wow, look at that, look at what we did to the  
13 reef in Haiku.  
14 Divert that. Maintain enough EMI system  
15 so that all the dirty waters about to choke the  
16 reefs, whatever, goes into these holding reservoirs,  
17 settle it, pump the water high to the Kula when you  
18 need it.  
19 Now all this stuff is like, yeah, great  
20 pie in the sky. But, you know, that's how things  
21 get started.  
22 I'm not asking for tomorrow, where the  
23 Kula guys say, well, no water. Give them the status  
24 quo. But I want to see some progress moving to some  
25 things that are worthwhile.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

28

1 For 35 years, all we do is fighting and,  
2 oh, that's your stream, that's your stream, and we  
3 never move at all.  
4 I can guarantee you to fund the  
5 reservoirs, I think there's \$350 million per  
6 billion-gallon reservoir. You can float a bond. If  
7 you can float a bond for the Super Whale that's  
8 never going to be self-supporting, you can surely  
9 float a bond out of state, because fresh water  
10 that's potable, that's usable for ag, is like gold.  
11 But I only like this if your EIS says  
12 long-range plan. I want to see every three years,  
13 we're moving forward, moving forward a little bit  
14 more towards the idea that we choose. Otherwise,  
15 it's so frustrating. And I'm a patient guy, but I  
16 like to see a little progress, sincere progress.  
17 Thank you.  
18 MODERATOR SENEALLY: Thank you, Dr. Pang.  
19 Edward Wendt.  
20 Oh, can you go, Keola?  
21 Mr. Wendt. Thank you.  
22 MR. WENDT: Aloha.  
23 MODERATOR SENEALLY: Aloha.  
24 MR. WENDT: My name is Ed Wendt. I am  
25 president of Na Moku.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

29

1 Our community has been involved with this  
2 water contested case for many years.  
3 In these years, DLNR and (inaudible) have  
4 never displayed their leadership in enforcing the  
5 laws, protecting our native rights and the public  
6 trust doctrine, which are our constitutional rights.  
7 Who will enforce these laws? Each stream  
8 and river that is diverted has a major impact on our  
9 environment and our constitutional rights, when we  
10 have never had accurate measurements of the volume  
11 of water that is being transferred out of the  
12 watershed.  
13 We need gauges in the ditch systems and  
14 regular intervals to determine how much water is  
15 actually being diverted.  
16 We are also concerned about invasive  
17 species, such as Miconia, Gardenia, and African  
18 tulips, which are overtaking the watershed and  
19 claiming our native plants.  
20 From Maliko to Honopou, which are outside  
21 the permitting areas, streams and rivers are  
22 diverted by East Maui Irrigation for free. The  
23 State has allowed them to take this water also.  
24 This should be accounted for. It is in the public  
25 trusts interests.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

30

1 Well water. A & B has 15 wells on its  
2 property. The amount of water available to A & B  
3 from these wells needs to be accountable.  
4 Gray water. We need to know if gray water  
5 from the treatment plant can be used for Alexander &  
6 Baldwin irrigation needs.  
7 USGS studies were done on the streams and  
8 rivers, it took three years to do this, specifically  
9 for East Maui watershed. Their recommendations  
10 should be considered. Water needs to flow  
11 uninterrupted into the ocean. It is critical for  
12 our health, a healthy environment.  
13 Based on USGS studies, we have noticed  
14 since the recent release of water that our native  
15 species, such as the Koloe bird, Hawaiian stilt and  
16 species of the dragonfly, found only in East Maui  
17 and Halawa Valley, are returning.  
18 OHA should have a say in the wording of  
19 the 30-year lease. Honomanu, Keanae, Nahiku are on  
20 so-called ceded lands. We'd also like to know how  
21 much water Hawaiian Homes is entitled to.  
22 My last comment, for the people of  
23 upcountry, Kula Farms and Alexander & Baldwin, you  
24 have enjoyed the privilege of receiving water from  
25 these four areas. As Father Tomoso stated, water is

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

31

002106

1 for life and water is for everybody. And we agree.  
2 While you all were enjoying this  
3 privilege, we in the four areas went dry. Dewatered  
4 completely. This does not match (Hawaiian). This  
5 is called sacrifice and culture genocide.  
6 Mahalo.  
7 MODERATOR SENELLY: Next speaker,  
8 Mahealani Wendt.  
9 MS. WENDT: Mahalo.  
10 Before I give my testimony, I'd like to  
11 ask if the facilitator would consider allowing our  
12 East Maui chana to go earlier on the agenda because  
13 the drive home is very far. It's like two hours.  
14 Just something to think about.  
15 I was also going to ask if there was any  
16 possibility of convening a third consultation in  
17 Hana. Many of our people want to come, want to  
18 participate, but are unable to. It's really a  
19 hardship for them, especially with big families.  
20 So you don't have to answer now. Just  
21 something to consider.  
22 MODERATOR SENELLY: Regarding -- how's  
23 about this, we were going to take a break between  
24 6:00 and 6:15.  
25 So why don't we take -- if it's okay, take

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

32



1 the speakers up until then. And then after the  
2 break, whoever is -- whoever from East Maui who  
3 wants -- if that's okay with everybody. Yeah?  
4 Okay.  
5 So during the break, you come and tell me,  
6 and we'll make sure that we put you on. So I'll  
7 make the break sooner than later.  
8 MS. WENDT: Thank you.  
9 My name is Mahealani Wendt. I'm a board  
10 member, I'm also a board member of Na Moku Aupuni 'O  
11 Ko'olau Hui.  
12 As a founder and executive director of the  
13 Native Hawaiian Legal Corporation for 32 years, I  
14 filed the petitions to set interim instream flow  
15 standards for all the streams within Koolau on  
16 behalf of Na Moku. This was in 2001.  
17 In a free and Democratic society, we  
18 should all have a reasonable expectation that the  
19 rule of law will apply and result in a fair and --  
20 fair outcome, a fair and just outcome for all  
21 disputants. This is how we have been taught things  
22 operate in a free and Democratic society.  
23 A & B's last long-term lease expired in  
24 1986. From 1986 until 2016, when the legislation  
25 passed, when the legislation passed the so-called

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

33

1 permit, A & B operated outside the law for 31 years.  
2 From 1986 until 2016, it had no valid permit.  
3 And you know, it's, you know, kind of an  
4 outrage. But more than that, I think when things  
5 like that happen, as people, as citizens, we lose  
6 respect for the law. They lose heart. They feel  
7 like they cannot trust.  
8 So, you know, as yourself, as consultants  
9 and other decision-makers go through this process,  
10 please consider this. Because, you know, honestly,  
11 I feel like we're being herded into another process  
12 with a predetermined outcome. A lot of us feel that  
13 way.  
14 You know, you tell us that, you know, it's  
15 going to open bid and all of that, but there is  
16 every appearance, especially given the history,  
17 that, you know, A & B is going to get the lease and  
18 that the politicians and the people at DLNR Board  
19 are inclined to push it through, the same way they  
20 did at the legislature.  
21 So this is kind of like editorializing a  
22 little bit, but I think these are things that we're  
23 all feeling.  
24 Nevertheless, operating outside the law, A  
25 & B siphoned every drop of water from the East Maui

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

34

1 watershed, while A & B, HC&S, upcountry and other  
2 county users enjoyed water, our families went  
3 without.  
4 You have no idea. We never did not want  
5 to share. We always wanted to share. Nobody shared  
6 with us. And it was really, really, really, really  
7 hurtful, because the origin was right there. We  
8 could look at the water, we could look up mauka and  
9 see the water, but we couldn't use it. It wasn't  
10 for us.  
11 And so, you know, it was really, really  
12 hurtful. And we went through these processes, and  
13 we would hear, you know, the other people who have  
14 access to this water accuse us of being selfish and  
15 not wanting to share. That was not the case. We  
16 didn't have anything.  
17 So, you know, so this was the situation  
18 and, you know, we were for so many generations, the  
19 taro from -- you know, generationally, traditional  
20 taro farming went out. There was no water to farm  
21 taro. The fishing grounds were depleted.  
22 The doctor probably knows, Dr. Lorrin Pang  
23 probably knows that in our area, the empty  
24 streambeds were nesting places for mosquitoes. It  
25 was a very unhealthy situation that we lived with

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

35

1 every day.  
2 Several speakers from East Maui did know  
3 that the EMI ratcheting up is a diversion. So that  
4 you took everything in 1990, just happened to  
5 coincide with a water conference that was held at  
6 Keanae around the same time.  
7 And it seemed like on EMI's part, it was  
8 maybe perhaps a preemptive move or something to send  
9 a signal to the people over there don't try  
10 anything.  
11 You know, the water conference was  
12 attended by a lot of attorneys from both sides. The  
13 attorneys who were sympathetic to the East Maui  
14 farmers were saying you have rights, you really do  
15 have rights. They don't have a right to come in  
16 here and take everything. And these are what your  
17 rights are.  
18 And I think it came to a shock and  
19 surprise to some of the EMI operatives on the ground  
20 who were accustomed to behaving in the old way, you  
21 know, where, you know, like an Imperial, somebody  
22 from outside that comes in and tells you: This is  
23 how it's going to come down, and you have nothing to  
24 say about it.  
25 This is how they treated the people, very

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

36

1       disrespectful, very condescending.

2       So the EMI process should actually have

3       started a long time ago.

4       A lawsuit was filed. And in 2005, EMI and

5       A & B were ordered to do an EIS, and they did not.

6       They fiddle-farted around, you know.

7       And actually, in the interim 30 years

8       since they -- since the other long-term lease

9       expired, they have what amount to a de-facto

10      long-term lease, because it's been 30 years, and

11      they have had continuing access to the water.

12      That's exactly what happened.

13      So there is this -- I mean, I know you're

14      only interested in knowing what's supposed to go

15      into the EIS, but this is a really important

16      historical framework for people to understand.

17      So I actually do have some comments on the

18      Environmental Impact Statement, but I just have

19      another point about that, that all of this would not

20      have been possible but for the collusion of DLNR.

21      The DLNR attorneys with the A & B

22      attorneys were working together and came up with

23      these wonderful legal strategies to issue these

24      so-called temporary interim leases, I mean temporary

25      permits, which did not exist, which were false, and

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

37

1       which were finally declared to be illegal.

2       So given that framework, it's really hard

3       to trust that this process is going to go, you know,

4       in any other way but in A & B's direction.

5       But here are some comments for the EIS.

6       The degraded watershed, which has resulted

7       from decades of A & B's unlawful occupation, should

8       not be the standard. You know, that point was made

9       last night, that they have, you know, all of these

10      many, many, many decades to go out there and wreck

11      the watershed.

12      And that is not the starting point or, you

13      know, the standard toward which we should aspire in

14      terms of the EIS.

15      Never again must aina be transformed into

16      killed areas, disturbed so severely that the people

17      are deprived of their constitutional rights and

18      human rights to live the subsistence traditions of

19      their kupuna, including growing taro, fishing and

20      gathering from the streams and shoreline areas

21      nourished by fresh water. These also include rights

22      of access to these areas.

23      We have had to humble ourselves and beg

24      and go through a monthly permitting process just to

25      be able to go up mauka and clean the streams so that

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

38

1 the water can flow.

2 Streams must flow continuously and

3 uninterrupted from the mountain to the ocean shores

4 so that aquatic animals can live.

5 Gauges to collect accurate water, transfer

6 and collect, collection data are critical.

7 Regulatory oversight and enforcement are

8 also critical.

9 Without enforcement, EMI has run roughshod

10 over the people, you know.

11 The public can say whatever they want, but

12 EMI really does whatever they want. You know, they

13 think whatever they want, we go up there, we say,

14 hey, you know, we're supposed to be getting water,

15 but you've completely closed, you know, closed your

16 gate and nothing is coming to us.

17 And they say, oh, well, you know, take it

18 up with our attorney. And then their attorney calls

19 our attorney, and their attorney says, oh, well, my

20 client is in full compliance.

21 And that's the kind of BS our people have

22 been going through for decades.

23 I have one last point. DLNR should

24 seriously consider alternatives to awarding A & B a

25 30-year lease. I'm totally opposed to A & B

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

39

1 receiving the 30-year lease.

2 MODERATOR SENELLY: Thank you very much.

3 Michelle Waikiki? Michelle Waikiki.

4 We have a lot of people speaking tonight

5 that signed up, and so we're going to try to change

6 the order a little bit. So as I asked earlier, if

7 you can summarize as much as you can. Thank you.

8 MS. WAIKIKI: My name is Michelle Waikiki.

9 And this is a message from my husband to the EIMS --

10 or EIS tonight.

11 The Department of Water Supply, County of

12 Maui, released their statements of cash flow audits

13 done by M & K CPAs. In their audit, cash received

14 from the public trust and others, from 2013 to 2017,

15 equal \$200 million.

16 Payments to suppliers, A & B, HC&S, EMI

17 and Wailuku Water Company from 2013 to 2017

18 surpassed \$100 million. All suppliers are ditch

19 operators. They are all selling state-owned water

20 to the County and charging the public trust at a

21 33 percent or more increase.

22 The public trust pays water bills to the

23 County, who then pays A & B, EMI, HC&S and Wailuku

24 Water Company to transport the water to the County

25 grid.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

40

1           The public trust doctrine simply has no  
2 representation. This is theft and fraud and other  
3 crimes because these operators are in violation of  
4 expired water licenses, expired leases, EIS audit  
5 violations, violation of HRS 167, failure to public  
6 auction, year to year revocable permits, violation  
7 of HRS 271G, Hawaii Water Carriers Act, violation of  
8 HRS 271G-10, violation of 271.12, under the PUC,  
9 PUCC, PCN. And the County of Maui is an accessory  
10 to these violations.  
11           Only a federally regulated public water  
12 utility company, publicly traded stock corporation,  
13 bonded and insured, providing water, can meet all of  
14 these requirements and lawful demands by  
15 representing and enforcing the public trust  
16 doctrine.  
17           Maui Electric Company is a public utility  
18 company, providing electricity to the public trust.  
19           In final, all of you, meaning the board,  
20 should be arrested for fraud, plundering and  
21 pillaging.  
22           And then I would like to also say for  
23 myself, like, I would like to propose that the  
24 Hawaiians get together and we figure out how we can  
25 figure you guys out through blood quantum.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

41

1           I know my husband is 100 percent Hawaiian.  
2 They threw him in prison for 20 years over this  
3 water, over \$141,000. So I hope -- before he went  
4 to prison, he put videos out, which are on my  
5 Facebook page.  
6           The 1863 water course agreement, with my  
7 husband's two grandfathers' names on it, he created  
8 an EIN for Maui water utility company. So we need  
9 is the public to come together, and we use this Maui  
10 water utility company to put the water in the  
11 public's hands, not HC&S, EMI.  
12           And then we also have a document that is a  
13 Supreme Court order right here for -- from 1914 to  
14 present, the American government owes the Kingdom of  
15 Hawaii, it's 74 billion on this paper, but it's  
16 about 125 billion now.  
17           And in court, Judge Nishimura ruled that A  
18 & B water permits are invalid.  
19           I have 11 file boxes full of information.  
20 I've proved my husband innocent beyond a reasonable  
21 doubt and this state guilty of fraud. And I want my  
22 husband out of prison. He don't belong in prison.  
23           Thank you.  
24           MODERATOR SENELLY: Okay. Here's what  
25 we're going to do.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

42



1 Wait. We're going to take a break. Can  
2 we, please? I want to take a break.  
3 The folks -- Mahealani suggested that the  
4 people who are like -- live far away, a couple hours  
5 away, if you have signed up to speak, will you come  
6 and see me, and I will change the order around. And  
7 I'd like to do this.  
8 So we have a five-minute break. Thank  
9 you.  
10 (A brief recess was taken.)  
11 MODERATOR SENELLY: We're going to have  
12 the East Maui people talk first. Okay. Just like  
13 we said, we're going to have Isaac talk before them  
14 because they said that it was okay.  
15 I'm going to do something real quick  
16 before we go. Everybody sit down, please.  
17 Come on, you guys. Come on.  
18 Okay. Here's what we're going to do. I'm  
19 going to go over the protocol again, because we  
20 really do want to let everybody stay here for a  
21 reasonable amount of time. And so we want to -- we  
22 really want to be pau about 7:30. We've got a lot  
23 of speakers.  
24 So again, safe haven; okay? So we all  
25 respect. You guys are doing really good at that.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

43

1 One person at a time. You're doing good  
2 at that.  
3 You guys are clapping, but don't clap as  
4 loud. It's good. I like it, but, you know.  
5 Summarize, summarize, summarize, please,  
6 so that your fellow -- so the rest of the folks can  
7 talk, please. Try not to repeat.  
8 Okay. So that's it.  
9 Actually, hold on.  
10 MR. HALL: Isaac Hall.  
11 MODERATOR SENELLY: Wait. Actually, you  
12 know what happened, when he was here talking to me,  
13 the other Hana people, the East Maui people said  
14 it's okay. So they said it's okay.  
15 MR. HALL: I want to thank the East Maui  
16 people for letting me speak now.  
17 My name is Isaac Hall. I live in Haiku.  
18 I'm an attorney, and I've been working on this case  
19 for 40 years.  
20 The preliminary comments on the EISP have  
21 been submitted. I want to cover some points that  
22 may not be addressed by others.  
23 One, the proposed leases of public lands  
24 must be disposed of at a public auction. I know  
25 this point is being made. The assumption is being

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

44

1 made, unfortunately, that the ultimate lessee is  
2 going to be A & B.

3 Even though it's been stated by Wilson  
4 people that it's not, they're still talking about  
5 what we're going to examine in this is the  
6 30,000 acres and that we should address the impacts  
7 of those 30,000 acres.

8 That would render this EIS inadequate.  
9 You have to address other alternative lessees.

10 Let's, you know, think about who else might be  
11 interested in getting this land and address those  
12 impacts. Those are alternatives that have to be  
13 addressed in this EIS.

14 Two, when A & B applied for this lease  
15 many, many years ago, it was for a fully functioning  
16 sugar cane plantation. The plantation closed, the  
17 lands are mostly fallow. There's no need for --  
18 there's no current need for anything like 115  
19 million gallons a day.

20 The current application is stale and  
21 should be withdrawn and replaced by an up-to-date  
22 application.

23 Three, the lease is for all four license  
24 areas. This is an antiquated concept designed to  
25 provide all of the water to one prospective lessee,

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

45

A & B.

DLNR is required by law to lease lands in  
economic units, minimum-sized areas that could be  
served by the water. That's HRS 171-33.3 in the Big  
Island Small Ranchers case.

The alternative of separate leased license  
areas. Let's say for the Keanae-Wailua community,  
carving off an area that could be leased to them  
alone, for their purposes alone, is an alternative  
that has to be addressed.

The alternative of a separate leased  
license area for the Huelo area. Carve that off.  
Let them go in and bid for it.

And likewise, a separate leased license  
area for say the Haiku area. Let the Haiku  
community go in and bid for a lease.

These are smaller units that by the  
statute that applies to DLNR have to be discussed as  
alternatives. If they are not, this EIS is going to  
be inadequate again.

Again, as others have said, No. 4, these  
are 5(f) lands. They're part of the public lands  
trust and part of the seed lands trust. Native  
Hawaiians are the beneficiaries of these trusts.

Now there are three aspects of this. One

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

46

1 is that the first priority to this water belongs to  
2 the native Hawaiian homes. That means the current  
3 and future needs of Hawaiian, of people on Hawaiian  
4 home lands must be carved out first. That has never  
5 been done, it's never been studied, and that has to  
6 be done in this EIS or it again is going to be  
7 inadequate.  
8 Also, 30 percent of the revenues from the  
9 leases must go to Hawaiian homes to be spent for the  
10 benefit of native Hawaiians.  
11 20 percent of the revenues from the leases  
12 must go to OHA to be spent for the benefit of native  
13 Hawaiians.  
14 That's 50 percent of the revenues from  
15 these leases is owed to native Hawaiians.  
16 DLNR, BLNR has never paid -- well, they  
17 have paid attention to it, but they've paid tiny  
18 amounts in lease amount -- in leases, for the  
19 leases.  
20 BLNR has never appraised the value of the  
21 water that it has provided to EMI and HC&S.  
22 HRS 17133.5 requires that before any  
23 notice of an intended disposition is given, BLNR  
24 must determine an upset price for that lease based  
25 upon the fair market value of the resource being

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

47

1 leased.  
2 BLNR has never done that. It's leased  
3 everything from way below the fair market value.  
4 So in this EIS, as part of it, a study  
5 must be done, studies must be done, and one of those  
6 studies must be an appraisal of the fair market  
7 value of these lease lands. They cannot possibly  
8 satisfy their trust obligations to native Hawaiians  
9 unless they do this.  
10 This is a point that other people have  
11 touched on tangentially. This is 6. Any lease of  
12 water rights requires a watershed management plan.  
13 That's in their statute 17158-E and F. That's being  
14 done to prevent degradation of surface water,  
15 prevent degradation of ground water quality.  
16 So what has to happen here in an EIS is  
17 that the EIS must address the current conditions of  
18 the watershed and address steps that are required to  
19 restore the condition of the watershed to an  
20 adequate level. That's never been done.  
21 As everybody's said, they've essentially  
22 had the equivalent of a 30-year lease but they've  
23 never done a watershed management plan. And you've  
24 heard testimony about what the condition of the  
25 watershed is. That has to be addressed in the EIS

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

48

1 or it's inadequate.

2 Number 7, I was disappointed to see the

3 list of water users and that the people with

4 riparian and appurtenant rights were totally left

5 out. Those people downstream of these diversions

6 weren't even mentioned.

7 And I did notice that there was a lot of

8 misinformation that I hope will get corrected later

9 by those that know about the number of streams that

10 are diverted, the number of streams that are in the

11 petition area, the number of streams, that sort of

12 thing. The numbers I heard were wrong.

13 Finally, No. 8, the alternatives

14 considered were three. I've already mentioned four

15 or five more, but there way many more alternatives

16 need to be considered or else this will be

17 inadequate.

18 Thank you for the opportunity to speak.

19 And I'll submit more detailed comments by

20 March 10th.

21 MODERATOR SENELLY: Thank you.

22 Okay. Cheryl Kekahuna?

23 MS. KEKAHUNA: Aloha everyone.

24 MODERATOR SENELLY: Aloha.

25 MS. KEKAHUNA: Unfortunately, I was not

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

49

1 really prepared that we have to come to a meeting

2 and give points to the EIS process. I guess the

3 invitation is really not that clear. However, I

4 would like to share and hopefully you can take that

5 with you.

6 My name is Cheryl, also known as Pohe,

7 Kekahuna. I'm the safety director for the Nahiku

8 Community Association, as well as a resident of

9 Lower Nahiku.

10 I am here today to oppose a 30-year lease

11 proposed by A & B. I would like to start with a

12 couple questions.

13 Why after HC&S was officially done in

14 December 2016, the water wasn't restored to all the

15 rivers, being there's no sugar cane in production?

16 And where is the water that was irrigated for the

17 sugar cane?

18 Now, it seems almost coincidental that the

19 same month HC&S was done, A & B sold 300-plus acres

20 in Paia.

21 The message I got from that was, here we

22 go, progress. And it was clear to me that A & B

23 can't be trusted. They have their own agenda.

24 In A & B's Environmental Impact Statement,

25 your EIS for February, you need like a lawyer or a

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

50

1 dictionary to kind of understand this.

2 However, there was something that caught

3 my attention. Under the proposed action, there's a

4 statement that:

5 "Aqueduct system continues to

6 serve a critical role in providing

7 upcountry Maui and Nahiku community

8 with water, and should the delivery of

9 water from EMI aqueduct system be

10 curtailed, upcountry Maui and the

11 Nahiku community would be left without

12 a reliable source of water."

13 Now, I had to Google the definition of

14 "curtail." It states:

15 "To reduce in extent or quantity,

16 impose a restriction on, or deprive

17 someone of something."

18 Makapipi, Hanawi, Haipuaena automatically

19 runs through our island blood. I ask: Are you God?

20 Who gave you the right to deprive us of our right to

21 live?

22 Back in the day when our great

23 grandparents, uncles, grand uncles, grandparents

24 used to work for EMI, the streams and rivers were

25 properly managed. The rivers never ran dry and all

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

51

1 -- and was well maintained. Is that the case now?

2 We, as kanaka'ole, have to fight for our

3 water. Our kava farmers in Keanae for over a decade

4 have been fighting for the rivers to be restored to

5 their (Hawaiian). And here comes A & B with their

6 proposals and greed for more water.

7 State and county representatives, are you

8 going to allow A & B to deprive and be unjust to the

9 people and county you represent?

10 And lastly, I would just like to end my

11 testimony by simply saying: Remember our rivers are

12 sacred. There's (Hawaiian) in these rivers. Don't

13 let the hewa follow you.

14 MODERATOR SENELLY: Thank you, Cheryl.

15 Mapu Kekahuna.

16 MR. KEKAHUNA: Mahalo to all our kupuna

17 for being here. Thank you for being here.

18 Today I'm very disappointed as -- I'm

19 going to (inaudible) the vice chair tonight of the

20 community association.

21 And I'm insulted that A & B, your

22 organization, to bypass Hana and involve East Maui,

23 all of East Maui, from Kaupo, Kipahulu, Hana,

24 Nahiku, and everybody else. This is big

25 geographics, yeah. And not have them participate in

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

52



1 this EIS, whatever you want to call this. Okay?

2 It's not pono.

3 You know, people, our people here in Maui  
4 are seeing the desecration. We see it every day.

5 Gradually we have to keep our Maui, all of us in  
6 this room. People, wake up. Because Maui will be  
7 gone. It will protect this island.

8 Seven generations, my family -- I'm a  
9 seventh-generation from Nahiku.

10 You know, like you guys said, that EIS,  
11 you guys, I was reading through it, that you could  
12 probably compromise our domestic drinking water if A  
13 & B don't get this 30-year lease. That's what I was  
14 reading. Is that a threat?

15 You know, for me, as a kanaka, I feel  
16 like, wow, if A & B don't get what they want, we  
17 don't get drinking water, my kupuna have to go to  
18 the river and haul water from the river, as they did  
19 when they were growing up? Is that what the answer  
20 is?

21 I think the County of Maui has a fiduciary  
22 responsibility. We have three County water tanks in  
23 Makapipi.

24 Like the lawyer said before, carve it out,  
25 take Hanawi, Kapaula, Makapipi, carve it out, take

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

53

1 out that diversion, let the County of Maui take care  
2 of their aqueduct that feeds the county to provide  
3 us domestic water, which is our right too, yeah.

4 And then take us out of your palapala.  
5 Take the word "Nahiku" out. Take it out, take it  
6 out. We don't want it.

7 You know, our people of Maui can see this,  
8 right, plain as day. I drive to Paia every day,  
9 Monday through Friday, going back to Nahiku. The  
10 traffic is nasty. Selling land quietly, use the  
11 term "quietly," they sell it to a businessman in  
12 California to supplement that development.

13 People, we're not stupid. We're not  
14 stupid. The sooner A & B realizes all the illegal  
15 actions -- and I thank the kupuna people that  
16 started this battle. It shouldn't be a battle. Not  
17 for the kanaka, not for the people of Maui, born and  
18 raised, bred, to have to sit in a meeting when we  
19 have to work, work, to come listen to this nonsense.

20 It's expensive to live here in Maui, in  
21 our homeland, our only home. Expensive to live  
22 here, but we have to take that -- our passion for  
23 our island is important to all of us.

24 Even for you malehinis that moved here to  
25 Maui, you guys can see the desecration going on.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

54

1 Keep Maui Maui. Oahu is already messed  
2 up. Leave Maui alone.  
3 Take Nahiku out of that equation. That's  
4 my recommendation. Cut it out, like the attorney  
5 said, cut it out. Take the diversion, feed on the  
6 other county tanks, that's it, and let our rivers,  
7 rivers flow.  
8 Mahalo.  
9 MODERATOR SENEALLY: Mahalo. Thank you.  
10 Kumu Tamalu Taho'otele.  
11 MS. TAHO'OTELE: I don't feel comfortable  
12 speaking to all of you from the back, so I'm going  
13 to walk up front, if you don't mind, so you all  
14 don't have to twist.  
15 Okay. Anyway, aloha once more. Before I  
16 say what I need to say, mahalo, I would like to do a  
17 little ole for all of us. And I think we need it.  
18 Let us remember this.  
19 (Hawaiian chanting).  
20 Mahalo. I would like to start by reading  
21 something that disturbed me very much. This is a  
22 proposed action from A & B. The proposed action  
23 constitutes the issuance of one long term of 30  
24 years, water lease from the DL, BLNR for the  
25 continued right -- now follow me, my people -- the

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

55

1 continued right, privilege and authority to enter  
2 and go upon the Nahiku, Keanae, Honomanu and Huelo  
3 licensed areas for the purpose, for the purpose of  
4 developing, diverting, transporting, and using  
5 government-owned waters. The water is owned by God.  
6 Excuse me.  
7 Through the existing EMI is Maui  
8 irrigation aqueduct system, which supplies water to  
9 domestic and agriculture water users. I just  
10 thought I'd share that.  
11 And by the way, (Hawaiian name), founder  
12 and president for the past 11-plus years for the  
13 Lower Nahiku Community Association, why was this  
14 information not sent, e-mailed, mailed, to the  
15 Nahiku Community Association or the residents of  
16 Lower Nahiku, informing them on the proposed  
17 application, EISPEN, for A & B's 30-year water lease.  
18 Mahalo to Dick Mayer, Alliance of  
19 Community Associations, for sending this information  
20 to us or we would not have known of this matter  
21 earlier on.  
22 Why was the Hana District not included in  
23 these public meetings involving East Maui streams?  
24 Speaking on behalf of my ahupuaa of Lower  
25 Nahiku, and for our streams and diversions from

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

56

1 (Hawaiian), remember what I just said. The true  
2 name of Makapipi is (Hawaiian), better known today  
3 to everyone as Makapipi River.  
4 Kopiliula and Hanawi, of which currently  
5 flows from the Koolau, down through our (Hawaiian).  
6 You don't hear that no more, because today they call  
7 it the landing, the Lower Nahiku landing. This is  
8 where these streams (Hawaiian.)  
9 There should be no more diversions,  
10 people. All waters should be returned to each and  
11 every ahupuaa, for it is their streams; it is their  
12 livelihood; it is their battle of survival; it is  
13 their (Hawaiian) of healing.  
14 Requesting a 30-year long-term lease would  
15 be very damaging to our community. We all know that  
16 since the closing of the sugar cane plantation, no  
17 firm decisions have been released or open for public  
18 review on their so-called diversified ag.  
19 There was talk about in the absence of  
20 sugar. Just talk? Instead they are selling sugar  
21 cane land to developers from anywhere. For what, I  
22 ask.  
23 As I review the EIS information -- here,  
24 hold this; you need a podium, honey -- provided by  
25 the County of Maui Water Supply could become

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

57

1 promised and that the 30-year lease will enable A &  
2 B to continue to maintain the aqueduct systems that  
3 is currently maintained by EMI.  
4 The County should maintain it to provide  
5 domestic water to Nahiku and not have a third party  
6 dictate the control of this water source for our  
7 community of Nahiku.  
8 Remove all metal gates -- which I know  
9 what they look like, I've been up there, walked the  
10 road -- and have all streams returning to its full  
11 capacity.  
12 Also cap, close, remove all diversion  
13 systems that moves water from Makapipi to Hanawi and  
14 so on.  
15 The County Water Supply should lease or  
16 maintain the aqueduct that supplies water to the  
17 County, water tanks that currently supply Lower  
18 Nahiku with domestic water, farming water,  
19 (Hawaiian) animals, yeah. They gotta drink water  
20 too, not only from the rain.  
21 In closing, A & B, the applicant, needs to  
22 be fully transparent on their intent, their needs,  
23 their wants, and not smoke-screen and quietly do  
24 things to further divide the communities as they did  
25 with HC&S.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

58

1 I believe that our kupuna (Hawaiian) will  
2 guide our pathway, to be sure that our precious  
3 resource isn't solicited for their money gain, while  
4 our entire livelihood and quality of life is  
5 jeopardized. We must protect, preserve and  
6 perpetuate for the future generations to come.

7 Our voices now and forever will be heard,  
8 as we cannot sit here no longer and watch our island  
9 become more overly developed, culturally desecrated,  
10 and our lahui is left behind, and not have a voice  
11 to our island.

12 We will stand for what is right, and the  
13 right thing is to maintain truth and not deception.

14 Just to add, it's not just the water that  
15 is life; it's the mana that the (Hawaiian) hold from  
16 the days of our not alii, (Hawaiian), for it holds  
17 that strong (Hawaiian) of our ancestors.

18 I close by saying much of our (Hawaiian)  
19 throughout East Maui is (Hawaiian) with debris,  
20 fallen trees and not maintained for proper flow from  
21 mountain to sea. What are we going to do about  
22 that? Is it only about power, money, and greed?

23 Let us think about it. Mahalo.

24 MODERATOR SENELLY: Maluhia Stoner.

25 MR. STONER: My name is Maluhia Stoner,

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

1 and I've lived in Lower Nahiku all of my life.

2 Now before I begin, I would like to inform  
3 you that this is specifically for the East Maui  
4 Irrigation Company and A & B and does not portray my  
5 opinion of the council before me.

6 This is a Hawaiian proverb handed down for  
7 generations: When the earth is ill, what is its  
8 medicine? Rain. Because when the heavens cry, the  
9 earth is healed.

10 By this saying, it is easy to understand  
11 the Hawaiian connection of water and health. The  
12 rain that falls from the heavens causes the waters  
13 to flow; and they, in turn, gives life to the earth.  
14 The earth in turn sustains the people.

15 The waters of life which flow from the  
16 mountains and which will sustain our generation and  
17 future generations are of great importance to me and  
18 people who love and care for the land and culture.

19 The initial development of the ditch  
20 system was authorized as a part of the Hawaiian  
21 Kingdom's program to promote prosperity for all the  
22 people of the Kingdom.

23 Of importance to the native Hawaiian  
24 families of the land, each of the water licenses  
25 issued under the Kingdom included clauses which

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

1 protected the water rights of native tenants of the  
2 respective lands through which the ditch system was  
3 developed.  
4 The original license stated: The  
5 continuance of the right herebefore granted is upon  
6 this condition, that existing rights of present  
7 tenants of said lands or occupiers along said  
8 streams shall in no wise be affected injuriously by  
9 reason of anything herein before granted or  
10 covenanted.  
11 Now before I continue, I would like to  
12 point out that during the time of February 2015,  
13 during the drought on the other side of the island,  
14 you cut off not only the rivers but the aqueduct  
15 that supplies Lower Nahiku with water.  
16 May I inform you that we had children  
17 under the age of three at the time, and this  
18 threatened not only our health but the health of the  
19 land, the native plants and animals, and the native  
20 fish, both fresh water and salt water.  
21 It took having the County workers of our  
22 community go all the way to the water blockage and  
23 turn it back on. This is a clear violation of the  
24 license issued under the Kingdom of Hawaii and is  
25 ineligible to pass in court.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

61

1 But regardless of the laws and regulations  
2 stated above, you don't only break the laws of the  
3 state but the laws that nature itself has set for  
4 every man, woman and child who sets foot on these  
5 sacred lands; and you are in no position to  
6 determine what is and isn't sacred.  
7 You're making us pay for our water that  
8 you take too much of; and you don't even have the  
9 courtesy of doing it within the legal boundaries of  
10 the laws you agreed upon years ago.  
11 You take 450 million gallons of water a  
12 day and waste a huge percentage on releasing it on  
13 the ground. When will you realize there's no more  
14 cane fields to feed and that the industrial  
15 progression which you support is the very reason why  
16 you feel you must take that much water.  
17 You are the reason that there's no water  
18 in certain sections of the island. Nature has taken  
19 the waters of life from you because you had the  
20 nerve to abuse such a sacred element.  
21 You have already deprived our culture of  
22 the once abundant source of life, and you dare take  
23 more.  
24 I testify that the East Maui Irrigation  
25 Company and A & B is guilty for the theft of our

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

62



1 culture, the endangerment of native and indigenous  
2 species, the choice to ignore the claims of the  
3 Hawaiian people, the people of this island, and the  
4 destruction of the home in which we will always and  
5 have always resided in.  
6 Thank you very much.  
7 MODERATOR SENELLY: Thank you, Maluhia.  
8 Can I say -- excuse me.  
9 You know, actually, you guys are providing  
10 scoping input, and -- because I've heard the word  
11 "testify" and stuff, and I know it has that power,  
12 but I'm just saying technically, it's not testimony.  
13 But we take it -- I mean, we do consider it very  
14 valuable input. Okay? Because this is in itself  
15 not a required meeting.  
16 No, no, it's fine. But I'm just saying I  
17 don't want people to think that it is testimony,  
18 because technically, it's not. That's all.  
19 (Audience speaking.)  
20 MODERATOR SENELLY: Yeah, it is for you.  
21 That's right.  
22 Mavis Oliveira-Medeiros.  
23 MS. OLIVEIRA-MEDEIROS: Aloha. I'm from  
24 Hana. And I decided to come during work, so I don't  
25 really have a really good prepared testimony.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

63

1 But my name is Mavis Oliveira-Medeiros,  
2 and I come from Hana, Maui, Hamoa. But my mom and  
3 dad was -- my dad actually came from Nahiku, and my  
4 mom came from Olahino, both places that we were  
5 water people.  
6 So my mom was a gatherer. I don't know if  
7 anybody said that yet, but the gathering people need  
8 to be on that EIS. She taught us how to gather all  
9 the stuff growing in the fresh water ponds and  
10 rivers, and that's what we ate, that's what we ate  
11 to subsist.  
12 And then A & B took the water, and then we  
13 had our kids, and our kids had their kids, and it  
14 was never able to be passed on to the next  
15 generations.  
16 So two generations, including me because I  
17 was a little girl when she used to take me in the  
18 rivers, so it's like three generations of people  
19 that were robbed of gathering, gathering food in the  
20 rivers.  
21 I cannot tell you how awful that feels.  
22 What was taught to us, we haven't been able to teach  
23 our kids. It feels like genocide, cultural  
24 genocide, when you cannot teach your children and  
25 theirs how to survive from the aina that they grow

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

64

1 up around. That is a terrible, horrible thing.

2 So I hope that you put that in your EIS,  
3 the gatherers. There's also -- in Hana, there's  
4 tons of fishermen. So I wish you guys come to Hana  
5 too, on the list of wishes.

6 Lots of fishermen, hula dancers, they rely  
7 on the water. And gatherers, we still have people  
8 who actually go in the EMI's ditches. I don't feel  
9 comfortable because it says "keep out, no  
10 trespassing." But there's people who still go in  
11 there and gather opai. So, you know, we still eat  
12 that stuff.

13 In Hana, a lot of people in Hana still  
14 fish to subsist, to survive, to help put food on the  
15 table. That's another thing that you can add to the  
16 EIS. Subsistence.

17 And if you ask me, I think you should put  
18 the people first and the corporation last.

19 MODERATOR SENELLY: Thank you. Thank you  
20 very much.

21 Lany Young.

22 MR. YOUNG: Aloha everybody.

23 Well, this one, it comes from knowledge.

24 (Hawaiian.) As we help others, we will  
25 find help for ourselves.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

65

1 Hawaiians lived in two distinctive areas  
2 of the islands: Those who lived near the shoreline,  
3 those who lived in the uplands. Goods traded with  
4 one another, those goods only available in their own  
5 area, this system created a mutually beneficial  
6 relationship that supported sustenance, living.

7 This one comes from the heart.

8 Like the veins that flow your blood  
9 through the human body and feeds the limbs is the  
10 water that flows through the valleys and feeds life  
11 among us. You stop the blood flow, the arm, the  
12 leg, the brain goes dead. You stop the streams from  
13 their natural flow, life around us suffers. The  
14 only native (Hawaiian) will diminish. The only true  
15 native opai will be sacrificed. For what?

16 The river mouths, or (Hawaiian), as it is  
17 called, is a place of birth. Like the wound, you  
18 stop the flow to the wound, you stop the beginning  
19 of life for many, many species, species that bigger  
20 species depend on for survival. Species like us.

21 But who cares about all this when you can  
22 have money in the bank? Is this right? Is this  
23 pono?

24 I oppose redirecting 150 million gallons  
25 of water per day from East Maui.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

66

1 By the mile marker 10, Waihine Bay once  
2 had a water fountain that was an underground spring.  
3 You and the other money-hungry corporations took  
4 that for your profit. Everybody who drives on that,  
5 everybody that lives on the island and the visitors  
6 use that water to sustain their life.  
7 The County and State government, they all  
8 fall in the same corporation. So the reason why  
9 they wanted to destroy it is because the road needed  
10 to be more wide, and also for their profit.  
11 Give back what the corporations stole from  
12 the community. So I say no to the 30-year lease.  
13 We don't need development and added progress, nor  
14 diverting or transporting of our water.  
15 It's not the government's water. It's  
16 ours.  
17 Aloha. Thank you.  
18 MODERATOR SENELLY: Thank you.  
19 Tammy Luat.  
20 MS. LUAT-HUEN: Thank you. My name is  
21 Tammy Luat-Huen. I am from Keanae. I live on the  
22 peninsula. And we try to farm taro in our yard, but  
23 we're the last taro farm to receive the water.  
24 So in your EIS, I would like the  
25 temperature of the water to be tested. You guys

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

67

1 keep taking water out, the water is going very low;  
2 the sun is so hot, it makes the water hot. By the  
3 time it gets to me, all my taro was like horrible.  
4 We tried to save the -- you know, when we  
5 harvested, we tried different patches to see how it  
6 is. Oh, my god, it was terrible, and it was like  
7 spongy. So definitely I think that the EIS should  
8 include the temperature.  
9 And also, before I even started, I was  
10 supposed to tell you guys this. I tripping out that  
11 you guys are talking about our water and handing out  
12 permits to the highest bidder, like you're talking  
13 about stocks and bonds.  
14 We're not talking about stocks and bonds.  
15 We're talking about life. We're talking about water  
16 for all of us to live, because I don't know about  
17 you, but I cannot drink money. So without water, we  
18 cannot survive.  
19 EMI has had control of East Maui's waters  
20 for way too long, also stewards of these lands.  
21 In your EIS, I demand that EMI be ordered  
22 to restore these rivers and streams, especially the  
23 ones that they're not using. They leave all their  
24 cement, their metal, their crap. Take it out.  
25 Like if they were my tenants, I would be

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

68

1 like, you know what, you're out, you're not going to  
2 get another lease from me. You let go our place,  
3 you're out.

4 So I think we should demand that they  
5 restore our rivers and streams to how it was before  
6 they got it.

7 And on that note, also in your EIS, it  
8 should say they took so much water -- when I was  
9 little, my grandpa used to work for EMI, so I know.  
10 He took me up there. There was plenty of water  
11 flow. I'm not that old.

12 You know, I don't want to tell you guys,  
13 but I have a big birthday the other week.

14 But I know how much water there was  
15 flowing.

16 When I drive home to Keanae, there's so  
17 much rivers that used to flow all the time. Now  
18 only trickles coming down. And I'm trying to  
19 remember the story about that water that used to  
20 come up the side of Waikoloa. And we always used to  
21 pull over, wash the baby bottle if something  
22 spilled, drink water. You know, we used to use  
23 that, and it's gone. I remember that.

24 But anyway, where they took a lot of  
25 water, and now they let the rivers run bone dry.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

69

1 Not even like a little bit. We went all the way up  
2 to the top, dry bone. As wide as you can imagine,  
3 this river was dry. So now what's in there? Just  
4 so happens that invasive trees, bushes, vines, all  
5 kinds of weird stuff started growing in there.

6 Now they go, oh, we are ordered to release  
7 the water, what does EMI do? Instead of they go  
8 clean the rivers and the beds because it's all grown  
9 with invasive stuff, open the water, water is  
10 flowing, no more place to go, where does it go?  
11 Every which way but loose. Not in the flow that  
12 it's supposed to be.

13 So I honestly believe a lot of these  
14 landslides that we've been experiencing on the east  
15 side of Maui, all A & B's fault. They should  
16 have -- they were so worried about their employees,  
17 their 400 employees. They could have had their  
18 employees stay on for one more year while they go  
19 clean up all our rivers and streams. It's their  
20 responsibility.

21 So for the EIS, I highly recommend that  
22 you guys have them -- not ask them -- demand that  
23 they go clean up our rivers and streams to where --  
24 to the point where they got it. And I'm sorry about  
25 that, but it makes me so mad.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

70

1 Because now, you know, those slides  
2 has caused us so much havoc. We have people that  
3 are putting their lives in danger just to go to the  
4 doctor, you know. We have roads that's completely  
5 shut down for seven hours; and then what happens if  
6 there's an emergency?

7 This is the kind of stuff that EMI  
8 personally caused. And I know that for a fact. So  
9 that's one more thing that I wanted your thing to  
10 say.

11 And, you know, like if it was clean, the  
12 water would flow the way it always flowed centuries  
13 ago. But when the thing is all plugged up, where  
14 does it go? It's got to go to the outside; now it's  
15 going wider and wider, and it's bringing down  
16 everything.

17 And we're not talking small rocks. We're  
18 talking rocks as big as trucks. And now we're going  
19 to be driving home, all unaware -- especially  
20 tonight; it's dark already -- now we're driving  
21 home, and let's go play Frogger and try and jump on  
22 this side, oh, no, let's go to this side, and then  
23 here comes the rocks, you know.

24 So you guys didn't do us no favors by  
25 giving them the lease. They literally put our lives

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

71

1 in danger, and I'm over it. So it's time for  
2 somebody else to -- I understand that everybody on  
3 this side needs water. I do understand that. But  
4 you're talking about our water as if it's a  
5 commodity, and it ain't.

6 Thank you.

7 MODERATOR SENELLY: Thank you.

8 David Prais.

9 MR. PRAIS: My name is David Prais.

10 The first thing would be that I understand  
11 that this is not for testimony. It's you want to  
12 know what's for the EIS.

13 That right there is a flag telling you,  
14 here is your blocks, this is what we offer you, take  
15 it or leave it.

16 Our kupuna, they have been honest all the  
17 way. All the way, you've done it correctly by their  
18 standards and their ways, but we are the new  
19 generation, the generation right here right now. We  
20 are on the rise.

21 I do have one thing I can add to the EIS.

22 The first thing I want to say is there's a  
23 strong presence of police here. Very strong. In  
24 the 30-plus years, have you ever seen this strong of  
25 a presence? And that is because they are afraid.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

72



1 They're afraid of us because we are intelligent, we  
2 know how to think, and we can act upon it.  
3 There's a lot of people who want to speak.  
4 I'm going to make it quick. The one thing that I  
5 add to the EIS is do not come back before our people  
6 without every concern and demand met.  
7 That's all. Mahalo.  
8 MODERATOR SENELLY: Thank you.  
9 Dan Clark.  
10 By the way, these are all the East Maui  
11 folks. I'm really trying to get them -- let the  
12 Hana and Keanae and Nahiku side go home.  
13 MR. CLARK: Yes. Good evening.  
14 I had a very pleasant ride coming out to  
15 the meeting today. I was with two of my close  
16 friends, that are farmers in Keanae and Wailua.  
17 (Audience and speaker interchange.)  
18 MR. CLARK: Okay. Now at any rate, they  
19 spoke of all of the streams and the mountains  
20 springs all throughout -- from Nahiku on out.  
21 I'm still a student there in Keanae. I've  
22 been fortunate to be taught by a lot of the elders  
23 about farming. I raise taro. I have an affinity  
24 for taro in my family from Nualolo Valley on the  
25 Napali Coast of Kauai.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

73

1 And though I might not seem that much  
2 cocoa, but I do have.  
3 I wanted to -- I guess you wanted the  
4 specifics as to what you can use in your EIS. Of  
5 course I want to -- I'd like to say that I'm opposed  
6 to, first off, the issuance of a license for  
7 Alexander & Baldwin for the continuance of diversion  
8 of water. There needs to be an incline of this -- a  
9 removal, a plan.  
10 This is recorded or --  
11 MODERATOR SENELLY: She's taking it down.  
12 MR. CLARK: Yeah, okay.  
13 MODERATOR SENELLY: And we have a video.  
14 MR. CLARK: Thank you.  
15 Anyhow, it has been 120 years of  
16 construction and diversion. I've been up in the  
17 mountains, I've seen where all the water, every drop  
18 of water that they can actually take from the side  
19 of a hill by putting little PVC pipes hidden at --  
20 you know, to a particular stream, that ends up in  
21 the ditch itself, diverting it out here.  
22 Now in times of a lot of water, a lot of  
23 rain, the water is brought out so far and then  
24 dumped into a river out here. That doesn't make  
25 sense to me, you know. The ditch is running full,

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

74

1 they'll dump the water all the way out here, as  
2 opposed to discharging the water back to the streams  
3 from which they took the water.

4 Second off, at times I have to sponge my  
5 water off the awai, yeah, fronting our kalo patches,  
6 sponge pretty much the water into the patch. I'm  
7 serious. The water is hugging the bottom of the  
8 ditch, you know. I've been working with, you know,  
9 the Waialua people in trying to clear our pipeline  
10 from Waikane down to Waialua to, you know, get water  
11 to feed the Hana side for the past four years.

12 And we will get there, we will get the  
13 water distributed. But what I've found is that  
14 attending these meetings with the Water Resources  
15 Commission, they were looking for reasons why to  
16 deny these people their water.

17 First they went in and they tried to  
18 confuse the farmers as to where the geographic  
19 location of their water was coming from, feeding  
20 their loading system. Right?

21 And then the Water Department steps in and  
22 says, where do you think your water comes from? I'm  
23 listening, why the heck is the Water Department  
24 asking this?

25 Do you have a water meter, they say?

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

75

1 Well, shucks, of course we have. We're fortunate.  
2 We paid for that well system, right?

3 We may not have paid for all of it, but we  
4 as stepchild way out there, that's how the system  
5 goes. The community assists the rest of the  
6 communities in, you know, providing moneys that make  
7 it possible for us to dig that 400-foot well.

8 That water belongs to us in the district,  
9 yeah. It feeds the Keanae-Waialua Nui area.

10 Same thing with Nahiku. I was listening  
11 to the lady talking about the water from above.

12 Now I would like to see the water metered  
13 that comes into the Parshall flume that feeds the  
14 Keanae loading system. Okay. I want to know, not  
15 by guess and by golly. I want to know what water is  
16 being fed us, because the water is warm in the kalo  
17 patches. We have root rot and all kinds of diseases  
18 that come off from that, you know, failure to  
19 provide cool, clean water, which is what the kalo  
20 require for a good harvest.

21 And Keanae was not issued an amount of  
22 water necessary for our -- you know, all the loading  
23 in there.

24 And they said, well, you've got all --  
25 you've got all Buffalograss or California grass in

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

76

1 there. And there's a system. The Hawaiians have  
2 been raising taro in there for 800 years. They know  
3 certain patches got to go fallow, right, you've got  
4 to regenerate it.

5 So they're saying, well, because the kids  
6 coming behind you guys are not interested in the  
7 taro, we're going to take the water. No, I'm sorry,  
8 that's not the case. You let the water run to the  
9 sea, yeah.

10 And there is 14 vertical shaft wells all  
11 along the isthmus, in between the two mountains  
12 here, if A & B is not telling you that, yeah,  
13 400 feet deep, right, down into the basal land's  
14 crystal clear water.

15 My field was water and wastewater. 40  
16 years, I put in there, in operating wastewater  
17 plants and water treatment systems. I know about  
18 water.

19 But when I brought that to the attention  
20 of Dr. Milk, you know, he immediately shut down,  
21 that I didn't have the right to bring that up in  
22 that particular meeting, the Water Resources  
23 meeting.

24 All I'm saying is -- I talked to some  
25 young lady that was working agriculture with MCC, or

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

77

1 now it's called Maui College, and I was explaining  
2 to her, you know, how the systems were all managed  
3 and the ponahiki of the district determined, you  
4 know, what amount of water went where and nobody cut  
5 anybody short.

6 That water was allowed to flow cool to all  
7 these farmers so that they can farm the land. And  
8 I'm sorry, but I lost trust in the Water Resources  
9 Commission. I'm concerned that they're going to be  
10 making the ultimate decision on this particular EIS  
11 request.

12 And I'm happy for the meeting that you're  
13 putting on here, yeah. All I'm saying is that give  
14 us the water that we need to farm.

15 Also meter the water. So if you tell us  
16 that 3 mgd is what our allotment is, until they can  
17 deconstruct that whole ditch system, then I'd like  
18 to know, put that Stevens meter back that A & B had  
19 inside of that -- what do you call it? -- right  
20 there at the Parshall flume, okay? Right there  
21 above Keanae with the spring water.

22 That spring comes from the ground. If  
23 it's not fed from above, the water is diverted, it's  
24 not going to come up on the spring through the  
25 stream. Okay?

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

78

1 So, I'm sorry, but I'm frustrated that,  
2 you know, not all is going to be heard. The meeting  
3 is, by design -- this young lady told me it's by  
4 design to have the meetings out here as opposed to  
5 inside of Keanae, at the Keanae school for the other  
6 families that were directly affected. By design,  
7 she told me.  
8 I said, okay, but I'm not going to fault  
9 Wilson Okamoto for that. I worked with you in  
10 wastewater and a lot of the design over the years,  
11 so I know that your intent is good. The thing is  
12 that I think, as the lady said, it needs to be  
13 everything transparent and clear, you know, so  
14 everybody's comfortable with the decision going  
15 forward.  
16 And thank you very much this evening for  
17 your time.  
18 MODERATOR SENELLY: Thank you, Dave.  
19 Okay. Kawika Stone.  
20 MR. STONE: Hi, how's it going? My name  
21 is Kawika Stone. I am from Lower Nahiku.  
22 And I know you guys only want to hear  
23 about the EIS and what it should address. But, you  
24 know, first off, I think there's kind of an agenda  
25 behind the EIS and just the way you guys got it,

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

79

1 step one, step two, step three.  
2 And maybe next time you guys should hold  
3 the meeting or you should maybe hold another meeting  
4 out in Hana side, because most of the people -- if  
5 you look on the list of places, Haiku is not on that  
6 list, and most of the people affected by these  
7 decisions actually live out there.  
8 Some of them is kupuna. They can't just  
9 go and drive this long road. Some people have  
10 babies, kids, they can't just drive this long road,  
11 like I said. They gotta work, all this kind of  
12 stuff.  
13 But also I see that you guys -- I see that  
14 you guys are on top -- if I can go to the slide show  
15 real fast, I see you guys mentioned -- there's some  
16 things you guys mentioned in here. Where is it?  
17 Okay. Right here. "General description  
18 on the proposed action," you guys put "economic,  
19 social, cultural and environmental" characteristics  
20 on there.  
21 But what you guys gotta understand is  
22 economic -- if we're talking about Hawaiian and  
23 Hawaiian culture, you put "cultural" on there.  
24 Hawaiians, economics is cultural.  
25 If you think about it, the mauka to makai,

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

80

1 that's from the mountains to the ocean, that's just  
2 the way things go.

3 But you guys', EIS, it's based off of --  
4 you guys said that it has to meet the laws, right,  
5 of the State; it has to meet certain requirements of  
6 the law. But that's the law of the state, but  
7 there's also the law of nature, which doesn't really  
8 get mentioned.

9 Even though you guys mentioned cultural  
10 and environmental, it's a contradiction, because  
11 economic is what? Money, right? But in the ancient  
12 days, the Hawaiians, they never used money.

13 So if you think about that for a second,  
14 the Hawaiians used to trade. The people who lived  
15 by the ocean, makai, they would trade food with  
16 those who live in the mountain, according to what  
17 they have. Like if you're by the ocean, you have  
18 fish; people by the mountain, they have other things  
19 that isn't right next to the ocean.

20 So they would trade, and they would --  
21 that's how -- that's our economics, as Hawaiians.  
22 So you can take that "economic" out of  
23 there because that's a contradiction, because  
24 cultural -- how you guys gonna talk about cultural  
25 when economics and all that is in there?

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

81

1 And then how the EIS is supposedly -- this  
2 is just a prep, right, like a preparation for you  
3 guys' main decision. This is just like -- this  
4 isn't for us to testify, but where do we testify?  
5 Where do we testify?

6 MR. MATSUKAWA: The decision is by the --  
7 for the permit, there will be proceedings, I  
8 imagine.

9 So again, I'm not the attorney, I don't  
10 know the exact process, but I would think there  
11 should be.

12 MR. STONE: Well, if it was me -- I'm not  
13 trying to -- but if I was the one running this  
14 meeting, you know, I would definitely know  
15 everything that's going on, especially what's going  
16 on in the future.

17 Okay. Where's the other page, though?

18 MR. MATSUKAWA: We should clarify that.  
19 We are doing the EIS. You know, I'm still -- in  
20 order to do the EIS, I have to learn things.

21 I don't know all of the legal -- this  
22 thing has had a long history. I got into this not  
23 that long.

24 MR. STONE: I'm not saying you personally.  
25 MR. MATSUKAWA: I don't know everything.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

82



1 That's why I don't answer some of the questions. I  
2 don't know.  
3 MR. STONE: Okay. You know, I'm not --  
4 you know, it's not a personal thing.  
5 MODERATOR SENELLY: Can I say one thing?  
6 MR. STONE: It's not a personal thing or  
7 anything like that.  
8 MODERATOR SENELLY: By the time the EIS is  
9 pau, we will know. Okay?  
10 But coming out here, part of it is when  
11 you, people like you --  
12 MR. STONE: Yeah, you guys are hearing our  
13 testimony.  
14 MODERATOR SENELLY: Yeah.  
15 MR. STONE: You guys are hearing us speak.  
16 MODERATOR SENELLY: What you guys are  
17 saying. And so that helps --  
18 MR. STONE: That helps you make the  
19 decision.  
20 MODERATOR SENELLY: Right. That helps us  
21 put what's going to be in it.  
22 MR. STONE: I understand your process.  
23 MODERATOR SENELLY: So that by the time  
24 we're pau, we're gonna get.  
25 MR. STONE: Okay. I understand you guys'

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

83

1 process and stuff like that, but like I said, you  
2 guys might need to remake a whole new PowerPoint,  
3 just by -- whoever made it, that's cool. But just  
4 think about where you're at, Hawaii. Who are the  
5 people who's native to this place? Hawaiians. So  
6 when you talk about the actions of anything, you  
7 guys should base it off of that first.  
8 And also when you talk about culture,  
9 people get religions and this and that. Hawaiians'  
10 religion is our culture. So if I was to bring up  
11 another religion, people's ears would perk up. But  
12 they don't see Hawaiian as a religion, but Hawaiian  
13 is a religion.  
14 It's not a religion, but it is because you  
15 know what I mean.  
16 MODERATOR SENELLY: Kawika, we're going to  
17 move on, okay? You know, I have two more people  
18 from East Maui.  
19 MR. STONE: I'm going to wrap it up with  
20 what you guys should address in the EIS.  
21 MODERATOR SENELLY: Okay.  
22 MR. STONE: You guys should address the  
23 area, think about the areas that you're talking  
24 about, think about the people, and maybe you  
25 should -- oh, yeah, address the gatherers and the

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

84

1 providers, which are the same thing.

2 Okay. So if I can't go out to the other  
3 side to get food or anything like that -- some  
4 people go to the store, that's how they get their  
5 food. Some people rely on nature, things around  
6 them to get their food and to provide for their  
7 family.

8 So you guys should address, mainly on the  
9 gatherers and the culture -- you guys put the word  
10 in there, "cultural." And "environmental." That's  
11 the two big words right there.

12 Social and all that can go right now. And  
13 cultural and environmental, that should be you guys'  
14 main basis, but, you know, it's -- this is words and  
15 these are documents and stuff like that.

16 But when it comes down to it, it's not  
17 words and documents and signatures that will  
18 determine how the river is going to flow, because  
19 that's nature.

20 So when it comes to nature -- oh, yeah.  
21 When you talk about meeting the laws of the State,  
22 just think about meeting the laws of nature before  
23 anything.

24 MODERATOR SENELLY: Mahalo.

25 Mr. Young, you've been so patient.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

85

1 UNIDENTIFIED SPEAKER: You know, I would  
2 just like 10 seconds.

3 Glyphosates, Roundup used on the ditches,  
4 could we have people that drink from the ditches get  
5 free testing of their urine to see how much the  
6 effect has been by phosphates? Please study it.

7 MODERATOR SENELLY: What's your name?

8 UNIDENTIFIED SPEAKER: That's my  
9 testimony.

10 MODERATOR SENELLY: Did you note that?  
11 Okay.

12 UNIDENTIFIED SPEAKER: Thank you.

13 MODERATOR SENELLY: Mahalo.

14 We're taking a break. I'll tell you why.

15 No. You know why? Because the folks from  
16 East Maui are staying. And if they've already gone  
17 home home -- I just want to make sure I take them  
18 first, and so if they want to go home during the  
19 break, that's it.

20 Also, Darcy will need a few minutes.

21 UNIDENTIFIED SPEAKER: Please don't use  
22 that as an excuse not to go out to Hana.

23 MODERATOR SENELLY: I understand.

24 Okay. Mr. Young, go ahead.

25 MR. YOUNG: Now I lost my thought.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

86

1 MODERATOR SENELLY: Sorry.

2 MR. YOUNG: I want to talk about Makapipi

3 going bone dry from 1990 up until they the their

4 sugar cane; and then when they closed the sugar

5 cane, they opened up Makapipi again.

6 But for 27 years, Makapipi never flowed.

7 Because in 1990, East Maui Irrigation took all the

8 water from Makapipi.

9 There's two big dams up there, one called

10 Poke's ditch, and I don't know what that bottom dam

11 was, but it stopped all the water, and everything

12 went into the ditch system to Wailuku.

13 And as for the Environmental Impact

14 Statement, the government that's supposed to

15 overlook the stream flows, there's -- Makapipi is a

16 perennial stream, which means that the thing is

17 supposed to flow all the time, but it wasn't. It

18 was bone dry.

19 And what happened is that all the springs

20 in Hana all dried up down on the ocean and

21 everything like that, and 90 percent of our fish has

22 disappeared, because 90 percent of the seaweed has

23 disappeared.

24 And the fish live off of the seaweed, and

25 also the baby fish, like the ocean, where the river

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

87

1 enters the ocean is known as an estuary. And

2 estuaries are all nurseries for all your baby fishes

3 and crabs and lobsters and everything like that, and

4 they live off of zooplankton and cytoplakin. One's

5 a vegetable, one's an animal, and these -- this is

6 like milk, mother's milk to them.

7 And when a lobster gets a little bit

8 bigger, then they will feed off the bottom, off of

9 solid food. But when they're little, they just

10 float in the water column, and they have to bump

11 into the food, because they cannot swim up to the

12 zooplankton and catch it. They have to just bump

13 into it.

14 So when there's no fresh water going into

15 the ocean, there's no food to bump into. So all our

16 fish is gone. 90 percent of the fish in Hana has

17 disappeared. 90 percent.

18 Now, as for the environmental or the part

19 that's supposed to watch the environment, they've

20 been doing a real poor job, because I can show

21 you -- you can come into Hana Bay, and I can show

22 you there's no seaweed anymore, no turtles, because

23 no turtles are -- the turtles eat seaweed, and

24 there's no turtles anymore. And there's no

25 (Hawaiian), and that has all disappeared.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

88

1 And I say don't give East Maui Irrigation  
2 or A & B that 30-year lease, yeah. Stop it.  
3 Thank you.  
4 MODERATOR SENELLY: Thank you, Mr. Young.  
5 Okay. Bob Marta.  
6 MR. MARTA: See if my voice holds out and  
7 if you can hear me.  
8 Aloha everyone.  
9 MODERATOR SENELLY: Aloha.  
10 MR. MARTA: My name is Bob Marta. Born  
11 and raised in Hawaii. I'm a 57-year resident of  
12 Kuau and Paia and have spent 75 of my 88 years  
13 involved in some form of agriculture.  
14 Because of my background, some of what I  
15 share may be complex, unconventional, new or even  
16 unique.  
17 Alexander & Baldwin, Incorporated, once a  
18 very local company, is rapidly changing. Through a  
19 stock distribution, it gave its wholly owned Matson  
20 Navigation, now Hawaii's fourth largest corporation,  
21 to A & B stockholders on a share-for-share basis.  
22 It then merged its agricultural divisions into A & B  
23 properties.  
24 According to Pacific Business News, it is  
25 considering a change in its corporate business

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

89

1 structure into that of a real estate investment  
2 trust by the spring.  
3 With 77.1 percent of A & B stock now held  
4 by investment managers, it is obviously managed for  
5 their benefit.  
6 It is noteworthy that investment managers  
7 now control 84.7 percent instead of 77.1 percent of  
8 Matson incorporated that was recently distributed by  
9 A & B to the stockholders.  
10 This suggests that outside investment  
11 managers will increasingly control A & B and its  
12 Hawaiian assets.  
13 This suggests a need for better  
14 understanding of A & B's future commitment to  
15 agriculture.  
16 A & B has now requested a 30-year lease  
17 for a large amount of water. Much will take place  
18 in the next 30 years, and it's important that this  
19 water be available where most needed.  
20 How fast can things move? Since closing  
21 HC&S, I understand that A & B has sold 339 acres of  
22 land in Paia, where the survey for its county water  
23 line was completed before the sale was announced.  
24 Progress at this rate can accomplish much  
25 in 30 years, but is this development progress? Is

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

90

1 it safe? What is happening in agriculture,  
2 especially sustainable agriculture? Let's give this  
3 some thought.  
4 If the numbers were run, I suspect that we  
5 do not have sufficient water to produce food for our  
6 current population of perhaps 1.4 million, to  
7 tourists and the military. I also suspect that  
8 agriculture is deliberately being held back by state  
9 officials to ensure water for development.  
10 Someone needs to run the numbers on this.  
11 Obviously, we are short of facts.  
12 We also need to know where we collectively  
13 stand on food sustainability, a growing subject of  
14 discussion.  
15 Most machines work by using the sun's  
16 energy, whether derived from fossil fuels, plant  
17 products or solar panels. The same energy from the  
18 sun powers everything we do as individuals, only we  
19 get our energy from a fuel known as food. That is  
20 mostly produced through plants; and the progress in  
21 the process, we call agriculture.  
22 Agriculture a land-based process is noted  
23 for the enormous amounts of water the process  
24 requires for each unit of food produced.  
25 Presently, enormous amounts of sunlight

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

91

1 that could be used to produce food in East Maui is  
2 being wasted for lack of water. And even more  
3 sunlight in central Maui is being wasted for lack of  
4 agriculture. Is this smart planning?  
5 Historically, the Hawaiians were able to  
6 grow enough food to sustain a million people, as  
7 they were hard working and industrious. It may be  
8 this population was not larger because of water  
9 limitations.  
10 Remember, a sustainable population is  
11 limited by what can be produced in a dry year.  
12 With the introduction of sugar cane, there  
13 was a practice to divert water from adjacent and  
14 distant areas, depriving users from their  
15 livelihood. Deprived from income, many farmers  
16 could not pay taxes and lost their lands.  
17 Without farms, many were forced to work as  
18 laborers for shipping, sugar, pineapple and  
19 construction.  
20 The upshot was we lost crops, farmers and  
21 farms.  
22 With long-term lack of water and more  
23 recently riverside drift, our food sustainability  
24 dropped from 100 percent to today's 5 to 13 percent.  
25 MODERATOR SENELLY: Excuse me, excuse me.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

92



1 Mr. Marta, are you going to -- can you  
2 turn that in? Are you almost done?  
3 MR. MARTA: I beg your pardon?  
4 MODERATOR SENNELLY: Are you done? Or do  
5 you want to turn it in?  
6 UNIDENTIFIED SPEAKER: We want to hear it.  
7 MR. MARTA: I'm almost done.  
8 MODERATOR SENNELLY: Because I also have --  
9 since you have it written, we also want to -- we can  
10 take it also.  
11 (Simultaneous and unintelligible audience  
12 speakers.)  
13 MODERATOR SENNELLY: Go ahead. Do it.  
14 We have one more East Maui person after  
15 this, and then I will address what you said.  
16 MR. MARTA: Shipping to import food from  
17 over 2,000 ocean miles away, is this what we want  
18 and a risk we choose to take?  
19 Before giving water for unidentified  
20 and/or unidentified uses, we need to identify how  
21 much agriculture we want, where it will be, who will  
22 do it, and how much water will be needed.  
23 The State has not done this. It has yet  
24 to identify the problems or reasons why our  
25 sustainability has gone from a hundred percent to

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

93

1 the present unknown but unrealistically low figure.  
2 Overall, the state has failed miserably to  
3 protect its agriculture and its people.  
4 But this is not the subject of tonight's  
5 meeting. Tonight's subject is what are we going to  
6 do with our water.  
7 If agriculture is a serious consideration,  
8 let's recognize that I've had 40 years of experience  
9 in the Paia nursery, with plant damage from  
10 chemicals from the air and County water. HC&S has  
11 gone away, but surprisingly, my problems haven't.  
12 Based on experience, I can suggest that  
13 diversified agriculture as to Baldwin Avenue may  
14 also be in for some unexpected surprises. Will this  
15 affect plans or schedules? We will find out.  
16 Finally, there was a question of a proper  
17 scope of an Environmental Impact Statement.  
18 Will the EIS recognize the existence of  
19 people on Maui and the merits of converting  
20 nonwasted sunlight, falling on East and Central  
21 Maui, into food for their use and possible survival?  
22 If so, the entire process becomes more complex, as  
23 it should be.  
24 I hope that some of this -- I hope that  
25 some of this material will be of use in formulating

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

94

1 the needs of the EIS and some of the things that it  
2 must consider and factor into a good solution.  
3 Thank you very much.  
4 MODERATOR SENELLY: Appreciate it. Thank  
5 you.  
6 Okay. Kaleikoa Ka'eo.  
7 MR. KA'EO: (Hawaiian introduction.)  
8 Aloha. First of all, I'd like to just say  
9 exactly what has already been said, which is I find  
10 it strange that this isn't being heard, first of  
11 all, in Hana or Keanae, first of all. And that's a  
12 clear sign or a sign to the community that we're  
13 being set up.  
14 So I don't know what the intentions were  
15 perhaps, but it's clear to us that the community  
16 wasn't looked at first.  
17 So I want to start off by making clear,  
18 this I think has to be clear, is that this EIS needs  
19 to be careful in making sure it has the correct  
20 historical, political, economic and cultural history  
21 of Koolau and East Maui, not one that provides a  
22 settler, colonial mentality of justifying how we got  
23 here.  
24 But let's be clear, because there's a lot  
25 of great historians out there. So the EIS has

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

95

1 always failed to do that, so I want to make sure  
2 that you get somebody that knows the history of this  
3 area, and that's up front at the very beginning,  
4 prior, prior to the taking and stealing of the water  
5 from East Maui.  
6 So let's not start with when the water was  
7 taken. Let's start with how the water was managed  
8 for many, many years, and generations, let me just  
9 say.  
10 You know, our people has been here for  
11 2,000 years, for many, many generations. So we're  
12 not Johnny-come-Latelies into this area.  
13 However, when you look at this process,  
14 the fact that the EIS is looking on a 30-year lease  
15 extension, extension, these are extensions for the  
16 continued stealing of this water, that's the  
17 starting point, not the starting point says this  
18 water belongs to the people of East Maui. That's  
19 who it belongs to.  
20 And if HC&S, A & B, EMI, whoever they are,  
21 want that water, they should bring their plans to  
22 the people and prove to the people. This process,  
23 it's backwards. it's backwards. We gotta defend  
24 ourselves to go prove that that's our water.  
25 This is part of the confusion. That's why

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

96

1 for me, it's very important we start with that  
2 point. And that's why I'm wondering why hasn't it  
3 started at that point. I can go straight to the EMI  
4 administration and the State process, which wants to  
5 continue business as usual. But I'm here with many  
6 other Hawaiians, and we say no more. No more we  
7 allow this to occur.  
8 So I want to make sure that we have a  
9 correct political, economic history that's at the  
10 forefront and that we have a true Hawaiian historian  
11 involved at the forefront.  
12 Secondly, let's make sure -- we talk about  
13 this EIS, but it also does a terrible job in  
14 explaining -- not the potential impacts, but let's  
15 look at already what the impact has already been for  
16 over a hundred years. The degradation to the  
17 environment. Let's ask how much billions of water  
18 has been taken out of East Maui already? Billions.  
19 Every year, we talking billions that they take.  
20 Well, how much? What is the total?  
21 What have been the effects of the  
22 (Hawaiian) already that have been killed off? We're  
23 not talking maybe might kill. We're talking already  
24 has been wiped out in many of those streams that  
25 used to run every day.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

97

1 That's an environmental crime that has  
2 already occurred. For me, it was just a crime,  
3 before we talk about continuing crime.  
4 Secondly, let's also look at its effects  
5 already. How much fish has already been lost? How  
6 much shellfish? What degradation has already  
7 happened to the fisheries that depend on their fresh  
8 water to go into that stream, to get the smaller  
9 fish, to get the bigger fish and the limu.  
10 What has already been the destruction that  
11 people pretend as if -- see, people believe this is  
12 the normal state as is now.  
13 This is not the normal. This is the  
14 abnormal. This is what happens when corporate  
15 mentalities comes in and rapes the land, destroys  
16 the land.  
17 So let's make sure we tell the right  
18 story. Let's tell the true story.  
19 And during the course, water has already  
20 had many impacts upon the community, the Hawaiian  
21 community already, who lost, lost food sources  
22 already, who has cultural practices already because  
23 associated with those streams, have already been  
24 harmed.  
25 In other words, that has already been

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

98

1 done. Let's recognize the (Hawaiian) first. We  
2 cannot talk about what we gonna do if you don't  
3 recognize that.  
4 So let's start with that and understand  
5 what are the crimes that have already been against  
6 the native Hawaiian people. Because these are  
7 crimes against humanity.  
8 And that brings me to the third point. We  
9 should also be clear to understand what is going on  
10 between the (Hawaiian) and native Hawaiian  
11 community. We are no longer afraid to speak and say  
12 we demand our human rights as human rights, our  
13 humanistic rights as an occupied people by the  
14 military foreign power that continues to exist and  
15 allows these kinds of crimes against humanity to  
16 occur.  
17 So I want to make sure in this report we  
18 also investigate all of those things. What are our  
19 rights as native Hawaiians internationally, our  
20 human rights, our humanistic rights?  
21 You know, look at things like the UN  
22 resolution 1514, look at the Proxmire Act. These  
23 are all international covenants that are already  
24 there to protect the rights of not some human  
25 beings, but which human beings? All human beings.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

99

1 And I therefore would say, you know,  
2 Hawaiians, we are human beings. And therefore, we  
3 deserve the right of a state agency that will make  
4 sure, even on international law, our rights are  
5 protected.  
6 Number four, all I'm going to say is  
7 remember Maunakea. Maunakea is occurring today  
8 because of the failure of the EIS, the EA cultural  
9 impact, all those kinds of impacts that was ever  
10 done.  
11 Even when the people came out in droves,  
12 testified against it, didn't matter. No. The State  
13 of Hawaii, the University of Hawaii went ahead  
14 anyway, anyway. And you saw what happened recently  
15 in the past few years. There's an uprising.  
16 So part of this should also address what  
17 happens when you say yes, what happens when you say  
18 yes to A & B.  
19 You guys should be prepared to know that  
20 you gotta deal with all these Hawaiians. You guys  
21 should understand, you guys should address that  
22 question, because you're going to have to deal with  
23 us in the courts and every Planning Commission  
24 meeting. Anything to do with the taking of our  
25 water, our people gonna be there.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

100

1 And so these are some things even outside  
2 of the courts we gotta realize, because at some  
3 point, we as Hawaiians understand sometimes we need  
4 to stand, sometimes we need to defend.  
5 And I believe that's something that the  
6 EIS should address by looking at examples, like  
7 Haleakala. It's really the same BS that's going on.  
8 The rights of developers, settlers,  
9 colonizers, investors, land speculators, are treated  
10 as if they're some golden child that needs to be  
11 protected, and our concerns as the people of this  
12 land is thrown to the wayside, our commentary to the  
13 side.  
14 See, I understand. I've been coming to  
15 this thing for many, many years, and I've seen a  
16 whole lot of meetings. But you might even have  
17 99 percent of the people testify against something.  
18 And what does the EIS say? Oh, let the project go  
19 through.  
20 So the point I'm trying to say, we let  
21 fools come in here and participate, but we get  
22 asking, we get demanding, and we're here also to  
23 declare that we will do whatever is necessary for us  
24 to protect our resources to return the water back to  
25 the community where it starts.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

101

1 If any water should be taken from the  
2 community, it's for the community to decide, first  
3 of all.  
4 So I just want to say mahalo to you guys  
5 for coming and giving us the opportunity to share.  
6 But at the same time, I would say this to  
7 everybody here: Our voices, whether one word or a  
8 thousand words, are all important.  
9 Because it's for us, it's for us to decide  
10 for ourselves what is this for ourselves. It's not  
11 going to be the government, it's not going to be the  
12 Board of Land and Natural Resources, it's not going  
13 to be land speculators from outside, because in the  
14 end, it's going to be us.  
15 So if the EIS doesn't listen to these  
16 voices, I blame the EIS for not listening to the  
17 voices of our people.  
18 Mahalo.  
19 MODERATOR SENELLY: Thank you.  
20 Here's what I'm going to ask. Darcy needs  
21 a break. So for the rest of you who didn't give  
22 oral comments, for those of you who want to turn in  
23 written comments or e-mail your comments, that's  
24 okay.  
25 May I ask by show of hands how many of you

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

102



1 still want to speak?

2 Okay. Here's the deal. It is -- and I'm

3 sorry, Darcy -- it is 7:42.

4 We're going to have a five-minute break,

5 and we're going to come back, and I'm going to ask

6 you, all of you will who raised your hand, can you

7 summarize as much as you can? You can also

8 supplement it with written stuff. But let's try and

9 be done by 8:30, okay? Can we do that?

10 (A brief recess was taken.)

11 MODERATOR SENELLY: I'm going to call your

12 name in the order you signed up. And I'm going to

13 ask you, I really want you to summarize. Okay?

14 I really want you to summarize when you

15 speak. Understand that there's a lot of people who

16 want to speak, and we want to be pau at 8:30,

17 please.

18 All right. Christina Hemming.

19 MS. HEMMING: Hi. My name is Christina

20 Hemming, and I actually live on Kuiaha stream.

21 It's been running lately here in Haiku,

22 which has been great. But today I went down there,

23 and it's pretty much all done. Everett Dowling's

24 got a well up above.

25 Okay. So this is an EIS. We've got to

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

103

1 fit into their paradigm in order for it to count.

2 So the number one thing I want to be part

3 of the EIS is the EIS has to be consistent with the

4 development resource plan, which has some very

5 stringent rules.

6 And some of those rules are -- well, first

7 of all, the first rule it says is it only looks 20

8 years out. And you know it says the rules are only

9 for 20 years out.

10 So how can you ask for a lease for 30

11 years when in the rules themselves, in 13.170 32, it

12 says a 20-year vision. So the lease should only be

13 considered for the rules that have the paradigm of

14 20 years.

15 Second of all, who is the lease going to

16 go to? Who -- can the lease be transferred if

17 you -- if they agree to this and it goes through,

18 will the lease be able to be transferred or

19 subdivided to multiple entities. Number two.

20 The instream flow standards need to be --

21 all the -- everything needs to go up, all the water

22 needs to go into the stream, and then you ratchet it

23 down to see how much is actually needed.

24 And this is where it gets kind of tricky

25 for me, because I personally feel like East Maui

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

104

1 needs to be designated as a water management  
2 resource area, just like west Maui. Because  
3 technically, if it's not designated as a water  
4 resource management area, all the waters that's been  
5 flowing down to Central Maui, that's a crime.  
6 That's a crime against the water laws of the State  
7 of Hawaii. And no one has been discussing it.  
8 If they want to take the water from  
9 anywhere on East Maui and take it down to central  
10 valley without a water management designation  
11 area -- which means they have to tell you all the  
12 wells. Everybody's got to get a permit for any well  
13 they drill. They have to tell how many wells there  
14 are. They've got to do a study on the quality of  
15 water, and all of that goes into can they release  
16 water out to another area of the island.  
17 Otherwise, if it's not declared a water  
18 management area and the aquifers aren't protected,  
19 then this EIS application is illegal based on the  
20 Water Resource Commission rules.  
21 You have to project the usage of water,  
22 you have to identify the sources of water, you have  
23 to have the existing uses of water all part of the  
24 EIS; you have to have the capacity, and it all has  
25 to be part of a 20-year analysis plan.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

105

1 The last time I went to a water meeting  
2 was like in '99, '98, and it was on the Kaupo ditch  
3 system. And I remember when DLNR awarded the Kaupo  
4 ditch system to the Kaupo Ranch for \$600 a year, in  
5 quarterly payments of \$125 or \$150.  
6 So the amount of money that the people are  
7 paying for the water and then leasing it back to the  
8 people is a crime. And that should also be  
9 addressed.  
10 So the impact of the construction by EMI  
11 on the water quality should also be addressed in the  
12 EIS, please.  
13 And you have to follow the state resource  
14 code. And the lease should not be able to be  
15 transferable, and that should be -- because, hey,  
16 guess what? Monsanto, you know, guess what, there's  
17 a ton of companies.  
18 Do you know how privatized water has  
19 become in the United States? We don't want a  
20 Japanese bottling plant moving out there and taking  
21 all the water and then shipping it over to Japan or  
22 China or wherever else, where they are desperate for  
23 clean water. So that should also be part of the  
24 EIS.  
25 Thank you so much.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

106

1 MODERATOR SENELLY: Andrea Christian.  
2 Okay. Andrea Christian went home.  
3 Leslie Kuloloio.  
4 MR. KULOLOIO: Aloha everybody.  
5 (Hawaiian.)  
6 We are all related to all the people all  
7 the way around the island, and the same water, I'm  
8 here to talk about what the EIS should not do.  
9 The last time I see an EIS performed was  
10 by the United States Navy for the island of  
11 Kahoolawe. And when we went inside there, we  
12 thought that we had to bring all the people together  
13 to bring back what you call Kanaloa, is a sacred  
14 place, a sacred place.  
15 And when the EIS was done, they did not  
16 clean up the island of the ordinance. This will not  
17 clean up, the (Hawaiian) of Alexander & Baldwin, who  
18 is the Roman empire.  
19 The Roman empire is the guys that came  
20 here from the pilgrims, called Americans, came over  
21 here and put their feet down at the Sea of Kulolia,  
22 which now they are calling Honolulu Harbor.  
23 And guess what? We just had a settlement  
24 agreement of Alexander & Baldwin go out and make the  
25 molasses, who gave it to Matson, who is on EIS, who

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

107

1 is a subsidiary of water, like EMI, done by  
2 consulting companies.  
3 I'm going to respect Okamoto.  
4 And guess what, they killed all the fishes  
5 in Honolulu Harbor by the sugar cane plantation  
6 molasses.  
7 Let's think big now, let's think big.  
8 So did Lahaina Pioneer Inn. So did  
9 Wailuku Sugar. All of the missionary families from  
10 Connecticut, and Pennsylvania, Rhode Island.  
11 You know what Aloha Tower is? Just like  
12 the Statute of Liberty: Come, come, come  
13 immigrants, come into my land on the Sea of Kulolia,  
14 now called Honolulu Harbor.  
15 Who fought the war for the Pauwela  
16 Lighthouse? Yours truly. And guess what the first  
17 used to run. The EMI, EMI is part of the  
18 Spreckelsville Beach that haole bought from Waiehu,  
19 the grant, the grant, 3343, all the way to Pauwela.  
20 That's the railroad. That's the fight land.  
21 So let's talk bigger than that. It is the  
22 ending of A & B, on the plantation product of many  
23 generations. But A & B pau. Go home, go home. You  
24 folks had the aina for a long time. Give back the  
25 water.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

108

1 And water should be free for the homeless  
2 family in Kahului. The Hawaiians who are homeless,  
3 they're all on Alamaha Street, down the harbor,  
4 they're all over the place. We're all related.  
5 We're all ohana, we all ohana.  
6 You know what freedom of religion is?  
7 Then you'd better know so that your culture impact  
8 will affect what you should address.  
9 Why don't you have -- you folks have a  
10 cultural person tonight, sir?  
11 Well, you'd better. You said you don't  
12 have the experience. If you don't have the  
13 experience, you don't deserve to be here tonight.  
14 MODERATOR SENNELLY: There will be a  
15 cultural expert. We haven't --  
16 MS. KULOLOIO: There better be one that  
17 you folks don't pay them off. Okay.  
18 MODERATOR SENNELLY: Okay.  
19 MR. KULOLOIO: And so all I'm saying is  
20 that native rights gotta be protected. We had  
21 enough. We had enough.  
22 Our ditches -- I want the Kuiaha ditch to  
23 run again. That was the first one they took over to  
24 run the cannery, the pineapple industries. Are you  
25 listening?

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

109

1 And Pauela ditch came all the way down to  
2 the lighthouse. Look at the maps. Show me the  
3 maps.  
4 You know what you don't have? You don't  
5 have the map of Maui. All our families are  
6 affected. No treat us kanakas (Hawaiian). We food  
7 of abundance, we navigators.  
8 Make sure you're listening. Put it down  
9 in your notes.  
10 We navigators, we farmers, we gatherers,  
11 like all you said, and we protectors, and we are  
12 really just people.  
13 That observatory on top there need to come  
14 down, in Haleakala. You know why? It get Inouye's  
15 name on top there.  
16 You folks listening?  
17 And one mayor said the rocks are not  
18 sacred. What? Then the water is not sacred. In  
19 the name of the Father, Son, I baptize you in the  
20 name of the Father, Son and Holy Ghost.  
21 So let's do a cultural impact. Let's talk  
22 Hawaiian religion. Have Hawaiian religion here,  
23 it's about time. And the fishermen are Hawaiian  
24 religion, yeah. They treated us like the teepees.  
25 They took away all our abundant places. Everybody

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

110

1 say: (Hawaiian.)  
2 That's the gill of the fish that travel.  
3 We are related to the fishes of the world. The fish  
4 go around the world. We don't stay in swimming  
5 pools, we don't stay in those aquariums. Our family  
6 go around the world. Okay?  
7 And guess what, say: (Hawaiian.)  
8 We seek knowledge from the gills of the  
9 fish. That's who we are, (Hawaiian).  
10 And the ocean is part of us. We  
11 navigators, we gatherers, we know what is the reefs.  
12 We don't need one haole tell us guys how to protect  
13 the reef.  
14 But you know what, thank you folks for  
15 listening. I'm kind of P-ed off. You know why?  
16 This process is one insult.  
17 Thanks. Mahalo.  
18 MODERATOR SENELLY: Sean Lester.  
19 MR. LESTER: Aloha. My name is Sean  
20 Lester. And I do have a little to read.  
21 I live in an area directly affected by the  
22 EMI's water system and the water request being made  
23 before this body of A & B, because this actually is  
24 by A & B.  
25 The accountability for water resources has

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

111

1 been at the core of all water disputes and requests  
2 before this commission and the State of Hawaii since  
3 the formation of the State constitution. The  
4 requests before you today is no different in this  
5 regard.  
6 Several years ago, HC&S was receiving over  
7 90 billion gallons of water while paying less than  
8 \$150,000 a year for the resource. They were, as A &  
9 B is now, requesting a 30-year lease.  
10 I applaud the wisdom of this commission,  
11 because a few years later, the direction of HC&S  
12 Corporation changed dramatically when it was  
13 liquidated.  
14 Forward-looking local residents questioned  
15 this commission as to the validity of the 30-year  
16 lease request back then, and the commission kept the  
17 annual lease structure.  
18 Forward-looking citizens are once again  
19 questioning the validity of a 30-year lease here  
20 before you today.  
21 Any corporation can be merged or  
22 liquidated, even the corporation who is now before  
23 you asking for a 30-year lease. How prudent is it  
24 to give such a long-term lease to a corporation that  
25 may not be structured as the same company in a few

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

112



1 years, much less 30 years.

2 Maui gave tremendous support for many

3 decades to HC&S as a large local employer and

4 supporter of our local economy. Yet with the final

5 decision in the A & B boardroom, these jobs in the

6 HC&S Corporation itself were extinguished. We, as

7 citizens, need a place besides a boardroom where our

8 future is decided.

9 It is in places like this commission where

10 we, the people, can ask for assurance that

11 thoughtful and balanced approaches to land and the

12 water use will be employed.

13 As in this case, this is the legacy that

14 can balance the corporate model with short-term

15 profit and factor long-term local needs into the

16 equation.

17 Whether people liked it or not, HC&S did

18 try to keep this land in agriculture. We could

19 count on the acreage farm to be consistent, as was

20 their water request. It was on this basis that this

21 commission allowed HC&S to keep using these water

22 contracts year after year.

23 So the question is: Do we acquiesce and

24 give A & B a new long-term water subsidy to the tune

25 of 41 billion gallons of water rights a year for

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

113

1 hypothetical crops and unknown uses?

2 You must ask: Is the water use efficiency

3 of their hypothetical diversified agriculture, or

4 what is it? Are they going to sell even more land

5 designated as agriculture, as they did the 339 acres

6 in Paia, to a mainland business, with no local

7 review or thoughts as to the impact of the local

8 water needs?

9 When A & B sells agricultural land, do

10 they sell the rights to the water -- that they're

11 asking you for now -- with the land sale? Did they

12 bank it as a commodity? What are their use plans

13 that are shown in this water efficiency and their

14 support of local food sufficiency needs?

15 So many unanswered questions. Why?

16 Because, frankly, if you take the time to ask them,

17 they don't know.

18 The parent company of HC&S needs about

19 150 million gallons a day for diversified ag use.

20 This request is based on, at best, a speculative

21 projection with no basis in real fact.

22 Actually, what they're asking for is

23 simply a request to get water rights, justified by

24 the fact that they're a large land owner, hoping you

25 will trust them to have the foresight to know how to

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

114

1 utilize the water correctly as they did when they  
2 were a 140-year-plus monocrop agribusiness. This  
3 logic no longer applies as it's an entirely new  
4 ballgame.  
5 The logical game plan is what you have  
6 here on the table before you.  
7 As you probably are aware, the continually  
8 shifting landscape of A & B's map and its parcels,  
9 and which are listed as ag, were sold, is far too  
10 tenuous to substantiate a blanket long-term water  
11 lease. So many questions are obscured and hidden  
12 behind A & B's corporate structure.  
13 I'll skip on.  
14 A bit of an overview here. A & B is a  
15 huge local land owner owned by out-of-state  
16 entities.  
17 A & B's major shareholders own  
18 81.65 percent of the stock. We're talking from the  
19 mainland and from Europe, according to the  
20 Morningstar investment website.  
21 I will place the list of these investors  
22 in my written testimony.  
23 But you hear the names of these people  
24 that we know as A & B, you see T. Rowe Price,  
25 Vanguard, Touchstone Capital. What stands out here

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

115

1 is there's not a single Hawaii-based institution or  
2 fund listed as an A & B major stockholder. Not one  
3 here.  
4 This is an out-of-state corporation.  
5 Understand that. Please take the time to look at  
6 each of these major investors as I have.  
7 These companies have one purpose: To  
8 ensure the largest possible return on a diversified  
9 portfolio of investments.  
10 So let's be real when we talk about this  
11 lease request. It isn't about keeping diversified  
12 agriculture. A & B does not have the same need we  
13 do for this resource to be wisely allocated.  
14 We also, we who live here, are looking at  
15 a multigenerational survival. A & B's major  
16 shareholders are looking at a quarterly report that  
17 steers decisions on how many shares to buy and sell.  
18 We must weigh this part of the equation when making  
19 decisions of this magnitude.  
20 This company has two potential avenues of  
21 land use here on Maui. One is to sell and build out  
22 as much of this land as possible to keep their  
23 stratospheric 180 rating -- and if you look that up  
24 on online, they're higher than Microsoft was when  
25 they were at their zenith.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

116

1 The land banked for many years in future  
2 real estate sales. This would include leases or  
3 sales to a few large agri businesses and a thin  
4 covering of local farmers, et cetera, to placate, as  
5 they have for well over a hundred years placated by  
6 handing out a few dollars here and a few dollars  
7 there. Those days are over, those days are over.  
8 The second possibility is to work with a  
9 very different model. Become partners with the  
10 County of Maui and other private or nonprofit  
11 organizations to move to a truly long-term  
12 profitable, sustainable, agricultural model that  
13 will ultimately be profitable in more than just the  
14 normal short-term corporate structure.  
15 This would lead to the wise use of water  
16 resources and engage community support of a future  
17 with long-term, locally aligned values and goals.  
18 Please understand that the areas where  
19 this water is taken from on the East Side, Nahiku,  
20 Keanae, Huelo, have paid the price over the years  
21 for HC&S's use of this resource. An entire way of  
22 life was disrupted and destroyed, remaining so to  
23 this day.  
24 So in my opinion, there is no right to  
25 this water by A & B as a corporation. They were

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

117

1 paid by many generations of local Hawaiian and other  
2 communities for every dollar of profit they have  
3 received, at extraordinarily heavy and profound  
4 costs to these communities.  
5 There is nothing owed to this company  
6 regarding water rights.  
7 At the same time, everything is owed to  
8 these West-side communities. We must reinstate  
9 their water rights ahead of any ruling on A & B's  
10 request. This could be done immediately on request.  
11 To put things in perspective, in order to  
12 receive ag-rate water as a small farmer here on  
13 Maui, we have to show on an annual basis of the  
14 stable farm plan, implement this plan, and be  
15 inspected to ensure it's being applied directly  
16 every single year. We had a plan inspection done  
17 annually to show that it was indeed an agricultural  
18 property.  
19 A & B is primarily a real estate and  
20 transportation company when sugar was taken out of  
21 the equation. They're entering an entirely new area  
22 of land use. Why should they not be held at least  
23 to the same level of accountability as other ag here  
24 on Maui?  
25 And if you look at Keanae or Nahiku, there

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

118

1 simply isn't any water, as you have -- as the  
2 commission has held up the disbursement of even  
3 small amounts of water that was fought for so hard  
4 by locals before the State.

5 We cannot afford the old-style  
6 dog-and-pony show that allows entities like A & B to  
7 demand such water rights or play the game where  
8 they're the only guy at the table with the \$10,000  
9 chip.

10 Those previous models simply can't be used  
11 anymore. Hopefully, experience will be the guide to  
12 a new paradigm of water and land use in Hawaii.

13 Today it's even more pressing that we have  
14 a real ag water utilization plan, one that is truly  
15 proven with substantive penalties if not met and a  
16 real review on an annual basis for water use.

17 This is one of the agencies that can  
18 assure Maui of water use and land utilization that's  
19 a cornerstone for these precious lands.

20 And we can't have a FONSI here where it's  
21 like there's no impact.

22 Anyway, that's mine. Thank you, folks.

23 MODERATOR SENELLY: Charlotte O'Brien.

24 MS. O'BRIEN: I would like the EIS to  
25 include an assessment of the importance of the --

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

119

1 I'd like the EIS to assess the fragility  
2 of the food security of all of the Hawaiian islands  
3 due to the imminent threat of climate change and the  
4 potential for -- for the potential of international  
5 and even national political instability. This is a  
6 state security issue, not that I'm not sympathetic  
7 to all of the other issues, but this is a state  
8 security, food security issue.

9 I think that for our law enforcement  
10 people -- I'm sorry, for our lawmakers to make and  
11 form the decisions, this EIS should assess the  
12 potential of the development of what A & B has  
13 called their important agricultural lands,  
14 27,000 acres, the importance of that to the food  
15 security of all of the Hawaiian islands, in the same  
16 way that the bread basket of the Midwest helps small  
17 farmers in the south, in the east, in the west.

18 To supplement their pasture animals, the  
19 pigs of the Big Island are importing grain at the  
20 cost of \$8.80 a bushel for soybeans. That's just  
21 the shipping cost. \$8.21 a bushel just for corn. I  
22 called Matson myself.

23 Now there's no way that you can be a small  
24 pig farmer on the Big Island and pay those as the  
25 prices in addition to what you're paying for the

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

120

1 grain.

2 So this is a food security issue for all

3 of the Hawaiian islands, and I think that needs to

4 be assessed in this EIS, because it needs to be

5 assessed whether or not it should become a public

6 trust.

7 And I'm not saying that we need to take

8 the land from A & B. I think we can pay them what

9 they carry for the asset on their books. Whatever

10 their historical asset value of that land is on

11 their books, the State could pay them for that so

12 they're not out anything.

13 And the EMI, if the State runs it, A & B

14 can lease water just like anybody else according to

15 need and according to value to the citizens of the

16 State of Hawaii.

17 And I'll write more in my written

18 statement.

19 MODERATOR SENELLY: Thank you, Charlotte.

20 Okay. Nik Hilawanda.

21 MR. HILAWANDA: I'm sorry. I know it's

22 getting late, so I have just a couple little points.

23 MODERATOR SENELLY: You can also turn it

24 in.

25 MR. HILAWANDA: Not these things.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

121

1 First of all, I wanted to refute the fake

2 news -- we all know what that is now -- on the front

3 page of the finest daily paper here on Maui, which

4 said that yesterday at the meeting at MECO -- and

5 it's interesting to have a meeting at MECO but not

6 in Hana or Keanae -- that without the lease -- and,

7 of course, a former County councilmember said this,

8 and it was quoted in the paper -- without the lease,

9 upcountry would have no water.

10 Okay. Let's get rid of that fake news

11 right away.

12 Next, the lease, A & B is going to donate

13 the ditch system, and I had to the County. But

14 thinking about it here, I changed that to some kind

15 of publicly controlled trust. They could donate the

16 delivery system to us, the people, because they've

17 already made -- as has been said already by many

18 people, they've already made millions and millions

19 of dollars.

20 My employees know that ditch system to be

21 hired by this public entity to run the ditch system.

22 I also want to say, before I go on, I

23 wanted to incorporate in my testimony the brilliant

24 testimony of people before me. It just got me.

25 People have been here for generations.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

122



1 I bought my property 20 years ago.  
2 Mokupapa Stream is totally bone dry. 20 feet west  
3 of my property, it blocks all the water.  
4 On December 31st, that big storm,  
5 5 feet, it almost was over me, running through my  
6 streams, wiping out all the vegetation, all the  
7 trees and a hundred foot across in that streambed,  
8 running like the Wailuku River.  
9 I've been there 20 years, I've never seen  
10 that. It was incredible. That's how some of these  
11 streams used to be. Those who have been here for  
12 generations know that.  
13 Somebody had earlier mentioned that the  
14 Maui Police Department was here and said they'd  
15 never seen that. Everybody said no, no, no.  
16 About 10 or 15 years ago, maybe 10 years  
17 ago, 12 years ago, there was a meeting right here in  
18 this very room, and there was just as many police  
19 here. Now who asked them to come and why is it a  
20 coincidence that it's another water meeting?  
21 UNIDENTIFIED SPEAKER: EIS, EIS.  
22 MR. HILAWANDA: I do want to thank you for  
23 saying "EIS, EIS," because what I really liked about  
24 this meeting, you guys who know only a little bit  
25 and you've been educated by the people, did you

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

123

1 notice we weren't held to a three-minute testimony?  
2 MODERATOR SENELLY: Actually, people came  
3 up to me, and they wanted -- we don't do that.  
4 MR. HILAWANDA: Okay. So I want to thank  
5 you for that, because the passion of some of the  
6 people here, you can't cover that in three minutes,  
7 like when the County Council or whatever meeting  
8 says, we're going to give you three minutes. It was  
9 incredible.  
10 You know, it's funny, I'm up here for  
11 about five minutes to seven minutes, and other  
12 people go -- and I know it's the end of the day, and  
13 half the people left, and it's fine. That's why I  
14 cut this down to just a couple of points. I hope I  
15 don't miss them.  
16 So by the way, A & B is not going to get  
17 the 30-year lease. They're not even going to get --  
18 hopefully, a one-year lease, but they're not going  
19 to get the 30-year lease because of what's happened  
20 in this room today.  
21 And it's not stopping here. It's been  
22 going on for generations, you guys know. So the  
23 EIS -- but we have to stay on top of that.  
24 And just as a side mention, I want to talk  
25 about development. There's about a half a dozen

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

124

1 developments right here around Haiku already, just  
2 popping up, that we don't even know about, right  
3 here around the Haiku Community Center here. So  
4 it's going to keep on happening, keep on happening,  
5 keep on happening. People have mentioned some of  
6 the other ones.  
7 And I think that's about the things that I  
8 wanted to add that I didn't hear people talking  
9 about.  
10 But again, now put in your EIS that A & B  
11 does not deserve it. The people should have the  
12 water and the people that live on the East side of  
13 Maui. And there's plenty of water. For the people  
14 that need the water upcountry, somewhere else, can  
15 then ask the community of East Maui, hey, could we  
16 have some of your water, not the other way around.  
17 Thank you, Berna. You run a brilliant  
18 meeting.  
19 MODERATOR SENELLY: Lucienne.  
20 And here's what I'm going to do after  
21 Lucienne speaks. It's almost 8:30. Several of you  
22 raised your hands. Here's what I'm going to do.  
23 I'm going to ask you to, after she's done, just say  
24 a little bit and put something in writing. Okay?  
25 Because I promised 8:30.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

125

1 MS. DE NAIE: Mahalo. My name is Lucienne  
2 de Naie. I've lived in Huelo for 30 years. Me and  
3 my neighbors are the ones that kind of started this  
4 process, along with the folks in Nahiku and Keanae  
5 and Wailuanui, and we've been waiting for more than  
6 20 years for this EIS. So I'm going to speak to  
7 what I think should be in the EIS exclusively.  
8 MODERATOR SENELLY: Thank you.  
9 MS. DE NAIE: First of all, this is not  
10 about taro farmers and rural residents versus  
11 upcountry farmers and residents.  
12 So the EIS should be very clear that there  
13 may be alternate ways for folks upcountry to get the  
14 water they need.  
15 And we all support the ranchers and  
16 farmers having water, the ag parks, the Department  
17 of Hawaiian Homelands, and even folks that want to  
18 farm in Central Maui. The thing is how. And this  
19 EIS needs to look at real alternatives of how.  
20 We need to see if there should be crops  
21 that would use less water. We need to see if  
22 improving our soil would mean that all crops need  
23 less water. We need to take a hard look at the  
24 stuff that would affect how much water we use.  
25 We need to look not at the status quo, as

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

126

1 many people have said, but the existing conditions  
2 and impacts, and there are many.  
3 And we need to address the impacts of our  
4 overgrown streams. We see this in Huelo. Just  
5 letting the water out is not going to solve the  
6 problem. Someone needs to take care of those  
7 streams.  
8 The EIS also needs to have better maps.  
9 The maps, you know, they don't meet the standards  
10 that you're going to need to have information.  
11 First of all, there are not 39 streams.  
12 The decision and order of the hearings officer has  
13 named 43 streams in the lease area. And there are  
14 more if you count the tributaries. But these main  
15 43, I suggest you look at his decision and order.  
16 It's being used by everybody.  
17 There are not five streams being proposed  
18 to be restored. There are eight streams, and they  
19 are by name. And I'm not going to take time to name  
20 them, but if I turn in written stuff, you'll get  
21 their names.  
22 The EIS needs to look at alternative  
23 management plans, like several other people have  
24 said, and look at the economic side of it. So what  
25 else could be done. Could we have these smaller

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

127

1 leased areas? Could we have partnerships in leasing  
2 the land? Does it just have to be the one, you  
3 know, big banana there, A & B? You really need to  
4 take a look at that. The three alternatives are not  
5 enough.  
6 The EIS needs to look at alternatives for  
7 managing the watershed lands.  
8 Let me tell you, boys and girls, we're not  
9 going to keep having water unless we take care of  
10 the lands. It's like in 30 years, I've seen them go  
11 so downhill. They're not going to produce the same  
12 amount of water. So we'll be fighting over less and  
13 less.  
14 We need to grow water and grow our care.  
15 And that needs to be examined in the EIS, what the  
16 strategies for that would be, how much it would  
17 cost, because it's part of awarding any leases, the  
18 kuleana part.  
19 The EIS needs to have specific  
20 stream-by-stream information, both historic use and  
21 proposed diversion. We have no idea what's being  
22 taken out of these streams. That needs to be in the  
23 EIS.  
24 There also needs to be specific info on  
25 how much water is derived from the streams that are

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

128

1 outside the lease area. And those, you know, we can  
2 list those, too, but there's dozens of streams that  
3 are not in the lease area that all go to A & B right  
4 now and are part of their, you know, potential water  
5 source. But we don't know how much that is. So  
6 they're asking for 115 billion on top of all those?  
7 That's just like double dipping.

8 I'm getting to the end.

9 The last thing we really need to look at  
10 is the upcountry water system the county has. This  
11 water system is being very inaccurately portrayed in  
12 the draft prep notice.

13 First of all, there's no map that shows  
14 that the County's two-pipe system was supplied.  
15 Half the water, they use in the upcountry system.  
16 So all the farmers and ranchers that want water, the  
17 Hawaiian homeowners, that's the water that's sent to  
18 them.

19 The Kula pipeline, the lower one and the  
20 upper one, they are not on your maps. They do not  
21 go in the lease area. They go to streams, they go  
22 to five streams, four streams in East Maui. They do  
23 not go in the lease area.

24 So half the County's water is not even  
25 affected by this lease. The EIS should make that

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

129

1 very clear, and it should analyze what the wells of  
2 the County produce. They're barely using their  
3 wells. Half a million gallons a day for that  
4 Dowling well. I read the well reports.

5 I don't see any information like that, you  
6 know, even proposed to be discussed. It should be  
7 in there, and I will write some comments.

8 And I'm going to conclude by saying that  
9 if you put all this information together correctly,  
10 you will understand what really needs to be taken  
11 from East Maui streams, and that number is going to  
12 drop a lot lower, and then we can talk about how  
13 long the lease should be.

14 But 30 years, I think should -- there  
15 should be alternatives, like fish and wildlife and  
16 others that have suggested. 30 years is not the  
17 only number that should be discussed.

18 And public access to the lands needs to be  
19 discussed, too, as has been brought up by many  
20 others.

21 Thank you.

22 MODERATOR SENEALLY: Thank you, Lucienne.

23 I'm going to have Father to come up and  
24 say a closing prayer.

25 Who wants to speak and say something very

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

130

1 short? Okay. Let's do it fast.  
2 Who wants to speak? Can you come over  
3 here? Please be quick.

4 MR. BALDWIN: So my name is Dwight  
5 Baldwin.

6 I want to start with asking that -- you  
7 guys, thanks for having this meeting.

8 I would like to request EIS to have a  
9 thorough analysis to watershed conditions, with the  
10 current conditions right now with A & B, the past  
11 conditions with diversions running, and future  
12 projected conditions, even multiple scenarios.

13 I want to look at the impacts on the East  
14 Maui groundwater, including spring formation and  
15 tributary streams, and if possible, get your  
16 engineers to calibrate the model of the past and  
17 future -- I mean calibrate it to the past events and  
18 just estimate a model of the groundwater flow and  
19 stream conditions with scientific accuracy.

20 Because I think this is a good opportunity  
21 to understand more about what is going on in East  
22 Maui in the past and in the future, because there  
23 aren't accurate gauges and, you know, it would be  
24 good to have reliable, open access to information,  
25 and I think this could be a good stepping point for

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

131

1 that.

2 Thank you very much. That's all I need to  
3 say.

4 MODERATOR SENELLY: Thank you.

5 You're going to come up so that everybody  
6 can see you. And if you can say your name.

7 MR. LIU: My name is Elden Liu, and I'm

8 here tonight concerning this water issue here.

9 But I'm here to just say my ancestor was  
10 an ali'i. His name was Hikio. He was given  
11 Kaupakalua and he was given East Kaupakalua, which  
12 is Jaws, and he was also given a place in West  
13 Makaiwa that has all the A & B lanes coming down  
14 with the water. The water comes out of the  
15 Kaupakalua.

16 And so I'm just here to say I've spoken to  
17 A & B, and I've spoken to their attorney at the same  
18 time too, a representative, Mr. Helia, who manages  
19 the EMI system. We had a very pleasant  
20 conversation. I wanted to let him know that I did  
21 have interest.

22 And I'm the sixth generation from Hikio,  
23 who was the original. He was an ali'i.

24 And so I would like to be consulted with  
25 on some of these decisions that are going to be

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

132



1 made. After all, the royal patent cannot be sold;  
2 and if A & B is selling that, they're in big --  
3 hang onto this, please. I want to read real quickly  
4 what the law, the federal law says about this.  
5 "A warranty deed cannot stand  
6 against a land patent in Hawaii, or a  
7 royal patent. A grant of land, made  
8 patent, is public law standing on the  
9 statute books of the state or nation.  
10 It is notice to everybody subsequent  
11 purchaser under any conflicting sales  
12 made." "Wineman versus Gastrell."  
13 "The land patent is permanent and  
14 cannot be changed by the government  
15 after its issuance. Where the United  
16 States has parted with title by a  
17 patent legally issued and upon surveys  
18 made by itself and approved by the  
19 proper department, the title so  
20 granted cannot be impaired by any  
21 subsequent survey made by the  
22 government for its own purposes."  
23 "Cage versus Danks."  
24 I would like to be considered to sit in meetings  
25 discussing things that are happening on my family's royal

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

133

1 patent.  
2 MODERATOR SENELLY: Thank you.  
3 For the rest of you, can we make it short,  
4 please?  
5 MR. HALLER: Aloha. My name is Alex  
6 Haller. I'm born and raised in Haiku. I've lived  
7 on East Kuiaha Road my whole life. And I live one  
8 property below the EMI diversion, so I know what  
9 it's like.  
10 No lips. So when there's not a lot of  
11 rain and the water is coming down the stream,  
12 there's a 6-inch lip on a lot of these diversions.  
13 So there shouldn't be any minimum criteria  
14 of overflow to go down, you know, to makai.  
15 So all of the lips on every single  
16 diversion should be redone. And also the grates.  
17 Someone mentioned the grates earlier. The grates  
18 are no good as well.  
19 If there's a hundred -- you know, so  
20 around 100 streams, and there's four main levels of,  
21 you know, the system that runs east to west, that's,  
22 you know, a potential 400 diversions.  
23 So we should see it on a huge map from  
24 Maui, each diversion. Yeah, it's going to be 400  
25 pictures with, you know, an engineer to redo it, you

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

134

1 know, in six months.  
2 And the second point is there are Land  
3 Commission awards and po'aliima lots. That's just as  
4 important as the EIS. And that's what Mr. Liu just  
5 mentioned with the royal patents.  
6 And I'm one of the defendants in the  
7 Naweiiwa, and that's actually -- we're waiting for  
8 the results.  
9 So that's extremely important, the land  
10 commission awards.  
11 MODERATOR SENELLY: Thank you.  
12 MS. REILLY: My name is Rose Reilly,  
13 and --  
14 MODERATOR SENELLY: Okay. Can I ask you,  
15 if you have something written, will you please  
16 consider turning it in as opposed to speaking? Just  
17 a thought, please.  
18 Go ahead.  
19 MS. REILLY: I would just like to say that  
20 I see that the streams reaching the ocean with all  
21 of the fish that are produced as fundamentally  
22 important to the survival of the people, and that  
23 for as far as Hawaiians are concerned and as far as  
24 everyone's concerned, we are here in Hawaii because  
25 of Hawaiians. The way that they made this place is

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

135

1 what has made it so special and that everybody wants  
2 to be here because of it. And that they're here,  
3 they all are, with their lands and their water  
4 management, and like the system is set up to manage  
5 this.  
6 The environmental impact is in their  
7 history, and they know the whole thing, and they're  
8 the ones that should be saying like, you know,  
9 restore the forests. Like that's all these  
10 different levels of having -- you have the  
11 groundwater, the middle, the upper. You know, like  
12 the animals.  
13 This system that is being imposed, this  
14 colonial system is killing all of us. Please do not  
15 be a part of that.  
16 MODERATOR SENELLY: Did you state your  
17 name?  
18 MS. REILLY: Yes. My name is Rose Reilly.  
19 MODERATOR SENELLY: Thank you, Rose.  
20 Okay. Say your name.  
21 MS. COSTA: Jocelyn Costa.  
22 First of all, I would like to address the  
23 purpose of the HISPAN. The purpose of the EIS  
24 process is to disclose to government agencies, the  
25 general public, stakeholders and decision-makers the

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

136

1 anticipated impacts.

2 I'd like the impacts to be started from

3 the inception. I would like that to be included.

4 I'd like to know the timetable and dates to

5 determine these anticipations. I'd like to know why

6 the kuleanas were omitted from this process. It's

7 not in this process. And I would like to know what

8 will happen if they're -- when they discover all of

9 the irreparable harms that has already been done.

10 I think it would be too incomplete if you

11 started with anticipated impacts.

12 Within the impacts, will you be studying

13 the soil, surface water, cultural resources, and

14 coastal waters measured from inception?

15 Will the data include significant

16 knowing -- not of outside book knowledge -- to make

17 a determination? Everyone knows who writes the book

18 tells the story; and we have living generations that

19 are of knowing, that have survived the direct

20 historical impacts. Please include them.

21 As far as page 1-1, the description,

22 description of the purpose, "Background:" Since

23 1878, A & B or its predecessors and EMI have held

24 various -- blah, blah, blah -- permits. And use of

25 water from the State lands, please correct them. It

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

137

1 should reflect that the lease came from the Kingdom

2 of Hawaii. There was no such thing as State land in

3 1878.

4 Also I want to propose, in accordance to

5 1.2 "Approval," meaning the direction of consent,

6 include the consultation of the representatives for

7 all affected areas that will not only provide but

8 receive water included in this EIS. We should be

9 part of the consultation board. We shouldn't be on

10 the outside, speaking into the EIS. We are part of

11 DLNR.

12 So I think it would assist in your scoping

13 if you were to have each representative be a part of

14 this process.

15 And on 1.3, "Proposed Action." And so I

16 just briefly went over this, but I'm going to be

17 doing more extensive written.

18 Okay. A correction and/or addition to the

19 fourth sentence of your 1.3.

20 "Purpose of developing, diverting

21 and transporting the use of

22 government-owned waters."

23 It should read "kuleana waters"

24 only.

25 MODERATOR SENEALLY: Thank you.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

138

1 Again summarize as much as you can.

2 MS. CHASE: I'm not summarizing. I'm

3 reading it. And I've been here a long time, and

4 I've traveled for two years to cover this issue, and

5 I will speak directly to the EIS.

6 Just because I'm making a presentation

7 doesn't mean I condone this process.

8 Faith Chase. No pun intended.

9 MODERATOR SENELLY: Did you say your name?

10 I'm sorry.

11 MS. CHASE: Faith Chase. No pun intended.

12 I don't condone this process, but I'm

13 going to give my testimony because I've showed up to

14 make sure that everybody knows that in this process,

15 DLNR, Department of Water, the Senate, the House of

16 Representatives, that I'm watching.

17 I would like the EIS to examine the

18 contract language of the original sale of the Nahiku

19 and Keanae property that was once bought by Kaupo

20 Ranch -- it's searchable and findable -- at the turn

21 of the century. I haven't seen it, but I'm

22 wondering if there's any language in there that

23 might be salvaged.

24 I would like the EIS to review the

25 repeated letters and news in the Maui News from the

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

139

1 beginning -- the beginning of time, mentioning and

2 reporting the numerous repeated pleading to HC&S and

3 A & B to consider sustainable ag and consider that

4 they haven't considered.

5 I would like the EIS to include a review

6 of all the meeting minutes that were held at Keanae

7 School from the start to the end. I would like --

8 from the Maui County Council, to be specific.

9 I would like the EIS to include the

10 minutes of all Water Resource Committee, Maui County

11 again, where Hana, Keanae, Nahiku, Waialua and

12 Kailua are on the agenda.

13 I would like the EIS to include the

14 reporting of the 2016 seed worm breakout group

15 discussions and their findings, which I was at but

16 I've never seen, and I was told I'd get it e-mailed.

17 I would like you to also include the

18 recent 2017, though limited, seed worm, and though

19 about DHHL, there was a lot of language about this

20 and our sacred rocks at Iao. I want that included.

21 I would like the EIS to include the review

22 of all testimony of the Hawaii State Legislature

23 2016 Senate bill 3001 that didn't pass and the

24 resulting House bill HB2501, or better known as the

25 "water theft bill."

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

140

1 I would like the EIS to include the  
2 numerous petitioners, the number of petitioners, and  
3 all the comments in the Sierra Club petition  
4 relating to HB2501.  
5 I would like the EIS to also include the  
6 number of petitioners and all the comments in the  
7 petition to the governor to veto HB2501.  
8 Lastly, how have these areas been  
9 affected.  
10 I want a socio-cultural consideration to  
11 be made.  
12 Thank you.  
13 MODERATOR SENELLY: Thank you.  
14 MS. MURPHY: Thank you so much to everyone  
15 who's presented tonight, who's spoken up and stood  
16 in their truth about what's happening.  
17 MODERATOR SENELLY: Excuse me. What's  
18 your name?  
19 MS. MURPHY: Yes. My name is  
20 Aubrie Murphy.  
21 MODERATOR SENELLY: Thank you, Aubrie.  
22 MS. MURPHY: Also I just want to share my  
23 main point is please be complicit in this necessary  
24 change.  
25 I'm not entirely convinced that this

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

141

1 meeting is of the highest design and order.  
2 We have somebody taking minutes, great; we  
3 have camera people, great; we have a person who's  
4 supposed to be collecting information writing on a  
5 scrap of paper.  
6 I found out from our facilitator over here  
7 that this woman does not actually work for Wilson  
8 Okamoto. She doesn't know how she's affiliated or  
9 what she really --  
10 (Simultaneous speaking between Ms. Murphy and  
11 the moderator.)  
12 MS. MURPHY: Well, that's what this woman  
13 said over here. I'm not entirely sure.  
14 My base point is that I'm not entirely  
15 convinced that this collection of information is of  
16 the highest order.  
17 I ask you to be complicit in this change.  
18 Go to WOC at Wilson Okamoto, voice  
19 yourself. If you do not, other people will make  
20 these choices for you. Continue the fight, continue  
21 to speak your truth, continue to protect your water.  
22 And I also want every one of you, please,  
23 if you can, reach out to me, I want to share your  
24 story. I'm a published writer. And I'm Mermaid of  
25 Hookipa. I've had my ocean conservation project

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

142



1 since August of 2015. I host beach cleans. I write  
2 consciously created articles with scientifically  
3 backed research.

4 But I want to tell your story about what  
5 you've experienced as generations of Hawaiians.  
6 Please reach out.

7 My Facebook page is "mermaidofhookipa."  
8 It's open, everyone can come. Please share your  
9 story with me. I want to help make this a reality.  
10 I want the water to go back to its rightful

11 stewards.

12 Aloha.

13 MODERATOR SENELLY: Aloha.

14 MS. POWERS: Aloha. I'm Megan Loomis

15 Powers.

16 MODERATOR SENELLY: Megan Loomis Powers.

17 MS. POWERS: Yes.

18 MODERATOR SENELLY: Okay.

19 MS. POWERS: Thank you, everyone, for all  
20 your incredible sharing and your spot-on, you know,  
21 right to the number responses.

22 I grew up right next -- I grew up on  
23 Ho'olawa Stream, which was an absolutely dry stream.  
24 And thank goodness for Stephen Cabral. He was the  
25 guy who managed the gates most of my life, the EMI

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

143

1 gates. He knew that streams needed a certain  
2 minimum amount just to try and survive.

3 And so every year, he would give us at  
4 least six weeks of uninterrupted stream flow. And  
5 what was so amazing is you would watch life start to  
6 return. And all the mosquitoes would get washed  
7 away, and the frogs would come back, and they'd eat  
8 the rest of the mosquitoes that were growing in the  
9 bananas.

10 And what we're here defending is that we  
11 know that is -- the East Maui watershed is the  
12 supply of water for the big half of Maui, and  
13 it's -- everybody's water depends on that. And if  
14 we don't steward that mountain, if we don't steward  
15 that watershed, if we don't take care of the plants  
16 that gather the rain and bring it down to the earth,  
17 we're cutting off future generations.

18 And we know that because we've lived there  
19 and witnessed it, like your beautiful child with  
20 some mysterious disease that you don't have any way  
21 to fix just withering in front of you.

22 And the thing is living systems, they can  
23 only take so much abuse until something breaks,  
24 until you get cancer, until, oh, my goodness, how  
25 many species have gone extinct on the East Maui

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

144

1 watershed in the last 120 years. You know, that  
2 should be something in the EIS. How many species  
3 have gone extinct.

4 So what I am observing is that there's  
5 been 120 years of severe mismanagement of this  
6 watershed that serves not only the people living  
7 here now but future generations and future  
8 generations and future generations.

9 And that mismanagement also includes the  
10 36,000 acres of A & B land that now doesn't even  
11 hold water because they never, not once, let land be  
12 fallow. They never gave back to the soil. There's  
13 no humic acid in the soil to hold water.

14 I mean, we've seen studies. We've done it  
15 at the farm conferences. You pour water into  
16 A & B's soil, and it doesn't even make the dirt wet.  
17 It just runs around the outside and drips out.

18 If you have healthy soil, it holds water.  
19 There's so many studies that show if you have good  
20 humic acid content in your soil, you can reduce  
21 watering by 70 percent. Wow, 70 percent of the  
22 water gets to stay in East Maui.

23 That's what we need. We need good  
24 management. This is just the beginning of like  
25 recognizing that.

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

145

1 And what she said about go all the way  
2 back to the beginning, we need to -- this is not the  
3 baseline. Right here, this is not the baseline.

4 The baseline needs to be way back when it  
5 was a healthy ecosystem; and we need to make plans,  
6 and this EIS has to direct that planning, to support  
7 bringing, regenerating and restoring what's already  
8 been damaged. And the same goes for the soil out in  
9 the valley.

10 So I know I had something else to say, but  
11 thank you very much.

12 MODERATOR SENELLY: Thank you.

13 Hello again.

14 MR. SLATER: Hi. Steve Slater.

15 I would like to have some -- well, first  
16 thing, I think 30 years is way too long the way  
17 science and biology is going.

18 I mean, we're just breaking the surface of  
19 how important the microbial systems are to the soil,  
20 to our own human bodies, how much symbiotic both  
21 bacteria, virus, fungus. Just it's a whole new era.  
22 To lock us into a 30-year lease at this point, I  
23 don't think the EIS can be at all functional.

24 I think if we did an EIS in two years or  
25 five years, I think we'd be talking about completely

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

146

1 different things on the watershed, like the  
2 connection of the microbial system from the ocean,  
3 like miniature salmon, microscopic salmon swimming  
4 upstream, carrying nutrients.  
5 I mean, we're in a whole 'nother era. I  
6 just find it's going to be very difficult to get an  
7 accurate EIS unless we bring in state-of-the-art  
8 science these days. And I don't think we're going  
9 to get that on Maui.  
10 I really think you'd have to bring in some  
11 cutting-edge biologists, look at the whole microbial  
12 system, what it means to endangered species.  
13 And we're at a time when we're not going  
14 to get a lot happening in a short period. So why  
15 can't A & B be satisfied with a one-year lease?  
16 They've been living with it for all this time, and  
17 now major changes are happening.  
18 I just can't -- you know, that leads me  
19 back into the Glyphosate/Roundup problem, like the  
20 gentleman was explaining. So much spraying. Not  
21 just on the edges; but because it's difficult for  
22 them to go, they spray right in the water.  
23 Could we possibly get a study? You're not  
24 going to be able to go take water samples and find  
25 glyphosate, but couldn't we study some of the people

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

147

1 who have used it as drinking water?  
2 Could they have free access to a urine  
3 test and maybe compared to these people have a  
4 higher rate of glyphosate?  
5 And remember, glyphosate also kills the  
6 microbial content. It's like it's got more  
7 repercussions than just if it gave something to  
8 human health. It's changing the whole biosphere of  
9 the area.  
10 So why didn't A & B ever -- they've never  
11 had to say how much they pumped. A & B has a record  
12 of being able to put poisons out, not inform the  
13 Health Department, not inform the County, keep  
14 secret lists. Could EIS look at what chemicals have  
15 been put in the stream?  
16 And also, A & B has been spraying -- HC&S  
17 has been spraying the cane with glyphosate to make  
18 it dry so they can burn it. That has gone into the  
19 ocean. Plus what they're spraying into the fields.  
20 So what they've put on the fields also  
21 compounds what's coming down the streams.  
22 Is that possible?  
23 Also, you know, I own a property for the  
24 last 15 years where I can only live on catchment.  
25 Even though I have rights on my deed to two ditches,

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

148

1 Lowrie Ditch, Haiku Ditch, and Waipio Stream, I  
2 can't exercise those rights.  
3 You can't talk to EMI about using rights  
4 on your deed. It's a whole legal battle. You're  
5 looking for trouble.  
6 I have to live on catchment. It's \$200  
7 per thousand, I pay to have it water trucked in.  
8 Not \$3 dollars.  
9 And the last thing is what does this EIS  
10 cost? Because if some group or the County wants to  
11 reimburse for the EIS, is this EIS going to be so  
12 expensive that it's going to make that \$160,000  
13 starting point double? Do we know what this EIS is  
14 going to cost?  
15 MODERATOR SENELLY: Okay. That's the last  
16 speaker.  
17 Actually, we have one more very important  
18 speak. It's Father.  
19 But let me say this. Thank you. I know  
20 at times we -- you know, we just try different  
21 things.  
22 Just for your information, the person who  
23 brought this up, I'm actually an independent  
24 consultant to Wilson Okamoto, and I've done a lot of  
25 facilitation as well as mediation and social impact

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

149

1 stuff.  
2 And actually, you can ask Isaac Hall,  
3 because I've worked with him.  
4 Okay. I'm going to ask Father to say the  
5 pue.  
6 And also, anybody who has any feeling  
7 about helping us put stuff away, that would be  
8 really nice.  
9 Oh, and you know what. You know the  
10 water, if there's anything left, please take it.  
11 (Closing pue by Father Tomoso.)  
12 (Scoping meeting concluded at 8:56 p.m.)  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

RALPH ROSENBERG COURT REPORTERS, INC.  
(808) 524-2090/courtreporters@hawaii.rr.com

150

1 2 3 4

4 5

6

8 9 10

11 12

22

25



---

**APPENDIX M:**  
Scoping Meeting and EISPN Comments and  
Responses

**SUBJECT: EISP: PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS – SCOPING MEETING, FEBRUARY 22-23, 2017**

This EIS should address the historical & cultural implications of this water & land lease. The water & land issues present are agricultural & livelihood issues. There are communities & people that need access to this land & water to continue their culture. This land & water belongs to the Hawaiian people and this must be recognized. The environmental issues such as plant & animal that have historically existed must also be addressed. A&B is no longer an agricultural entity and they should not be treated as such. I am strongly opposed to this 30 yr lease.

PLEASE PRINT: Name: Adam Lonig (include additional sheets as necessary) Phone: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

Email: \_\_\_\_\_

Please submit comments by March 10, 2017 or email [woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

\*Receipt of e-mailed comments will be confirmed via e-mail. If you do not receive a confirmation message, please contact our office (see contact information, above).



10238-02  
 September 23, 2019

Mr. Adam Lonig

Subject: Environmental Impact Statement Preparation Notice  
 Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū and Huelo License Areas

Dear Mr. Lonig:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments received during the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui. The environmental impacts of the potential Water Lease will be assessed.
2. The Draft EIS will include in Chapter 4 an assessment of the impacts of the Proposed Action. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an Archaeological Literature Review and Field Inspection (See Appendix E) and a Cultural Impact Assessment (See Appendix F).
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

4. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).

Your written and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke‘ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Alohalani Smith

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. SMITH: Aloha, everybody. I'm Alohalani Smith. I live out in Kaupo and I have also lineal descendant in the (Hawaiian name) side, we grew up outside there. I am the Aha Moku Kaupo representative. I've worked in the national parks and DOWFAW in the natural resources management, but as well as it goes with that, development is needed, you know, I'm not against it. I support it, I was a carpenter too and that, I'm looking for smart development. But before we even start with development, we need water and we need to settle the water issue.

Now, it was mentioned on the state owned land in the 40 license areas the EIS study alternative, okay, I want to them to study, which I'm going to propose a solution: To cancel the lease, okay, because the DLNR and the state can take back the water system from A&B. The restoration to the irrigation system too can be worked on. Now, they can also work with partnerships. Just like what Kamalani was saying, is that the people can do it. We have a lot of partnerships right before us. Also the ohana's, okay, the ohana's can help. And by doing this we can save money for the state by having stewardship which was number one in the beginning.

Now, for example, we have this aha moku system and it is every ahupua'a that we take care of our kuleana from mauka to makai, even to the (Hawaiian word) where fishermen can also benefit. Now, all of this will benefit everybody, especially the communities that can take better care of our own, yeah, resources, our kuleana. So the state in the meantime will save money and make money back. Now, this would support our water system as Maui grows, it's that simple. But if A&B will really wants to take care of Maui, A&B should donate the restoration of the irrigation system and train the state workers or the partners as a tax write-off for the deduction and give back to the people. There's nothing wrong, it's that simple. So thank you very much for your time.

**From:** Earl Matsukawa  
**To:** Keola Chen; Rebecca Candlisha  
**Subject:** FW: Alexander and Baldwin's Water Lease  
**Date:** Wednesday, March 15, 2017 3:06:20 PM

Late comment

Earl Matsukawa, AICP  
Vice President & Director

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T: (808) 946-2277 F: (808) 946-2253  
W: <http://www.wilsonkamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: Jade Smith  
Sent: Wednesday, March 15, 2017 10:32 AM  
To: Earl Matsukawa; repdecote/capitol.hawaii.gov; molkaisweetpotato@gmail.com  
Cc: keeumoku\_kapi@yahoo.com; KYLE nakanelua; Aha Hana Shane Sinenci; Aha Hamakualoa Joclynn Costa; Aha Koolau Heleolu; Aha Hamakupoko Leona Nomura; Blossom Fedeirra; Aha kahikinui Donna Sterling; Aha Wailuku Kaniloa Kamaunu; Foster & Michele Ampong; Aha kula (Mauka) Timmy Bailey; Aha kula (Makai) Basil Oshiro; ulanikapu@gmail.com; Aha Kaanapali Felimon Sadang; Aha Honua'ula Kaonohi Lee; Aha Kipahulu Terry Lind; Kipahulu Ohana Inc DBA Kipahulu Kitchen; Alohalani  
Subject: Alexander and Baldwin's Water Lease

Aloha Mr. Matsukawa,

I would like to suggest a solution to all the deep issues regarding Alexander and Baldwin's Water Lease. Maui is the only State with it's own Island/State that doesn't own jurisdiction on its own water resources.

The Community of Maui has voiced their deepest concerns in opposition about A&B violating the permit process in the past with the help of DLNR. It goes to show how corruption works in Hawaii. It's a no brainer and well understood in the National and International regions. I totally oppose Alexander & Baldwin gaining this Water Lease.

I am the Maui Island Council Member (Kaupo) for Aha Moku Act 212. It is my belief that the water should be returned to the state-DLNR to take back the responsibility. No excuses! I have included the Maui Island Council Members in this email to assist you in knowing the other districts (Moku) contacts of Maui.

How? The Community (Ohana and Partnerships) of Natural resources (AMAC ACT 288 under DLNR) are available to assist the State. The State hasn't ask us yet, we are an active Council right under their noses. There are Rules of Practices intact for Aha Moku Advisory Committee of Act 288 that could be activated. These Rules were a combination of Community, Scholars and Government workers putting it together.

Next, Alexander & Baldwin shall give up any/all rights to the people's water. They can receive a hefty tax right-off

for restoring the diversion system and turning it over to the State/Community & Families who share this water through a training process of the irrigation system. There are ex-employees that would step back in the ring for water preservation. Then the State can make monies back to get out of the deficient we will be in 2019. Think about that, only two years away.

What History has showed is how the water can be cared for with the Kuleana of the people and the Aha Moku system that was intact for thousands of years (no money included). Yet Today, funds can be accessible through Non-Profit grants and funding that exist.

This is just an idea that would be in harmony for the whole Island of Maui and all the other Islands who are affected in this on-going slaughter of rights and justice.

Thank you for your time.

Jade Smith  
Kaupo Representative  
Aha Moku O Kaupo Council Member  
[www.ahamokuomaiui.org](http://www.ahamokuomaiui.org)  
Ph: 808-870-2820



10238-02  
September 23, 2019

Ms. Jade Alohalani Smith, Kaupo Representative  
Aha Moku O Kaupo Council Member

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Smith:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, your oral comments on February 22, 2017, as well as your written comments dated March 15, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

Your oral and written comments, and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Jade Alohalani Smith  
Page 2  
September 23, 2019

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



**From:** [Wilson Okamoto Corporation](#)  
**To:** [Earl Matsukawa](#); [Koala Cheng](#); [Rebecca Candlisha](#)  
**Subject:** FW: EISPN: Proposed Lease(water lease)For the Nahiku, Ke'anae, Honomanu, and Huelo, License Areas  
**Date:** Thursday, March 9, 2017 1:29:07 PM  
**Attachments:** [image001.jpg](#)

---

**Jeanine S.H.Y. Mortoka**  
Secretary



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

---

**From:** Al [REDACTED]  
**Sent:** Wednesday, March 08, 2017 10:19 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** EISPN: Proposed Lease(water lease)For the Nahiku, Ke'anae, Honomanu, and Huelo, License Areas

- Please include in your Environmental impact assessment;
- species of fish, prawns, and plant life.
  - How this lease would affect all native cultural uses of water for all areas affected.
  - diversions have affected these uses and comparative analysis on the similarities or differences of this diversion.
  - Research on how the previous diversions have affected these uses and comparative analysis on the similarities or differences of this diversion.
  - loss of soil to run off and erosion.
  - How the diversion will affect soil or the Comprehensive studies of bird species, including the Ne Ne which have been coming down to the area again in recent years, in the lao and all areas affected by the proposed water diversion and the impact it would have on them.

Thank you for taking the time to read this. Our water is precious as is our soil in Maui. Please take all these things and more (I am no scientist, there is much more to include), into consideration in your statement.

Mahalo.



10238-02  
September 23, 2019

Al

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Al:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)
3. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Al  
Page 2  
September 23, 2019

flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning  
cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**From:** Wilson Okamoto Corporation  
**To:** Earl Matsukawa; Kaola Chen; Rebecca Candillasa  
**Subject:** FW: EISPN; proposed lease - east Maui  
**Date:** Wednesday, March 1, 2017 1:21:03 PM  
**Attachments:** Image001.jpg

**Jeanine S.H.Y. Mortoka**  
Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

**From:** Alana D'Andrea [mailto: [REDACTED]]  
**Sent:** Wednesday, March 01, 2017 12:24 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** EISPN; proposed lease - east Maui

Aloha my name is Alana Dandrea and I was born and raised in Haiku, Maui.

When I think about what an environmental impact statement really is I try to break it down to the basics, it's a statement or document describing the impact something has on the environment.  
It doesn't take a scientist or professional to tell you if you put metal and cement grates and walls inside a natural stream or river that there will be major impacts.  
What I don't understand is how A&B and EMI can have control over all this water for all this time while we all know that what they are doing is extremely impacting the surrounding

environments negatively.  
I am requesting in this EIS that it be required no matter what that there be an alternative solution that allows more than 50% of the water running in every stream to flow mauka to makai.  
I recently saw a video of a Current east Maui stream which had a diversion about 3 feet wide and only about 10 inches open so water can flow down stream. That is not right.  
On A&B's own website it clearly states their corporate responsibility "the environment is a top priority for A&B and we believe that protecting our natural resources and operating with a high level of concern for the environment is vital to sustaining a healthy community and a healthy business".  
If this statement A&B said were true and they were living up to their responsibility, I don't think we would have such a long history of water rights issues.  
And the question comes up again, why are we allowing these inconsiderate greedy liars to control our islands most valuable resource ??  
It's common sense when you think back to the Hawaiians and their self sustaining system of living for thousands of years, they were not impacting the environment negatively from having a natural non diverted stream flowing-- they lived in a thriving ecosystem. Do the math. It's time for a change. It's time to make Hawaii Hawaiian again.  
So in conclusion I feel A&B needs to prove to us, the people, the real stewards of this land that they are doing everything that they can to live up to their own words and responsibilities and get their diversions as close to natural as possible. No private corporation should own or even be able to lease more than 50% of the water. We the people, the aina need more than 50%.  
I also feel that there needs to be a native Hawaiian cultural and environmental professional watching over and working with EMI and A&B to ensure they are doing what is best to preserve,

respect and restore what is culturally, environmentally and physically important to the land and the people. The EIS needs to examine every possible impact on every single stream. I'd like to see public documentation of each stream, where the water is being used and diverted too, how much is needed min and max and making sure each stream flows mauka to makai. A&B cannot be trusted with a 30year lease for all this land and water until they prove their words and actions are in the best interest of the aina, the people and Mother Nature. Enough lying, we are all watching and we know actions speak louder than words. I also feel whoever is going to be leasing this land and water needs to read over the Maui island general island plan for 2030. There are many goals, objectives and visions that clearly state what we need to do as a community to thrive.

Mahalo nui for this opportunity

Alana Dandrea

Full time working Maui resident

Sent from my iPhone



10238-02  
September 23, 2019

Ms. Alana Dandrea

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Kē'anae, Honomanū  
and Huelo License Areas

Dear Ms. Dandrea:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Kē'anae, Honomanū, and Huelo License Areas and for your written comments dated March 1, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Kē'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM)

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

4. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
5. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
6. The Draft EIS will include in Chapter 5 an assessment of the consistency of the Proposed Action with the Maui Island General Plan.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Alex Franco

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. FRANCO: Thank you. My name is Alex Franco. I'm with Maui Cattle Company. A number of years ago a group of ranchers got together to form the company in an effort to try and keep our cattle home for the local marketplace. For a number of years our cattle has been shipped to the mainland to supply the markets there and the local ranchers felt that, gees, we should try and keep our cattle home to try and develop a local market. And we were very fortunate that as we got into the local market, there was quite a bit of demand for our product and people sought after our local products. Unfortunately, one of the things that happened five years into our company is we hit a six-year drought that really impacted the ranching community here on Maui as well as the rest of the state. And what that did is it pretty much diverted the market share of cattle coming into the marketplace back to the mainland again because we couldn't sustain those animals here.

And with water being available to come to the central valley, it does provide an opportunity for the potential of irrigated pasture that we could keep more of these cattle here at home. But at the same time, we feel it is very important to have a shared use for the water and realize the importance of what the taro farmers need, but, again, just here expressing the concerns of the drought for our industry and the need to supply water for all of us that's in agriculture here in Hawaii. Whether we're small farmers or larger farmers, we all need the water, so I'm here to try and, you know, ask for support for water being supplied to bona fide farming.





10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Franco:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Maui Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Alex Franco  
Page 2  
September 23, 2019

Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



10238-02  
September 23, 2019

Mr. Alex Haller  
[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Haller:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your oral comment at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Figure 1-1 in the Draft EIS illustrates the EMI Aqueduct System overlaid on the Department of Land and Natural Resources (DLNR) Division of Aquatic Resources (DAR) geographic information system (GIS) data of streams. An electronic drawing of the EMI Aqueduct System was georeferenced by Akinaka & Associates, Ltd. to depict major diversions on East Maui streams on a United States Geological Survey (USGS) GIS base map. Due to the complexity of the EMI Aqueduct System and the level of detail shown on the map, not all of the minor diversions could be associated with a stream or tributary. The stream names shown are from the DAR GIS database but a few of those stream names may differ from how some East Maui residents may refer to them. Moreover, certain streams that were identified during certain proceedings before the Commission on Water Resources Management (CWRM) do not have

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

Environmental Impact Statement Preparation Notice  
Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas  
Scoping Meeting Comments of

Mr. Alex Haller  
February 23, 2017  
Ha'ikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. HALLER: Aloha. My name is Alex Haller. I'm born and raised in Haiku. I've lived on East Kuiaha Road my whole life. And I live one property below the EMI diversion, so I know what it's like. No lips. So when there's not a lot of rain and the water is coming down the stream, there's a 6-inch lip on a lot of these diversions. So there shouldn't be any minimum criteria of overflow to go down, you know, to makai. So all of the lips on every single diversion should be redone. And also the grates. Someone mentioned the grates earlier. The grates are no good as well.

If there's a hundred -- you know, so around 100 streams, and there's four main levels of, you know, the system that runs east to west, that's, you know, a potential 400 diversions. So we should see it on a huge map from Maui, each diversion. Yeah, it's going to be 400 pictures with, you know, an engineer to redo it, you know, in six months.

And the second point is there are Land Commission awards and po'alima lots. That's just as important as the EIS. And that's what Mr. Iiu just mentioned with the royal patents. And I'm one of the defendants in the Naweiliwa, and that's actually -- we're waiting for the results.

So that's extremely important, the land commission awards.

associated GIS data and therefore could not be precisely located on the map. Table 1-2 in the Draft EIS reconciles discrepancies between stream names used in the February 2017 EIS Preparation Notice and the CWRM's June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O).

3. For the purposes of this Draft EIS, the stream list used was from the CWRM D&O which is discussed in Section 1.3.4. The CWRM D&O was also used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area based on the modification or removal of diversion structures in streams designated by the CWRM D&O as full restoration.
4. Chapter 1.3.1 of the Draft EIS discusses properties involved with the License Area and Proposed Action.

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice  
Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas  
Scoping Meeting Comments of**

Ms. Alice Lee  
February 22, 2017  
Maui Electric Company Community Meeting Room  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

Good afternoon. Aloha, everyone. My name is Alice Lee and I'm a lifelong resident and community volunteer in Maui County. I think it is of the utmost importance that the EIS be fair, balanced, and representative of a wide range of interests that will benefit the community as a whole. These are my concerns. What will be the impact on the over 35,000 residents in Upcountry who rely on EMI for water? Will Upcountry water rates be raised if the county cannot get water from EMI? How will the county be able to provide additional water to Upcountry due to normal population growth. With Nāhiku, will Nāhiku water rates go up if the streams are restored?

Flood control is a significant problem now that the Iao Stream or Wailuku River has been substantially restored. With water constantly running in the stream, it is difficult, almost impossible to maintain the streambeds and control vegetation which allows the water to rise in the stream and increasingly pose a threat to human lives and property damage especially in times of heavy rains as we experienced in 1 September. Will the restoration of East Maui streams cause the same problems?

For over 100 years the stream diversions have contributed to the recharge of Maui's aquifers. What will be the impact of reducing recharge? What will happen to A&B land, over 30,000 acres, with and without stream diversion? If the central plains no longer receive surface water from East Maui, will this not cause an environmental catastrophe in Central Maui, such as serious erosion problems, dust storms, fire hazards? Native birds and animals who thrive in the cane fields, what will become of them?

How will our largest economic driver, the visitor industry, be impacted if much of the land becomes arid and a blight on the formerly lush slopes of Haleakala? Finally, I strongly believe diversified ag. is the best use of the former cane lands.

Thank you for your consideration.



10238-02  
September 23, 2019

Ms. Alice Lee  
[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Lee:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, for your oral comments at the February 22, 2017 EIS Scoping Meeting, and for your written comments dated February 22, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS studies a proposed long term farm plan by Mahii Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied.
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM)

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

EISP Public Meeting Wednesday, February 22, 2017  
Maui Electric Co. Conference Room 5pm  
A&B application for state water lease

Good afternoon,

My name is Alice Lee, a member of GO Maui and a life-long resident and community volunteer in Maui County.

Thank you for conducting this outreach meeting in preparation for the EIS regarding A&B's application for a state water lease. It is of the utmost importance that the EIS be fair, balanced and representative of a wide range of interests that will benefit the community as a whole and not just a few people.

The following are my concerns that I request be addressed in the EIS:

- (1) What will be the impact on the over 35,000 residents in upcountry who rely on EMI for water?
- (2) Will upcountry water rates be raised if the county cannot get water from EMI?
- (3) How will the county be able to provide additional water to upcountry due to normal population growth?
- (4) Will Nāhiku water rates go up if the streams are restored?
- (5) Flood control is a significant problem now that the Iao stream (Wailuku River) has been substantially restored. With water constantly running in the stream, it is difficult, almost impossible to maintain the stream beds and control vegetation which allows the water to rise in the stream and increasingly pose a threat to human lives and property damage especially in times of heavy rains as we experienced in September (2016). *Will the restoration of E. Maui's streams cause the same problems?*
- (6) For over 100 hundred years, the stream diversions have contributed to the recharge of Maui's aquifers. What will be the impact of reducing recharge?
- (7) What will happen to A&B land (over 30,000 acres) with and without stream diversion?
- (8) If the Central plains no longer receive surface water from East Maui, will this not cause an environmental catastrophe in Central Maui e.g. serious erosion problems, dust storms, fire hazards, the native birds, animals, insects, etc. who thrived in the cane fields – what will become of them?
- (9) How will our largest economic driver, the Visitor Industry be impacted if much of the land becomes arid and a blight on the formerly lush slopes of Haleakala?
- (10) Diversified ag is the best use of the former cane lands.

Your favorable consideration to include the above concerns in the EIS will be greatly appreciated.

With aloha,

Alice L. Lee

10238-02  
Letter to Ms. Alice Lee  
Page 2  
September 23, 2019

June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral and written comments, and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Joe Chesledon  
(Speaking on Behalf of Alvin Kalehuawehe)  
February 22, 2017  
Maui Electric Company Community Meeting Room  
Excerpt of Transcription by Ralph Rosenberg, Court Reporters, Inc.

MR. CHESLEDON: Hello, my name is Joe Chesledon, but I am here presenting this statement on behalf of many generation Hawaiian neighbor, Alvin Kalehuawehe. Alvin cannot miss work to be here tonight, but sends this statement as a message.

"As a Native Hawaiian from both family sides, I say to you aloha. Generations ago big sugar and pineapple companies including Alexander & Baldwin of the mainland imposed upon Hawaiians a valuable and irreplaceable water takeaway which has deprived Hawaiians of water and land to use for subsistence farming to feed our ohana and greatly improve our lives and restore what we once enjoyed: stream flow, fish populations, and our agriculture. As a result we have gone from a subsistence ohana to a dependent ohana.

"In sharing our water resources to big sugar by means of what I understand to be 165 million gallons of water per day to 33,000 acres, Hawaiians have been shared out of the ability and right to a self-sustaining way of life. It is my understanding that Maui currently imports more than 90 percent of its food; meanwhile, the Hawaiian farmer, at the expense of big sugar, is deprived of rights to work with the land, to sustain and feed our ohana. We have lost the right to teach our young that we can love our Mother Island and she will take care of us. We need a return of the water rights to us and our ohana. We do not need another theft of water by big sugar, Alexander & Baldwin.

"Mahalo nui loa, Alvin Kalehuawehe."





10238-02

September 23, 2019

Mr. Alvin Kalehuawehe

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Kalehuawehe:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, for your oral comments at the February 22, 2017 EIS Scoping Meeting, and for your written comments received February 22, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaii's Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

I am presenting this statement on behalf of my third generation Hawaiian neighbor Alvin Kaleh' uawehe (alpluson3@gmail.com). Alvin cannot miss work to be here tonight, but sends this statement as his message.

As a native Hawaiian from both family sides I say to you, Aloha! Generations ago Big Sugar and Pineapple companies, including Alexander and Baldwin, of the mainland imposed upon Hawaiians a valuable and irreplaceable water takeaway lease which has deprived Hawaiians of water and land to do subsistence farming to help feed our ohana and greatly improve our lives and restore what we once enjoyed and did on our own: stream flow, fish populations and our agriculture. As a result, we have gone from a subsistence ohana to a dependent ohana.

In "sharing" our water resources to Big Sugar, by means of what I understand to be 165 million gallons of water per day to 33,000 acres Hawaiians have been "shared out" of the ability and right to a self sustaining way of life.

It is my understanding that Maui currently imports more than 90% of its food. Meanwhile, the Hawaiian farmer, at the expense of Big Sugar, is deprived of rights to work with the land, to sustain and feed our ohana. We have lost the right to teach our young that we can love our mother island and she will take care of us. We need a return of our water rights to us and our ohana. We do not need another theft lease of water by Big Sugar, Alexander and Baldwin. The water belongs to our ohana Maui.

Mahalo nui loa for your consideration

Alvin Kaleh' uawehe

2/22/17

3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Economic and Fiscal Impact Study (See Appendix F); Social Impact Assessment (See Appendix G); Economic and report (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral and written comments, and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Aubrie Murphy

February 23, 2017

Ha'ikū Park and Community Center

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. MURPHY: Also I just want to share my main point is please be complicit in this necessary change. I'm not entirely convinced that this meeting is of the highest design and order. We have somebody taking minutes, great; we have camera people, great; we have a person who's supposed to be collecting information writing on a scrap of paper. I found out from our facilitator over here that this woman does not actually work for Wilson Okamoto. She doesn't know how she's affiliated or what she really --

MS. MURPHY: Well, that's what this woman said over here. I'm not entirely sure. My base point is that I'm not entirely convinced that this collection of information is of the highest order. I ask you to be complicit in this change.

Go to WOC at Wilson Okamoto, voice yourself. If you do not, other people will make these choices for you. Continue the fight, continue to speak your truth, continue to protect your water. And I also want every one of you, please, if you can, reach out to me, I want to share your story. I'm a published writer. And I'm Mermaid of Hookipa. I've had my ocean conservation project since August of 2015. I host beach cleans. I write consciously created articles with scientifically backed research.

But I want to tell your story about what you've experienced as generations of Hawaiians. Please reach out. My Facebook page is "mermaidofhookipa." It's open, everyone can come. Please share your story with me. I want to help make this a reality. I want the water to go back to its rightful stewards.

Aloha.

Aubrie Murphy  
Founder/Activist  
Mermaid of Ho'okipa

**From:** Wilson Okamoto Corporation  
**To:** Earl Matsukawa; Koala Cheng; Rebecca Candlisha  
**Subject:** FW: EIS for East Maui Water  
**Date:** Friday, March 10, 2017 8:38:44 AM  
**Attachments:** Image001.jpg

**Jeanine S.H.Y. Mortoka**  
Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

**From:** Aubrie Murphy  
**Sent:** Thursday, March 09, 2017 10:08 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** EIS for East Maui Water

To whom it may concern:

I am requesting the EIS of the proposed lease of east Maui water, thoroughly investigate the total disappearance and decline of all species of fish, native to the waters of east Maui. Further, I want these investigations to include the testimonies of every resident in the proposed water lease area: Huelo, Nāhiku, Ke'anae and Hana. I want the EIS to include an investigation into the consequences to local Hawaiian cultural practices, of those who reside near these waters; as a result of the disappearance of entire fish species; the impact it has had on their economic stability and cultural/religious practices, including all of the resident generations subjected to the impact of the previously held water lease and the possible implications of thirty years from now (the duration of the newly proposed water lease). I want the EIS to also include the thorough investigation of the decimation of Kalo agriculture practices within the proposed lease areas and the reasons this has occurred, siting any and all influence by company directed water diversions. Again, I want the testimonies of every resident of the proposed water lease areas included in this impact statement.

Sincerely,



10238-02  
Letter to Ms. Aubrie Murphy  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Ms. Aubrie Murphy  
Founder/Activist  
Mermaid of Ho'okina [REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Ms. Murphy:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas, for your oral comments at the February 23, 2017 EIS Scoping Meeting, and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
3. Cultural Surveys Hawai'i and Earthplan prepared reports in support of the Draft EIS assessing the cultural and social impacts of the Proposed Action, respectively (See Appendix F and Appendix G). The impacts of the Proposed Action to traditional cultural resources and

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

practices are discussed in Section 4.6 of the Draft EIS while impacts to the social environment can be found in Section 4.7.

4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral and written comments, and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Bob Martin  
February 23, 2017  
Haʻikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. MARTIN: My name is Bob Martin. Born and raised in Hawaii. I'm a 57-year resident of Kuau and Paia and have spent 75 of my 88 years involved in some form of agriculture. Because of my background, some of what I share may be complex, unconventional, new or even unique.

Alexander & Baldwin, Incorporated, once a very local company, is rapidly changing. Through a stock distribution, it gave its wholly owned Matson Navigation, now Hawaii's fourth largest corporation, to A & B stockholders on a share-for-share basis. It then merged its agricultural divisions into A & B properties. According to Pacific Business News, it is considering a change in its corporate business structure into that of a real estate investment trust by the spring. With 77.1 percent of A & B stock now held by investment managers, it is obviously managed for their benefit. It is noteworthy that investment managers now control 84.7 percent instead of 77.1 percent of Matson Incorporated that was recently distributed by A & B to the stockholders. This suggests that outside investment managers will increasingly control A & B and its Hawaiian assets. This suggests a need for better understanding of A & B's future commitment to agriculture.

A & B has now requested a 30-year lease for a large amount of water. Much will take place in the next 30 years, and it's important that this water be available where most needed. How fast can things move? Since closing HC&S, I understand that A & B has sold 339 acres of land in Paia, where the survey for its county water line was completed before the sale was announced. Progress at this rate can accomplish much in 30 years, but is this development progress? Is it safe? What is happening in agriculture, especially sustainable agriculture? Let's give this some thought. If the numbers were run, I suspect that we do not have sufficient water to produce food for our current population of perhaps 1.4 million, to tourists and the military. I also suspect that agriculture is deliberately being held back by state officials to ensure water for development. Someone needs to run the numbers on this. Obviously, we are short of facts.

We also need to know where we collectively stand on food sustainability, a growing subject of discussion. Most machines work by using the sun's energy, whether derived from fossil fuels, plant products or solar panels. The same energy from the sun powers everything we do as individuals, only we get our energy from a fuel known as food. That is mostly produced through plants; and the progress in the process, we call agriculture. Agriculture a land-based process is noted for the enormous amounts of water the process requires for each unit of food produced. Presently, enormous amounts of sunlight that could be used to produce food in East Maui is being wasted for lack of water. And even more sunlight in central Maui is being wasted for lack of agriculture. Is this smart planning? Historically, the

Hawaiians were able to grow enough food to sustain a million people, as they were hard working and industrious. It may be this population was not larger because of water limitations.

Remember, a sustainable population is limited by what can be produced in a dry year. With the introduction of sugar cane, there was a practice to divert water from adjacent and distant areas, depriving users from their livelihood. Deprived from income, many farmers could not pay taxes and lost their lands. Without farms, many were forced to work as laborers for shipping, sugar, pineapple and construction. The upshot was we lost crops, farmers and farms. With long-term lack of water and more recently riverside drift, our food sustainability dropped from 100 percent to today's 5 to 13 percent...

MR. MARTIN: Shipping to import food from over 2,000 ocean miles away, is this what we want and a risk we choose to take? Before giving water for unidentified and/or unidentified uses, we need to identify how much agriculture we want, where it will be, who will do it, and how much water will be needed. The State has not done this. It has yet to identify the problems or reasons why our sustainability has gone from a hundred percent to the present unknown but unrealistically low figure. Overall, the state has failed miserably to protect its agriculture and its people. But this is not the subject of tonight's meeting. Tonight's subject is what are we going to do with our water.

If agriculture is a serious consideration, let's recognize that I've had 40 years of experience in the Paia nursery, with plant damage from chemicals from the air and County water. HC&S has gone away, but surprisingly, my problems haven't. Based on experience, I can suggest that diversified agriculture as to Baldwin Avenue may also be in for some unexpected surprises. Will this affect plans or schedules? We will find out.

Finally, there was a question of a proper scope of an Environmental Impact Statement. Will the EIS recognize the existence of people on Maui and the merits of converting nonwasted sunlight, falling on East and Central Maui, into food for their use and possible survival? If so, the entire process becomes more complex, as it should be. I hope that some of this -- I hope that some of this material will be of use in formulating the needs of the EIS and some of the things that it must consider and factor into a good solution.

Thank you very much.



#36

## 2-23-17 TESTIMONY

My name is Bob Martin. Born and raised in Hawaii, I'm a 57 year resident of Kuau and Paia, and have spent 75 of my 88 years involved in some form of agriculture. Because of my background some of what I share may be complex, unconventional, even unique.

Alexander and Baldwin Inc. (A&B), once a very local company, is rapidly changing. Through a stock distribution it gave its wholly owned Matson Navigation, now Hawaii's 4th largest corporation, to A&B stockholders on a share for share basis. It then merged its agricultural division into A&B Properties. According to Pacific Business News (10-28-16) it is considering a change its corporate business structure into that of a Real Estate Investment Trust by this spring. With 77.1% of A&B stock now held by Investment Managers it is obviously managed for their benefit. It is noteworthy that Investment Managers now control 84.7 % (instead of 77.1) of Matson Inc. that was recently distributed to A&B stockholders. This suggests that (outside) Investment Managers will increasingly control A&B and its Hawaiian assets. This suggests the need for a better understanding of A&B's future commitment to agriculture.

A&B has now requested a 30 year lease for a large amount of water. Much will take place in the next 30 years and it is important that this water be available where most needed. How fast can things move? Since closing HC&S I understand that A&B has sold 339 acres of land in Paia where the survey for its county water line was completed before the sale was announced. Progress at this rate can accomplish much in 30 years. But is this development progress? Is it safe? What is happening in agriculture, especially sustainable agriculture? Let's give this some thought.

If the numbers were run, I suspect that we do not have sufficient water to produce food for our current population of perhaps 1.4 million, the tourists, and the military. I also suspect that agriculture is deliberately being held back by state officials to insure water for development. Someone needs to run the numbers on this. Obviously, we are short of facts. We also need to know where we collectively stand of food sustainability, a growing subject of discussion.

Most machines work by using the sun's energy, whether derived from fossil fuels, plant products, or converted by solar panels. This same energy from the sun powers everything we do as individuals; only we get our energy from a fuel known as food, that is mostly produced through plants in a process that we call agriculture. Agriculture, a land based process, is noted for the enormous amounts of water the process requires for each unit of food produced. Presently, enormous amounts of sunlight that could be used to produce food in east Maui is being wasted for lack of water; and even more sunlight in central Maui is being wasted for lack of agriculture. Is this smart planning?

Historically, the Hawaiians were able to grow enough food to sustain about a million people, and as they were hard working and industrious, it may be that their population was not larger because of water limitations. Remember a sustainable population is limited by what can be produced in a dry year.

With the introduction of sugar cane there was a practice to divert water from adjacent, then distant areas, depriving established users from their livelihood. Deprived from income many farmers could not pay taxes and lost their lands. Without farms many were forced to work as laborers for shipping, sugar, pineapple, and construction. The upshot was that we lost crops, farmers, and farms. With long-term lack of water and, more recently, herbicide drift, our food sustainability dropped from 100% to today's 5-13%. This has made us dependent on (sustainable?) shipping to import food grown over 2,000 ocean miles away. Is this what we want and a risk we choose to take?

Before giving away water for unidentified and/or unjustified uses we need to identify how much agriculture we want, where it will be, who will do it, and how much water it will need. The State has not done this. It has yet to identify the problems or reasons why our sustainability has gone from 100% to the present, unknown, but unrealistically low figure. Overall the state has failed miserably to protect its agriculture and it's people; but that is not the subject of tonight's meeting. Tonight's subject is what are we going to do with our water. If agriculture is a serious consideration let's also recognize that I have had 40 years experience in my Paia nursery with plant damage from chemicals in the air and county water. HC&S has gone away but, surprisingly, my problems haven't. Based on experience I can suggest that diversified agriculture west of Baldwin Avenue may also be in for some unexpected surprises. Will this affect plans or schedules? We'll find out.

Finally, there is the question of the proper scope of an environmental impact statement (EIS). Will the EIS recognize the existence of people on Maui and the merits of converting the now wasted sunlight falling on east and central Maui into food for their use and possible survival? If so, the entire process becomes more complex, as it should be.

Bob Martin  
Paia, Hawaii  
Feb. 23, 2017



10238-02  
September 23, 2019

Mr. Bob Martin  
Paia, HI

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Martin:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, for your oral at the February 23, 2017 EIS Scoping Meeting, and written comments received February 23, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Bob Martin  
Page 2  
September 23, 2019

3. The Draft EIS will include in Chapter 4 an assessment of the impacts of the Proposed Action. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an Agricultural and Related Economic Impacts Report (See Appendix I) and an Economic and Fiscal Impact Analysis Report (See Appendix H).
4. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

Your oral and written comments, and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Brendan Balthazar  
February 22, 2017  
Maui Electric Company Community Meeting Room  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. BALTHAZAR : I just wanted to say, you know, my father said that we all need water. I've been in several of these hearings and testimonies. I believe that nobody can have it all, I think it's a shared thing. We really need to know how much water is needed by the people who want to plant taro.

As a kid I used to stand by the pine fields and granted, yes, things were done 150 years ago that none of us in this room is accountable for; however, I believe everybody needs the water. Like myself, I live Upcountry and I depend on that water coming up out of my pipe, so does my animals, so does my lifestyle. I'm retired from the fire department, I ranch, and I'm also on the board of the Farm Bureau and the Cattleman's Association. And to just (inaudible) what the last gentleman said about us being able to be sustainable, with all of that land available for ag, and I -- and I emphasize the word "ag."

At the last testimony I did before DLNR, one of my things that I think was the wrong place, but I did say that if this water is earmarked for ag, that amount that is now used for potable water, like Upcountry, should be kept. I don't think any future subdivision should be coming up and tap into that ag. water and that's really my concern. I'm here representing ag, and the fact -- the part of ag, that I represent is the livestock industry.

I know some of the things that I heard some of the people from Sierra Club and some of the friends that I have from Keanae say, "Yeah, I mean, they want all this water, what for?" I don't know how much sorghum will take, how much corn will take, I can tell you how much if -- if we need to irrigate the pastures, right now the grasses that works down in that area would take about 4100 gallons per day per acre, that's what it takes to keep that thing in grass. Pending no rain now, I'm just saying just on the bottom line. Of course, it will be less with the rain and, of course, more with evaporation. Cattle drink 15 to 20 gallons per day, that's 20,000 gallons on a thousand acre pasture. A thousand acres of irrigated pasture, you can probably a head per acre. So I can only speak from the livestock side, I, on my end Upcountry, a lot of the kids now that should be in ranching and farming are not.

I'd like to see that land stay in ag, and I believe the water really should be shared. And like he was saying, I think once they found out what the stream flows is, then it should be adjusted as to what everybody can have so everybody can share the water. I mean, without water, there's no ag, I mean, nobody can disagree with that. So I'm saying also that if EMI -- and I'm not partial to them, but if EMI, who has been taking care of the ditch system for all these years, gets out of it, the county has no way in hell to take care of that ditch, they don't have the resources nor the funding. So it is essential for us, for our environment to have this water come out and have somebody take care of it.

FACILITATOR SENELLY: Okay. So my understanding is I did hear you say that you wanted to see some quantification of what the taro, the kalo needs are for water.

MR. BALTHAZAR: Exactly.

FACILITATOR SENELLY: You want to see the impact of the proposed action on the agricultural lands from your perspective, it's from ranching. And you also -- oh, you also want to see -- to make sure, you want the ES to show what some of the future uses might be if it's not ag., because you don't want to see it developed.

MR. BALTHAZAR: I'm really concerned that this water that is earmarked for ag, stay as ag.

FACILITATOR SENELLY: Okay. You want it ag. Okay.  
(Applause.)

FACILITATOR SENELLY: Thank you, Mr. Balthazar.

**From:** Wilson Okamoto Corporation  
**To:** [REDACTED]  
**Subject:** RE: Scan Attachment  
**Date:** Monday, March 6, 2017 9:02:54 AM  
**Attachments:** Image001.jpg

Scam Document Attached

This is to acknowledge that we have received your email comment on the subject EIS Preparation Notice. Your participation is appreciated.

**Jeanine S.H.Y. Morioka**  
Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

**From:** [REDACTED]  
**Sent:** Wednesday, February 22, 2017 8:17 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** Fwd: Scan Attachment

Mr. Earl Matsukawa

Dear Sir,

I just want to clarify one of the statements that I made in my public testimony. I said that the amount of water now being used for domestic use should be capped. That cap should include the water needed to fulfil what ever is needed to service the current water meter list. There are people on that list that have been there for years. Some have already died and still the family ,have not gotten there meter. I believe that number ( amount of gallons needed per day to service the water meter list which is already closed) can be obtained from the water director. This number of gallons needed to service the water meter list should be added to the current amount that is used per day ,and that number should be the amount that is capped. After this list is cleared no other applications for subdivisions should impact the agg water coming out to service agg.

Brendan Balthazar

Please email me so I know you got this addition.

002190



10238-02  
Letter to Mr. Brendan Balthazar  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Mr. Brendan Balthazar  
103 Maha Road  
Makawao, HI 96768

fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area.

4. The Draft EIS will include in Chapter 4 an assessment of the impacts of the Proposed Action. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an Agricultural and Related Economic Impacts Report (See Appendix I) and an Economic and Fiscal Impact Analysis Report (See Appendix H).

5. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action

Your oral and written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resource  
A&B / EMI, Applicant

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Balthazar:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, for your oral comments at the February 22, 2017 EIS Scoping Meeting, and for your written comments received February 22, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

3. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277



**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Brian Wittman  
February 22, 2017  
Maui Electric Company Community Meeting Room  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. WITTMAN: As I'm talking if -- I'm Brian Wittman. I live in Huelo on Hanehoi Stream near Moke. Earl, could you put up a map that says "Use Area"? It's about, I don't know, ten slides back. I notice almost all of these comments are about socioeconomic because we're people and we have to make a living and we have families. And we care about the individual species, but we're pretty much all talking about ourselves and our family and our history.

That's a good map. Thank you. I think that A&B is asking for too much and they're too big. So I think when you guys are making the EIS, you should make it with a more reasonable request in mind, not the request for all that water for 30 years. I think they're asking for too long a time and I think also, unfortunately, they're not giving back enough.

And I think one of the things that maybe all of us should realize, all these ditches are up here, right, these were built by steam shovels back before diesel. Right? They were built by Chinese labor, German engineers. We still have German Hawaiians, Chinese Hawaiians. Right? Huelo is a community that actually came from EMI development, it was a fringe area in Hawaiian times, but it became kind of a central part of EMI and it's in Kailua where they maintain the ditches.

And I know some of those ditches, I don't know all of them, but they go around here, right, and they come over here and this is all A&B's land. Now, me, I just have about four acres there, so I'm not even talking about me. I'm on rain catch, so I'm talking about all you guys, the whole island. I think if A&B wants to make a reasonable request, they should think about, first of all, where are we gonna put the water we're asking for? As it is, what they're doing is they're asking to just have the water, have the water, have the water, put it in the field and let it run down in the ocean.

Now, wouldn't it be smarter for them to take some of their 30,000 acres -- that's a lot. I've got four, they've got 30,000, okay, 30,000 acres. Why not build a reservoir? Okay? I drive around here like below Halimalie, it looks like there's kind of a scoop, below Pukalani there's a kind of a scoop. I think that they -- if they were smart, they would say, Okay, we have a lot of land, we should build a reservoir and we should just ask for the overflow.

FACILITATOR SENELLY: Okay.

MR. WITTMAN: Instead of asking for the main flow, we should say, You guys can have all the main flow and when you get storms in East Maui, when there's too much water, that's when we take ours and we

Scoping Meeting Comments of Brian Wittman  
Page 2  
February 22, 2017

put our water in a reservoir and then we can have what we need and you guys can still have everything you need.

FACILITATOR SENELLY: Okay. So it's a matter of distributing, of storing and distributing differently than what is -- so it's another --

MR. WITTMAN: A&B needs to invest. They haven't invested since the 19th Century.

**SUBJECT: EISP: Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas - following the scoping meeting, February 22-23, 2017**

**Date: March 9, 2017**

## Preface

For convenience, the following proposal is designated "Proposed Alternative Action 2.2," and is modeled after the project summary on page 3 of the EISP: accessed at:

[http://oegc.doh.hawaii.gov/Shared%20Documents/EA and EIS Online Library/Maui/2010s/2017-02-08-MA-5E-EISP-East-Maui-Water-Lease.pdf](http://oegc.doh.hawaii.gov/Shared%20Documents/EA%20and%20EIS/Online%20Library/Maui/2010s/2017-02-08-MA-5E-EISP-East-Maui-Water-Lease.pdf)

Basically, the proposal is to require A&B to construct, as an additional condition of the lease, a large reservoir in Central Maui (1000 acres, 16 billion gallons) so that their use of East Maui waters can be restricted to storm-overflow rather than normal daily diversion, with the accumulated waters in the reservoir being more than enough to meet all community, agricultural, cultural and environmental requirements, as well as provide excellent drought resistance and flood control management.

Under the Proposed Alternative Action 2.2 heading below, the black print follows the wording of the original EISP: project summary, with the red print indicating substitutions and additions. Following this, under the Discussion heading, each of the four bullet points in the "Objectives of the issuance of the proposed Water Lease (Proposed Action)" of the EISP: heading 1.6 are addressed. And under the Conclusion heading, additional benefits of the Proposed Alternative Action 2.2 are briefly outlined.

Thanks you for your consideration of these ideas.

**Brian Wittman**

*(Trustee of Wittman Homestead and Educational Trust, which is owner of TMK parcels 2-7-9-01 and 2-9-8-033 which are in the Hanalei Stream area of Huelo.)*

## PROPOSED ALTERNATIVE ACTION 2.2

The Proposed Alternative Action (2.2) constitutes the issuance of an initial medium-term water lease of 3 years, after which follow-up leases will be renewable at five-year intervals, provided specific conditions are met at each renewal request, from

the Board of Land and Natural Resources for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, and using surplus flood runoff waters" through the existing EMI Aqueduct System which supplies water to domestic and agricultural water users. The Water Lease will allow non-exclusive access to the license areas to the lessee to maintain and repair existing roads and trails used as part of the Aqueduct System and allow its continued operation to deliver water to the Maui County Department of Water Supply (DWS) for domestic and agricultural water needs in Upcountry Maui, supply domestic water for Nāhiku and supply irrigation water for agricultural users at the Kula Agricultural Park. Any additional flood runoff waters remaining after these priorities are met will be made available to the lessee to provide water to approximately 30,000 acres of former sugar lands in Central Maui owned by A&B, provided the lessee constructs and maintains, on its own property in Central Maui, for the purpose of holding these waters for on-going agricultural and future community uses, a reservoir system totaling not less than 1000 acres, which shall hold a maximum of at least 16 billion gallons (based on an average depth of 50 ft.). The Water Lease will not allow the delivery of more storm runoff water than will be available for diversion after the Commission on Water Resources Management issues a decision on the pending Interim Instream Flow Standard (IIFS) matters. The Maui County DWS shall remain an equal partner in the design and management of the reservoir system throughout each lease term, and shall retain first right of refusal for the purchase of all the acreage comprising the reservoir system should the water lease be transferred directly to the County of Maui at a later date, at the average prevailing price for general agricultural acreage at the time of purchase. During initial 3-year lease period, the lessee shall provide the following improvements:

- 1) Repair of access roads and trails in the license area.
- 2) Provision of reasonable community access to license areas, in conjunction with the DLNR.
- 3) Reconfiguration of water diversion gates so that during high water conditions (heavy rainfall), the diversions are fed, but during low rainfall and drought conditions, no water is diverted.
- 4) Repair of ditches, flumes, and tunnels to minimize wasted resources.
- 5) Design, funding, and substantial completion of a Central Maui Community Reservoir System.

Inadequate progress in any of the above improvements shall be grounds for non-renewal of the lease. However, for the purpose of realizing the completion of the above improvements, the lessee is permitted to engage in the following activities:

- 1) Seek additional funding for water resource development and flood control from any available County, State and Federal resources for the construction of the reservoir and its supply infrastructure.
- 2) Within the general reservoir plan, incorporate private plans on its surrounding property that may benefit from the reservoir, for example: agricultural parks that are well-placed to receive water; recreational and residential areas (where permitted) that take advantage of the ambience associated with a large body of fresh water, etc.
- 3) Solicit from the lessor any assurances of good faith and/or satisfactory performance as may be necessary for the lessee to enter into funding relationships that will further facilitate prompt completion and ongoing maintenance of the project.
- 4) Develop specific management arrangements with affected parties (residents receiving water; County and State agencies having water supply/control mandates, etc.) as necessary to accomplish the "Objectives of the Proposed Action."

## DISCUSSION

Under heading 1.6, In general, the objectives of the issuance of the proposed Water Lease (Proposed Action) are:

- Preserve and maintain the EMI Aqueduct System
- Continue to meet domestic water demands in Upcountry Maui
- Continue to provide water for agricultural purposes in Central Maui
- Continue to serve community water demands in Nāhiku

The Proposed Alternative Action meets these objectives in the following ways:

### **1) Preserve and maintain the EMI Aqueduct System.**

The Proposed Alternative Action 2.2 preserves and maintains the entire EMI Aqueduct System, with the specific new purpose of using the system to not to take the bulk of the normal flow, as has been the practice in the past, but rather to take maximum advantage of the storm runoff overflow of the streams. Normal flow will be maintained in all streams, and only the overflow during heavy rainfall will be diverted through the existing system. Because this overflow will be periodic rather than constant, a large water storage system in Central Maui is required. Under the Proposed Alternative Action 2.2, the lessee (A&B) must agree to build this large reservoir system as a condition for receiving the water lease. This is a very large expense, but it is reasonable to ask A&B to make a new outlay to bring the existing system up to modern needs. The previous practice (of taking all the water) is no

longer sustainable, and the previous sugar crop (which used all the water) is no longer viable.

The previous justification for leasing A&B all the water flow was based on its dominance in the local economy and its paternalistic management of the worker population during the plantation era. In return for the massive original investment (and impressive engineering), the companies that have since merged under A&B were given a privileged status, in spite of the fact that the water needs of the local communities were marginalized by diverting the streams. With accelerated modern development occurring all over the island, the allotment and conservation of water resources is clearly recognized as the primary community issue. A&B can no longer expect to continue to dominate water usage without providing adequate water resources for the remainder of the East Maui community. A&B does deserve some "legacy rights" for the remarkable accomplishment of the EMI system, but their last major investment in the system was the Wailoa ditch in 1923. Greatly enlarging the storage capabilities in Central Maui is the obvious "renewed contribution" that should be required of A&B, in order to meet good faith community needs for the current century.

Fortunately, by building a large Central Maui Reservoir system under the Proposed Alternative Action 2.2, A&B will be able to hold the water it needs for its large acreage just by diverting the storm water overflow from the East Maui streams. This will allow all the streams to maintain normal year-round flow even beyond the pending Interim Instream Flow Standards. In fact, using the EMI system to divert the storm water overflow will actually be helpful in preventing flood conditions and erosion along the streams.

And certainly, in addition to using the reservoir to supply its agricultural lands, A&B will be sure to make maximum use of the aesthetic possibilities of a large body of water to tie in with its existing development plans in the Hali'imaile and North Kihei areas. In acknowledgement of this inevitability, the Proposed Alternative Action 2.2 provides some leeway for A&B to seek funding to complete the reservoir system within the initial 3-year lease period by specifically allowing them to enter into funding arrangements with outside agencies and entities.

### **2) Continue to meet domestic water demands in Upcountry Maui**

Because the Proposed Alternative Action 2.2 not only maintains the existing EMI aqueduct system, but also greatly enhances the water storage capabilities in Central Maui, there will be no problem in continuing to meet domestic water demands in Upcountry Maui. The new reservoir system will be located, by obvious design priorities, as high in elevation as possible in order to benefit from the ditch locations, and the availability of water to feed the existing upcountry systems will only be enhanced.

### **3) Continue to provide water for agricultural purposes in Central Maui**



10238-02  
September 23, 2019

Mr. Brian Wittman  
[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Wittman:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, your oral comments at the February 22, 2017 EIS Scoping Meeting, and your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui. The environmental impacts of the potential Water Lease will be assessed.
2. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including lease durations.

We appreciate your interest in this environmental review process. Your oral and written comments, and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

The large-scale enhancement of water storage facilities in Central Maui will certainly continue to provide water for agricultural purposes in Central Maui. In addition, the greatly increased capacity of the new reservoir system in the Proposed Alternative Action 2.2 will allow the use of seasonal storm overflow rather than constant diversion to feed the Central Maui water storage systems. Though less water will be taken from the streams on a daily basis, none will be wasted, and the gradually accumulating large volumes of water from rainy periods will allow massive water storage to meet agricultural needs during droughts, without taking stream flow from East Maui during critical times.

#### 4) Continue to serve community water demands in Nāhiku

The Proposed Alternative Action 2.2 will continue to serve community water demands in Nāhiku. Nāhiku streams will remain at or above Interim Instream Flow Standards, and existing systems will not be affected. The Proposed Alternative Action 2.2 calls for the repair and on-going maintenance of all existing community supply systems.

#### Conclusion

In addition to meeting the objectives of the issuance of the proposed Water Lease, Proposed Alternative Action 2.2 will create the following:

- 1) Massive drought resistance for the Central Maui agricultural and population areas.
- 2) Additional aesthetic and recreational areas in the form of a fresh water lake on the central Maui slopes, and increased access to watershed areas for East Maui residents.
- 3) East Maui stream flow well above the pending Interim Instream Flow Standards, resulting in increased wildlife restoration including estuary eco-systems and enhanced near-shore fishing.
- 4) Additional economic opportunities for A&B that are commensurate with their expected new investment in water resource infrastructure.

10238-02  
Letter to Mr. Brian Wittman  
Page 2  
September 23, 21019

technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

Wilson Okamoto Consultants  
1907 S. Beretania St. Ste 400  
Honolulu, 96826  
Attn: Earl Matsukawa

Greetings,

EM

RECEIVED  
FEB 27 2017  
WILSON OKAMOTO CORPORATION

My name is Cal Shinyama. I grew up on Maui but for a few years on the Mainland for college. Maui has been my home. I am now retired and enjoying the fruits of my labor here on the most beautiful island in the world.

I can remember when agriculture was the engine that drove this economy, now it's tourism. Maui has consistently been voted one of the top vacation destinations in the world thanks in part to its open space due our agricultural past. I remember many of those camps that sprang around the mills and the families that grew up and contributed to making Maui attractive.

Now Pioneer Mill is gone, Maui Land and Pineapple is gone and many of those acres have been turned into golf course's, gated communities, or gentlemen's estates when those former agricultural companies get into real estate developments.

There is nothing to stop Alexander and Baldwin from becoming a Realty company as there are prime acres with sweeping mountain or ocean vistas, they have already sold 400 acres near Pala. I applaud them for wanting to keep much of their lands in agriculture, they are under no mandate to do so, the only way they can keep those lands in agriculture is by having a constant and guaranteed water supply.

The cattle industry for instance in order to expand must have water to irrigate those pastures especially in times of drought, any other agriculturally based company must have water to exist without it what other recourse does A&B have but to sell. There is enough water to satisfy everyone's needs, the Taro growers, the stream restorers and agriculture, it does not have to be all for one and none for the other.

We here on Maui will be the lesser if these open spaces become gated communities and Malls, it will be accessible only to those part time residents who come here who can afford to purchase them, they will certainly not be the local families that have made Maui their home. In short I am in favor of Alexander and Baldwin's bid for a long-term water contract.

Very Truly,

  
Cal Shinyama





10238-02  
September 23, 2019

Mr. Cal Shinyama

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Mr. Shinyama:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments received February 27, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The modification or removal of diversion structures in streams designated for full restoration by the D&O will have positive social value for East Maui, as discussed in the Social Impact Assessment by Earthplan (See Appendix G). Stream restoration supports cultural food gathering practices, as discussed in the Cultural Impact Assessment (See Appendix F). Restoring important cultural streams in East Maui will open opportunities for traditional agriculture and ensuing economic benefits, as assessed in the Agricultural and Related Economics Impacts Report done by Plasch Econ Pacific, LLC (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Cal Shinyama  
Page 2  
September 23, 2019

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



# Native Hawaiian LEGAL CORPORATION

1164 Bishop Street, Suite 1205 • Honolulu, Hawaii 96813 • www.nhlc.org  
Phone (808) 521-2302 • Fax (808) 537-4268



March 10, 2017

Board of Land and Natural Resources  
Attention: Mr. Ian Hirokawa  
1151 Punchbowl St., Room 220  
Honolulu, Hawaii 96813  
[Ian.c.hirokawa@hawaii.gov](mailto:Ian.c.hirokawa@hawaii.gov)

Re: Comments on the EISP/N Proposed Lease for the Nahiku, Ke'anae,  
Honomanu, and Huelo License Areas East, Central and UpCountry Maui, Hawaii

Dear Mr. Hirokawa,

On behalf of Nā Moku Aupuni o Ko'olau Hui and other farmers, fishermen and women, and gatherers of native plants and stream animals in the East Maui region, the Native Hawaiian Legal Corporation submits its comments on the Environmental Impact Statement Preparation Notice (EISP/N) for the proposed "Lease (Water Lease) for the Nahiku, Ke'anae, Honomanu, and Huelo License Areas" published on February 8, 2017.

The EISP/N's impact analysis matter-of-factly states that, "[t]he Proposed Action is limited to the issuance of the Water Lease for the subject License area, which would enable A&B to continue operation of the EMI Aqueduct System that has been in operation for over a century." The clear implication is that the Proposed Action entails nothing more than "maintain[ing] existing conditions[.]" Both inaccurately assume that the status quo is diverted streams. Simply because the same resource has been committed in the past, however, does not make a new commitment of the resource, which in this case lasts for a thirty-year period, a continuous activity. To the contrary, a full opportunity to reevaluate whether the Proposed Action serves contemporary and prospective public needs is required, as is an EIS that evaluates conditions existing prior to approval of the Proposed Action and the consequences of that decision.

## Hydrology Section 3.3

In Section 3.3, Hydrology, the discussion of surface water identifies a total of 39 streams within the four License Areas subject to diversions and notes that the "Proposed Action will maintain existing conditions." EISP/N at 3-4.

This statement ignores that over the past year alone [2016 through the present], A&B

*Services made possible with major funding from the Office of Hawaiian Affairs*

Maui. Upright, straight, tall and straight as a tree without branches, sharply peaked, as mountains. Fig., rightmost, correct.

Board of Land and Natural Resources  
March 10, 2017  
Page 2 of 4

significantly reduced its diversions of East Maui streams, limiting its diversions to the Honomanu and Huelo License Areas which draw from a mere fraction of the 39 streams identified. Compared to A&B's century-old diversion activities, present undiverted conditions are a dramatic turn of events and constitute the "existing conditions" against which the Proposed Action must be evaluated. To the extent the Proposed Action entails or contemplates reverting to pre-2016 conditions, where the high-water mark is a maximum diversion capacity of 450 million gallons daily, those impacts must be assessed. That "[t]he Water Lease will not allow the delivery of more water than will be available for diversion after the Commission on Water Resources Management issues a decision on the pending Interim Instream Flow Standard (IIFS) matters" reveals nothing about the broad spectrum of impacts that result from diverting anywhere from zero to all water in excess of these minimum streamflow standards. Any contention that the Proposed Action will "maintain existing conditions" belies these important considerations.

## Natural Environment Section 3.5

### Flora Section 3.5.1

The impact analysis of flora relies on the misnomer that the Proposed Action maintains existing conditions. The EIS should, however, analyze the changes in flora that have occurred since the 2016 stream releases, as well as any future impacts the Proposed Action would have on existing conditions. The EIS should consider impacts not just on flora found in the four license areas, but in areas that lie beyond and downstream that are impacted by the Proposed Action's reduction in streamflows. A&B claims that reduced *ditch* flows generate increased vegetation requiring additional maintenance. The proper focus of the EIS, however, should be on the streambeds, namely the impact of reduced streamflows on the type and amount of vegetation that grows in the streambed, effects on native species, and the proliferation of alien species in and along the streambeds.

### 3.5.2 Fauna and Aquatic Habitat

A number of studies by the Department of Aquatic Resources have analyzed the impact of stream diversions on native aquatic life in East Maui. The EISP/N states that the Proposed Action will "maintain existing conditions." Once again, the EIS cannot assume that pre-2016 diverted conditions control. Testimony provided to the Commission on Water Resources Management in the re-opened hearings on interim instream flow standards indicates that streamflow restorations can quickly lead to an increase in native aquatic species populations both in streams and in nearshore environments. For example, the return of flows throughout 2016, including Honomanu Stream, may already have caused significant changes from the prior diverted state. Therefore the EISP/N's statement that the Proposed Action will "maintain existing conditions" ignores recent, observable changes in fauna and aquatic habitat within the East Maui watershed.



#### General Considerations

The EISPN's insistence on treating A&B's historic diversions as an "existing condition" that will be "maintained" under the Proposed Action suggests that the true environmental impacts of the Proposed Action will not be meaningfully addressed. It is also unclear whether the detailed descriptions Nā Moku requested concerning the diversion system - particularly the amount of water diverted from each stream, license area, and watershed - will be included such that the EIS will provide the disclosures necessary for proper decisionmaking.

As stated in Nā Moku's pre-comments, Nā Moku's position is that the EIS should consider impacts to and along: (1) each diverted stream, (2) each individual license area, and (3) the entire 33,000 acres of license area. In addition, the discussion of diversions should include all structures, designs, and mechanisms that either remove water from streams or prevent water from entering into streams or flowing throughout a streamcourse.

The EIS should provide the following:

- Full disclosure of every single diversion along the East Maui Irrigation system (including photographs and descriptions as to how the diversion operates, how much water it diverts from the stream daily (on average and at minimum and maximum), and its precise location);
- Maps indicating all maintenance and/or access roads for the diversion system including identification of all access points at public roads and/or highways;
- Maps that show every single stream within East Maui, including all tributaries from ma uka to ma kai, identified by name; and
- Alternative proposed uses including one that involves the use of water from less than all four license areas and no diversion of water from East Maui.

The EIS should also disclose the following information for *each* alternative analyzed in the EIS:

- the amount of water proposed to be taken from each stream daily (on average and at minimum and maximum);
- the amount of water proposed to be taken from each license area daily (on average and at minimum and maximum);
- the total amount of water proposed to be taken from the entire license areas daily (on average and at minimum and maximum).


Finally, the EIS should provide an analysis of the following:

- the degree to which leasing of the land interferes with access to the license area - including a discussion as to who controls the various gates used to facilitate or prevent access to these lands;
- the impact of diverting water from East Maui streams on aquatic life;
- the impact of diverting water from East Maui streams on native plant species;
- the impact of diverting water from East Maui on invasive species, including the creation of mosquito breeding grounds;
- the impacts of diverting water from East Maui streams on outdoor recreational activities, the maintenance of ecosystems, and aesthetic values such as waterfalls and scenic waterways; and
- the impacts of diverting water from East Maui streams on traditional and customary Hawaiian practices (including but not limited to kalo farming, gathering of native stream flora and fauna, and recreation).

Our clients are looking forward to participating in the consultation process required to prepare the Draft EIS. You may contact our office if you need assistance contacting Nā Moku members or our other clients.

Attached to these comments as *Appendix I* are declarations, affidavits, and/or testimony from Nā Moku and other East Maui community members that are relevant to the EIS for this Proposed Action. Should you have any questions regarding the above, please do not hesitate to call us at (808) 521-2302.

Sincerely yours,

  
Camille Kalama  
Summer Sylva  
Staff Attorneys

Enclosure(s)

cc:

Applicant: Alexander & Baldwin, Inc.  
Mr. Daniel Y. Yasui  
dyasui@abprop.com

Consultant: Wilson Okamoto Corporation  
Mr. Earl Matsukawa, AICP  
ematsukawa@wilsonokamoto.com

IN THE CIRCUIT COURT OF THE THIRD CIRCUIT  
STATE OF HAWAII

In the Matter of the Contested Case Hearing )  
Regarding Water Licenses at Honomanu, )  
Keanae, Nahiku, and Huelo, Maui )  
  
 )  
 )  
 )  
 )  
 )  
 )  
 )  
 )  
 )

DLNR FILE NO. 01-05-MA  
DECLARATION OF EDWARD WENDT

DECLARATION OF EDWARD WENDT

I declare under penalty of perjury that:

1. I am basing my statements on matters that are within my personal knowledge.
2. I am the current President of Na Moku Aupuni o Ko'olau Hui ("Na Moku").
3. Attached as Exhibit "A" is a true and correct copy of the current Articles of Incorporation for Na Moku.
4. Na Moku, whose membership exceeds 500, is a nonprofit corporation organized by Native Hawaiian residents of the Keanae-Wailuanui ahupua'a, which encompasses the Nahiku, Keanae, and Honomanu license areas.
5. Tax map key numbers relevant to the issue of Na Moku's standing include, but are not limited to, 1-1-01-44; 1-1-02-Portion 2; 1-1-04-28, 30; 1-1-05:16, 20, 22, 52; 1-1-06-8, 39, 46; 1-2-02-09; 1-2-04-05, 07.
6. Na Moku was formed "to promote the general welfare of the tenants and descendants residing in the ahupua'a of Keanae-Wailuanui and elsewhere; in social, spiritual, cultural, educational and economic affairs", "to preserve and protect, and enhance the quality of the existing life of the people within the Keanae-Wailuanui

ahupua'a," and "to provide a formal voice and organization through which the residents of the community can participate fully and more meaningfully in the determination and development of policies and decisions affecting their destiny." See, Na Moku Articles of Incorporation, IV(A),(B), and (D), attached as Exhibit "A".

7. Thus, Na Moku's purposes encompass the assertion, on its members behalf, of rights as beneficiaries of the public trust, the Hawaiian Homes Commission Act, the trust created by Section 5(f) of the Admissions Act, and the constitutionally protected traditional and customary native Hawaiian practices which depend upon sufficient streamflow.

8. Many of Na Moku's members have property interests in kuleana within the Nahiku, Ke'anae, and Honomanu license areas. Although streamflow once fed lo'i on Na Moku's members' lands, that water is diverted and either no longer reaches these lo'i or results in lo'i water temperatures too high to effectively cultivate wetland kalo.

9. Na Moku seeks to restore streamflow in streams within the Nahiku, Keanae, and Honomanu license areas to their natural levels so that kalo cultivation is once again possible and its members may once again exercise their appurtenant and other traditional and customary rights ensured by Hawai'i's Constitution Article XI, §§ 1 & 7, Article XII, § 7, and HRS § 174C-63.

10. Na Moku also represents the interests of certain of its members who are beneficiaries of the trust created by the Hawaiian Homes Commission Act ("Act") and have applied for pastoral and agricultural homesteads within the Ke'anae-Wailuanui ahupua'a. Pursuant to Section 213(i) of the Act, they have a right to expect reasonable revenues to support programs for native Hawaiians and, pursuant to Section 221 of the Act, sufficient water to support homesteading. These rights are implicated by the proposed disposition of public lands for the development, diversion, and use of water.

11. Na Moku also represents the interest of its members who are beneficiaries of the trust established pursuant to Section 5(f) of the Hawaii Admission Act. As beneficiaries of this trust, Na Moku members have a right to expect reasonable revenues from the lease of public lands subject to the provisions of the trust to support programs "for the betterment of the conditions of native Hawaiians."

I declare under penalty of perjury that the foregoing statements are true and correct, to the best of my knowledge, information, and belief.

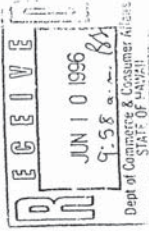
Dated: Honolulu, Hawaii, April 5, 2002.

  
EDWARD WENDT



DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS  
BUSINESS REGISTRATION DIVISION  
STATE OF HAWAII

P. O. BOX 40  
HONOLULU, HI 96810

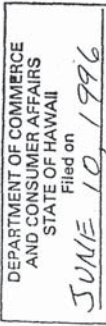


104 00152507 13- 6/14/96 25.00

Articles of Incorporation of

Na Moku Aupuni O Ko'olau Hui

The undersigned, desiring to form a nonprofit corporation under the laws of the State of Hawaii, certifies as follows:



I

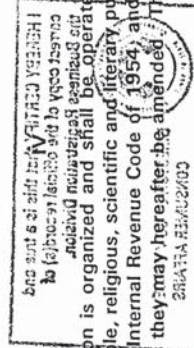
The name of the corporation shall be Na Moku Aupuni O Ko'olau Hui.

II

The location of the corporation's initial office shall be in Keanae-Wailuanui Ahupua'a, Maui, State of Hawaii, and the specific address is HC1, Box 62, Wailuanui Road, Keanae, HI 96708

III

The period of corporation's duration is perpetual.



The corporation is organized and shall be operated exclusively for cultural, educational, charitable, religious, scientific and literary purposes within the meaning of 501(c) (3) of the Internal Revenue Code of 1954, and regulations thereunder as they now exist or as they may hereafter be amended. The objects and purposes of the corporation are:

- A. to promote the general welfare of the tenants and descendants residing in the Ahupua'a of Keanae-Wailuanui and elsewhere, in social, spiritual, cultural, educational and economic affairs;

EXHIBIT A

EXHIBIT A

- B. to preserve and protect, and enhance the quality of the existing life of the people within the Keanae-Wailuanui Ahupua'a;
- C. to provide and improve communication and mutual understanding among the tenants and descendants of Keanae-Wailuanui Ahupua'a themselves and with other community associations concerning their mutual welfare;
- D. to provide a formal voice and organization through which the residents of the community can participate fully and more meaningfully in the determination and development of policies and decisions affecting their destiny.

#### V

As a means of accomplishing its cultural, educational, charitable, religious, scientific and literary purposes the corporation shall have, in addition to the general powers conferred upon it by the State of Hawaii'i, but subject to the foregoing limitations, the following powers:

- A. to accept, acquire, receive, take and hold by bequest, devise, grant, gift, purchase, exchange, lease, transfer, by judicial order or decree, or otherwise, for any of this objects and purposes, any property, both real and personal, of whatever kind, nature or description and wherever situated;
- B. to enter into, make, perform, and carry out contracts of every kind for any corporation purpose, without limit as to amount, with any person, firm, association, corporation, or other nonprofit organization, including contracts for the employment of administrators, employees, consultants or other counsel;
- C. in general, and subject to such limitations, and conditions as are or may be prescribed by this Articles of Incorporation, to exercise such other powers which nor or are hereafter conferred by law upon a corporation organized for cultural, education, charitable, religious, scientific and literary purposes set further above, or necessary or incidental to the powers so conferred, conducive to or in furtherance of the attainment of the proposes of the corporation.

#### VI

In all events and under all circumstances, including but not limited to reorganization, dissolution, or amendment of the Articles of Incorporation of the corporation, the purposes and powers shall be subject to the following limitations:

- A. no substantial part of the activities of the corporation shall consist of carrying on propaganda, or otherwise attempt to influence legislation; nor shall it participate in, or intervene in (including the publishing or distributing of statements) any candidate for public office; not shall it engage in any activities which are unlawful under the laws of the United States or of the State of Hawaii'i; nor shall it exercise any powers or engage in any transaction or activity not permitted to be conducted or carried on by an organization exempt under Section 501(c) (3) of the Internal Revenue Code and its Regulations as they now exist or as they may hereafter be amended, or by an organization contributions to which are deductible under Section 170(c) (2) of such Code and Regulations as they now exist or as they may hereafter be amended;
- B. the corporation shall never be operated for the primary purpose of carrying on any trade or business for profit, and neither the whole nor any part or portion of the assets, income or earnings of the corporation shall be used, nor shall the corporation ever be organized or operated, for objects or purposes which are need exclusively cultural, educational, charitable, religious, scientific or literary, under the laws both of the United States and of the State of Hawaii'i;
- C. neither the whole nor any part or portion of the assets, income or earning, current or accumulative, of the corporation shall ever be used for dividends or be otherwise withdrawn or distributed to or divided among any members, directors or officers of the corporation or any donor, whether upon liquidation or dissolution of the corporation or otherwise; provided, further, that neither the whole nor any part or portion of such assets, income or earnings shall ever be used for, accrue to, or inure to the benefit of any private individual within the meaning of the tax exemption requirements of the laws both of the United States and the State of Hawaii'i;
- D. the corporation is not organized for profit and shall not issue any stock, and no part of its assets, income or earnings shall be used for dividends, or otherwise withdrawn or distributed to any of its members, directors or officers. The corporation is organized and shall be conducted exclusively for cultural, educational, charitable, religious, scientific or literary purposes;
- E. the corporation shall be operated so as to qualify as an organization described in Section 509(a) (3) of the Internal Revenue Code, and thereby avoid being classified as a "private foundation" within the meaning of Section 509(a) of the Internal Revenue Code. However, in the event that the corporation becomes or is declared to be a "private foundation", then the income of the corporation for each taxable year shall be distributed at such time and in such manner as not to subject the corporation to the tax under Section 4942 of the Internal Revenue Code and Regulations promulgated in connection therewith. Notwithstanding any other provisions of the Articles of Incorporation or any provisions of law, the corporation shall not:

- a. engage in any act of self-dealing as defined in Section 4941(d);
- b. retain any excess business holdings as defined in Section 4943(c), subject to the right to dispose of such holdings within the period prescribed in said Section;
- c. make any investments in such manner as to subject the corporation to tax under Section 4944 or;
- d. make any taxable expenditures as defined in Section 4945(d).

#### VII

The management of the business and affairs of the corporation and the control and distribution of its property shall be vested in a Board of Directors.

The Board of Directors shall have full power to control and direct the business affairs of the corporation, subject, however, to any limitations contained herein and in the By-Laws of the corporation. The initial directors of the corporation, all residents of the State of Hawai'i, and their home addresses are as follows:

| <u>Name</u>        | <u>Residence</u> |
|--------------------|------------------|
| Edward Wendt       |                  |
| Henry Kailialau    |                  |
| Ellen P. Denecke   |                  |
| Awapuhi Carmichael |                  |
| Pualani Kimoeko    |                  |
| Willie K. Kimoeko  |                  |
| Mary Kaauamo       |                  |

Virgil E. Day, Jr.  
Patricia J. Neal  
Solomon Kaauamo  
Joseph J. Day

#### VIII

The officers of the corporation shall consist of a president, vice-president, corresponding secretary, recording secretary, treasurer and sergeant-at-arms. The initial officers, all residents of the State of Hawai'i, of the corporation and their home address are as follows:

| <u>Name</u>        | <u>Office-Held</u>      | <u>Residence</u> |
|--------------------|-------------------------|------------------|
| Edward Wendt       | President               |                  |
| Henry Kailialau    | Vice-President          |                  |
| Ellen P. Denecke   | Corresponding Secretary |                  |
| Awapuhi Carmichael | Recording Secretary     |                  |
| Pualani Kimoeko    | Treasurer               |                  |
| Willie F. Kimoeko  | Sergeant-At-Arms        |                  |



IX

The property of the corporation shall alone be liable for payment of the debts and liabilities of the corporation and the private property of the directors and officers shall not be subject to the payment of the corporation's debts or claims against the corporation of any extent whatsoever.


X

Upon the dissolution of the corporation or the winding up of its affairs, the assets of the corporation shall be distributed exclusively to cultural, educational, charitable, religious, scientific or literary organizations which would then qualify under the provisions of Section 501(c)(3) of the Internal Revenue Code and its Regulations as they now exist or as they may hereafter be amended.

This Articles of Incorporation shall be subject to amendment from time to time as provided by law, except that no amendment shall be made which would change the objects and purposes of this corporation to inure to the benefit of any member, donor or private individual, or which would permit any transaction or activity not permitted to be conducted or carried on by an organization exempt under Section 501(c)(3) of the United States Internal Revenue Code and its Regulations as they now exist or as they may hereafter be amended.

IN WITNESS WHEREOF, I certify under the penalties of the Hawaii's Revised Statutes, Section 415B-158 that I have read the above statements and that the same are true and correct.

DATED: Keanae-Wailuanui, Maui Hawaii'i, June 6, 1996.

  
Edward Wendt

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was duly served upon the following parties in the manner indicated, by U.S. Mail, postage prepaid, or by hand-delivery to their last known address:

The Honorable E. John McConnell (Ret.)  
33 N. Market Street, Suite 200  
Wailuku, Hawaii 96793  
U. S. MAIL


Alan M. Oshima, Esq.  
Oshima Chun Fong & Chung  
841 Bishop Street, Suite 400  
Honolulu, Hawaii 96813  
U. S. MAIL

Isaac Hall, Esq.  
2087 Wells Street  
Wailuku, Maui, Hawaii 96793  
U. S. MAIL

Patrick W. Hanifin, Esq.  
1001 Bishop Street, Suite 2475  
Honolulu, Hawaii 96813  
U. S. MAIL

Richard K. Minatoya, Esq.  
Deputy Corporation Counsel  
County of Maui  
200 S. High Street  
Wailuku, Hawaii 96793  
U. S. MAIL

DATED: Honolulu, Hawaii'i, April 11, 2002.

  
ALAN T. MURAKAMI  
MOSES K. N. HAIA III  
Attorneys for Petitioners  
Na Moku Aupuni O Ko'olau Hui, et al.

## STATE OF HAWAII

Regarding Water Licenses at Honomanu,  
Keanae, Nahiku, and Huelo, Maui

## DECLARATION OF BEATRICE KEPANI KEK AHUNA

I declare under penalty of perjury that:

1. I am basing my statements on matters that are within my personal knowledge.
2. Attached as Exhibit "A" is a true and correct copy of my birth certificate, which establishes that I am native Hawaiian.
3. I have property interests in and lawfully reside upon land identified as TMK: 2-9-001-014 and TMK: 2-9-001-016.

are located in Honopou, Maui and are bordered by Honopou Stream.

5. Honopou Stream exists within the Huulo license area.
6. Honopou Stream streamflow is diverted by a system of ditches operated by East Maui Irrigation.
7. Attached as Exhibit "B" is a true and correct copy of the current tax map for TMK: 2-9-001-014.
8. Attached as Exhibit "C" is a true and correct copy of the current tax map for TMK: 2-9-001-016.

001-014 and TMK; 2-9-001-016.

10. Currently, Honopou Stream streamflow either does not reach these lo'i or results in lo'i water temperatures too high to effectively cultivate wetland taro.
11. I seek to restore streamflow to Honopou Stream so that I and my 'ohana may cultivate taro on our land once again.
12. I also seek to restore streamflow to Honopou and other streams affected by EM) ditch system diversions so that I and my 'ohana may also exercise other traditional and customary rights ensured by Hawai'i's Constitution: Article XI, §§ 1 & 7; Article XII, § 7; HRS § 174C-63; HRS 1-1; and HRS 7-1.

13. As a native Hawaiian, I am also a beneficiary of the trust established pursuant to Section 5(j) of the Hawaii Admission Act. As a beneficiary of this trust, I have a right to expect reasonable revenues from the lease of public lands subject to the provisions of the trust to support programs "for the betterment of the conditions of native Hawaiians."

I declare under penalty of perjury that the foregoing statements are true and correct, to the best of my knowledge, information, and belief.

Dated: Honolulu, Hawaii, April 8, 2002.

Beatrice Kepani Kekahuna  
BEATRICE KEPANI KEKAHUNA



RECEIVED  
OFFICE OF CONSERVATION  
AND NATURAL LANDS

2005 AUG -1 P 3:58

DEPT. OF LAND &  
NATURAL RESOURCES  
STATE OF HAWAII

NATIVE HAWAIIAN LEGAL CORPORATION  
1164 Bishop Street, Suite 1205  
Honolulu, Hawai'i 96813  
Telephone: 521-2302

2285  
6277

ALAN T. MURAKAMI  
MOSES K. N. HAJIA III

Attorneys for Petitioners  
Na Moku Aupuni O Ko'olau Hui,  
Beatrice Kekahuna and Marjorie Walleit

BOARD OF LAND AND NATURAL RESOURCES  
STATE OF HAWAII

In the Matter of the Contested Case Hearing  
Regarding Water Licenses at Honomanu,  
Keanae, Nahiku, and Huelo, Maui

DLNR FILE NO. 01-05-MA

PETITIONERS' DIRECT TESTIMONY OF  
BEATRICE PUALANI KEPANI  
KEKAHUNA; CERTIFICATE OF SERVICE

Hearing  
Date: October 10, 2005  
Time: 9:00 a.m.  
Officer: Hon. E. John McConnell, Esq.

PETITIONERS' DIRECT TESTIMONY OF  
BEATRICE PUALANI KEPANI KEKAHUNA

Q. Please state your name for the record.  
A. BEATRICE PUALANI KEPANI KEKAHUNA.

Q. When and where were you born?  
A. June 3, 1932 in the Hana Hospital in Hana, Maui.

Q. Who are your parents and grandparents?  
A. My mother was Juliana Martha Koko. My father was Lokana Kepani, Jr. and his mother was Pi'i'ohia, aka Piholia.

Q. What are the properties in Honopou in which you currently own an

interest?

A. In addition to other property in Honopou, my 'ohana also acquired title to Royal Patent Grant 1082 to Kaimi. The Kingdom also granted Royal Patent Grant 3101 in two apana, consisting of two separated parcels, approximately 6 and 9.82 acres each, to my grandfather Kepani. Apana 1 of Grant 3101 now consists of 5.7 acres and is now TMK 2-9-01-6. LCAw. 5595-E:1, which surrounds Grant 1918:1, abuts Grant 3101:2. All of these parcels, except for Grant 3101:1, are, together with Grants 1082 and 3101:2, a part of the larger TMK 2-9-01-14, collectively consisting of 22.81 acres. The relevant tax map, now shows that Elizabeth Kepani and others in my 'ohana own Grants 1082, 1918:1, and 3101:1 and 2, and LCAw. 5595-E:1. My father deeded his partial interest in TMK 2-9-01-14 to me and my sister Virginia Amara effectively providing my sister and I with the legal authority to cultivate taro on these lands. This parcel is riparian to Honopou Stream.

Q. How do you use that TMK?

A. I farm a portion of this land with my cousin Marjorie Walleit and her 'ohana, but the current stream flow does not allow us to cultivate taro as we wish.

Q. Who is the current owner of the kuleana on which your hale is located?

A. LCAw. 5459-X:2 to Imihia is designated as TMK 2-9-01-16. My dad deeded that parcel to Lokana Kepani Jr, my oldest brother, now deceased. His three sons, Clifford, Gary, and Thomas who all live and work in Honolulu. They have collectively given me permission to live on and farm this kuleana which is riparian to Honopou Stream.

Q. How do you use that kuleana?

A. I occupy the house on LCAw. 5459-X:2 to Imihia, where I also have 3 taro lo'i.

Q. Where are the lands located?

A. TMK sheet 2-9-01 depicts the area along the Honopou Stream. This land is located down an unpaved road makai of the main government highway.

Q. How did you end up living and farming on the lands you currently occupy?

A. I helped my 'ohana raise taro in Honopou since I was a little girl. As an

002207

adult, I continued to farm taro despite the lack of sufficient streamflow in Honopou Stream.

Q. What is your background in taro farming?

A. I grew up with my parents in Honopou, on the lands mentioned above along Honopou Stream. I had to work the lo'i as a child (keiki). I recall growing taro along the Honopou Stream on Grant 3101.2, Grant 1918.1, LCAw. 5595-E:1, and LCAw. 5459-X:2.

Q. How much taro did you grow back then?

A. As a girl, I remember that we kept about 25 lo'i in wetland taro on Grant 3101.2, Grant 1918.1, and LCAw. 5595-E:1. We had about 3 lo'i near the house on LCAw. 5459-X:2.

Q. What kind of taro did your 'ohana grow?

A. Mainly lehua.

Q. How did you 'ohana manage so many lo'i?

A. We planted in cycles to take advantage of the placement of the lo'i, 'auwai, and the need to let each lo'i rest in between plantings. This pattern allowed the lo'i to stay rich and productive. If we didn't let the lo'i rest in between plantings, the crops would suffer.

Q. Were there other Hawaiian families that lived along the Honopou Stream when you were a girl?

A. Yes, people used to go mauka-makai in the valley, farming mauka and fishing along the shore.

Q. What kinds of fish would these residents of Honopou catch?

A. People would catch many kinds of fish for their diets – manini, po'opa'a, hinalea, enenue, and moi. There was even a trail that went through our 'aina for this purpose.

Q. Would they gather other kinds of foods?

A. Yes, they would gather limu along the shore and hihivai, o'opu, and opae in the stream. There were lots of hihivai, o'opu, and opae, when there was more water in the stream.

Q. What about today?

A. Now, no more. The water in the stream is dirtier, and there is less coming down all the way to the ocean.

Q. Where did you gather what you needed from the stream when you were a girl?

A. I just went to the stream right by our kuleana. For example, in the early morning, I'd fish for o'opu, as they slept in the sand. I didn't even use fish hooks; I just picked them from the stream. I also gathered opae 'oeha'a, which lived in our lo'i and 'auwai.

Q. How would you eat the o'opu?

A. We would dry them, lawalu paha with salt.

Q. Where would you get salt?

A. We'd gather salt from the small natural pools, kaheka, near the sea.

Q. What other foods did you gather or grow?

A. I used to catch moi li'i during its season, with a safety pin. My father also grew sweet potato (uala), pumpkin (pala ai paha), squash, sugar cane, and various vegetables.

Q. How important was the stream and 'aina to your 'ohana?

A. It was vital to our culture and survival. The land sustained and gave life to the families along the stream.

Q. Have you sought the BLNR staff assistance to restore flow?

A. I don't understand why the Department of Land and Natural Resources (DLNR) staff won't act to help us taro farmers and Hawaiian cultural practitioners. They've known about our problem for years, yet refuse to take any action against A&B/EMI to put more water back into the streams. I've made complaints to several generations of these state employees without any result. They come out and visit, look at my problem, then do nothing. My attorneys have repeatedly described in detail my inability to grow more than a small amount of taro with the available water released downstream of the ditch. No one from the DLNR staff has taken any initiative to determine whether I can now grow the amount of taro I am trying and entitled to grow with the amount of water now in the stream. I have been frustrated for years by the failure of the State to address my and others water rights by requiring A&B/EMI to return

streamflow to Honopou Stream so I can grow as much taro on these lands as my father and grandfather before him once did. I asked all that time, but without any response. I am now forced to go to formal contested case hearings. That is not right.

Q. What financial burden has this placed on you and your family?

A. Taro farming, fishing, and gathering from the sea and coastline all contributed significantly to helping me offset the significant costs of feeding my family. It also allowed me to engage in the cultural traditions I learned from my elders and which I want to pass on to my keiki and mo'opuna. Denying me water in the stream has an immediate, direct, and significant effect on my ability to sustain my family with food and cash to pay for living costs and to pass on these cultural practices. In effect, the loss of water has significantly adversely impacted my cultural heritage and my 'ohana's self-sufficiency. I have to pay for the difference in food costs.

In the past 4-5 years, the price of poi available to me in the store costs \$5 per plastic container and is shipped from Kaua'i. The poi from the Maui bags tasted better, but I can hardly get local poi anymore because the supply is so low, especially when you go into a store late in the day. Also, because I cannot find the hihitwai, o'opu, and opae, I am forced to buy other foods to substitute for those sources. This all adds to my food bill. Since I only have social security benefits, every little bit makes a big difference. I would much prefer to be able to rely more on what nature used to provide families like mine in Honopou to help me feed myself and my family.

Q. Has this situation imposed other costs on you?

A. I cannot afford to pay for any major costs of pursuing my legal claims, but I am obligated to pay for the costs of legal representation from the Native Hawaiian Legal Corporation. I have to ask for a waiver of that obligation because I cannot afford to pay for them. I also cannot afford to pay for any mediators, should any be appointed to mediate this dispute.

Q. What is your reaction to this situation?

A. I don't think it's fair, nor legal. I only want to get the water I am clearly entitled to get to farm taro and gather from the stream as my ancestors did. That's an entitlement the DLNR should have recognized and done something about long ago, instead of allowing A&B/EMI to continue victimizing me and my 'ohana. The water I

am seeking comes from ceded lands the state is supposed to manage for my benefit and other native Hawaiians. The DLNR is not doing that job and is, in the process, ignoring Hawaiians. Given my superior rights, I should be able to pick up the phone, call someone at the DLNR, inform them that I am being denied a sufficient amount of streamflow and have the problem resolved quickly. Instead, I have to prove that water should be released from the diversions. The water diversions the DLNR is allowing are illegal and should stop so I get as much water as I need to grow taro and once again gather from the Honopou Stream as my ancestors did. Once my rights and the superior rights of others are satisfied then the DLNR may determine what, if any, amount of the excess can be diverted.

Q. Where have you seen these diversions on Honopou Stream?

A. Right below the main highway on the stream, EMI has a large concrete dam that diverts water into the Haiku Ditch. In place of the natural flow, EMI has installed 4 inch pipes to carry a fraction of the natural stream flow beyond the dam. A gate use to control the release of water into the stream from this diversion. My dad used to open and close that gate as he needed, but now only the 4 inch pipes over the dam allow for a fixed amount of water to flow downstream and that isn't nearly enough to satisfy my rights and the rights of others.

Q. How has this low flow specifically affected your 'ohana?

A. We can't plant as much taro as we once did. I still grow taro on LCaw. 5459-X.2. I have started to restore the lo'i on LCaw. 5595:E:1, and a portion of Grants 1918 and 3101.2. However, the low flow has prevented me from going further.

Although I and my 'ohana want to open up more already existing taro lo'i on our property, there isn't enough water flow to do so. Also, my 'ohana and I are unable to exercise other traditional and customary native Hawaiian rights in and around our ahupua'a, coastline and adjacent ocean waters for subsistence, cultural and religious purposes passed on to us by our ancestors.

Q. How many traditional taro lo'i could you plant on the lands you mentioned?

A. About 33-35 lo'i.

Q. How many do you now have planted?

Q. 1-2 lo'i.



B. What is the reason you do not have more lo'i planted in taro?

A. When there's not enough water, as now, and for the past several years, the taro will rot without sufficient flow through to keep the temperature down in the lo'i.

Q. What are you planning to do in this current situation?

A. I have to leave some lo'i fallow for good farming practices. I would try to open up 3 now, to see whether we can grow it. I am asking the DLNR to force EMI to release water from its ditch so enough water reaches the intake to my 'auwai.

Q. What kind of taro will you plant?

A. I'd prefer Moi or Aweueo Kalo because it can be used for both poi and and luau leaf, but there is more chance it would encounter problems with root rot, so I feel I have to wait until the decision in this case gives me the water I need.

Q. How many lo'i would you open if you had all the water you needed?

A. Maybe 20-25, so I can rotate crops at different times in different lo'i. That means I'll leave about a third fallow.

Q. Who would help you?

A. My cousin Marjorie Wallet, her daughter, Lyn Scott, and my 2 sons Sanford and Boniface. Only the DLNR and its partner A&B/EMI is stopping me from growing the taro I could grow.

Q. Didn't A&B/EMI put in an additional pipe in the past year to make it easier on you?

A. It put in an extra pipe to pass more water over its dam above me, but the additional flow does not provide what I really need. Garrett Hew's employees started measuring the difference in flow during an especially rainy period. As a result, the difference in flow was due more to the rain than the flow through the additional pipe. Flow measurements should be taken during the normal dry period to get a true picture. The regular additional flow from the pipe is not sufficient for me to open up more taro lo'i. I can't rely on the flow through this additional pipe given the costs and amount of work involved with adding more taro lo'i.

Q. It seems as though your roots in Honopou are very deep?

A. I am connected to that land by birth and heritage and will always live there. I believe in malama 'aina, as my dad taught me as a girl, and apply it today in my

kupuna years. There is an old cemetery just above the old Honopu landing. No one is assigned to care for it, so I take care of it myself. This tradition of malama 'aina is important to all Hawaiians like me who have tried to remain on the lands on which we were raised.

The many Hawaiian families, like mine, that once thrived on this coast depended on an abundant flow of water in the streams for our taro growing and gathering activities. Our ability to depend on this water was critical to our being able to survive off the land. However, the diversions undertaken by A&B/EMI with the State's blessing have all but extinguished that ability. The decline in water flow as a result has steadily made our situation worse, because we increasingly lose the ability to fend for ourselves and pushed into relying more on a cash economy for our basic needs. If we had more water flowing in the stream, the resulting farming and gathering activities we would no doubt pursue would help restore our confidence, security, and culture. Without it, we continue to feel burdened by the resulting loss in food and cultural activities so dependent on naturally flowing streams.

I am now 73 years old and have seen many negative changes to the stream and the activities we pursued as Hawaiians that relied on that stream flow. I want to grow more taro and pass on that knowledge to my children and grandchildren so they can continue to make the lands of my ancestors as productive as they once were. I cannot do that without the state and A&B/EMI restoring the stream flow to which we as Hawaiians superior rights. These rights continue to take a back seat to the economic motivations of a private sugar plantation. This is Hawai'i. Our rights are supposed to be enforced so we can keep our unique cultural practices alive and well.

CERTIFICATE OF SERVICE

I hereby certify that two (2) copies of the foregoing document were duly served on Linda L. Chow, Deputy Attorney General, for Hearings Officer, The Honorable E. John McConnell on August 1, 2005, by hand delivery. I further certify that one (1) copy was served on the remaining parties as indicated, on August 1, 2005.

Linda L. Chow, Esq.  
Deputy Attorney General  
For Hearings Officer  
☐ U. S. MAIL  
☒ HAND DELIVERY

The Honorable E. John McConnell (Ret.)  
465 S. King Street, Room 300  
Honolulu, Hawaii 96813

Randall K. Ishikawa, Esq.  
Ishikawa Morihara Lau & Fong, LLP  
841 Bishop Street, Suite 400  
Honolulu, Hawaii 96813  
☒ U. S. MAIL  
☐ HAND DELIVERY

Ellijah Yin, Esq.  
David Schulmeister, Esq.  
Cades Schutte  
1000 Bishop Street, 10<sup>th</sup> Floor  
Honolulu, Hawaii 96813  
☒ U. S. MAIL  
☐ HAND DELIVERY


Isaac Hall, Esq.  
2087 Wells Street  
Wailuku, Maui, Hawaii 96793  
☒ U. S. MAIL  
☐ HAND DELIVERY

Robert H. Thomas, Esq.  
1001 Bishop Street  
Pauahi Tower, Suite 1600  
Honolulu, Hawaii 96813  
☒ U. S. MAIL  
☐ HAND DELIVERY

Brian T. Moto, Esq.  
Jane Lovell, Esq.  
Deputy Corporation Counsel  
County of Maui  
200 S. High Street  
Wailuku, Hawaii 96793  
☒ U. S. MAIL  
☐ HAND DELIVERY

Richard Kiefer, Esq.  
David Merchant, Esq.  
444 Hana Hwy, Suite 204  
Kahului, Hawaii 96732  
☒ U. S. MAIL  
☐ HAND DELIVERY

DATED: Honolulu, Hawai'i, August 1, 2005.

  
ALAN T. MURAKAMI  
MOSES K. N. HAIA III  
Attorneys for Petitioners  
Na Moku Aupuni o Ko'olau Hui, et al.



COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAHI, EAST WAILUAHI,  
KOPILILUA, PUAKEA, WAIHUE,  
PAAKEA, WAIKAHA, KAPAUHA,  
HANAWI AND MAKAPIPI STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF AJA AKUNA

DECLARATION OF AJA AKUNA

I, Aja Akuna, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni O Kō'olau Hui.
4. I am a taro farmer. My family grows kalo on about 1 ½ to 2 acres of property irrigated by Waiokamilo and Kualani.
5. I am farming this land based on my family traditions and the cultural practices we learned and wish to continue here.
6. Traditionally, my 'ohana gathered 'ōpae, 'o'opu, hihiwai, pohole, kalo, 'ulu, mai'a, watercress, pepeiau and other fish in Honopou, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu,

Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopililua, Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapihi, and Waiohue.

7. Traditionally, my 'ohana fished for moi, ane, 'ō'io, 'awa, pakaawa, aholehole, uhu, crab, kole, poopaa, haukeuke, 'opihī, pipi, kupee pu'u, pilali, and wana in or near the mouths of Honopou, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopililua, Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapihi, and Waiohue.

8. My 'ohana also engaged in mālama 'āina and mālama kahawai by only taking what they could eat in and around Honopou, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopililua, Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapihi, and Waiohue.

9. Currently, my 'ohana and I gather 'ōpae, 'o'opu, hihiwai, pohole, kalo, 'ulu, mai'a, watercress, pepeiau and other fish in Honopou, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopililua, Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapihi, and Waiohue. However, we can't get the same amount of these resources as my 'ohana used to be able to. We also need to go further to gather.

10. My family and I fish for whatever fish we can get, including moi, mullet, and aholehole in or near the mouth of in Honopou, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopililua, Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapihi, and Waiohue.

11. I gather and fish to feed my family and kupuna who cannot go and get food themselves.

12. We engage in mālama 'āina and mālama kahawai by only taking what we need and cleaning the above-named streams to help the water flow all the way to the ocean and support the ecosystem we rely on to farm, fish, hunt, and gather.

13. We also enjoy Honopou, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue recreationally. We fish and hunt in and around those streams. We go down to the muliwai to swim.

14. My 'ohana appreciates seeing the rivers run to the ocean and looking at the waterfalls.

15. The lack of stream flow is a problem for my family because we cannot grow kalo or gather how our kupuna used to. We are unable to open up new taro patches. We have also lost taro due to the lack of water. There also is not as much fish to eat. Families cannot support themselves and have to leave the area to make money.

16. If there was enough water in the streams, my 'ohana would open more taro patches.

17. If there were more water in the streams, my 'ohana would gather 'ōpae, hihiwai, and 'o'opu in Honopou, Waikamoi, Wahinepee, Honomanu, Piinau, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Waiaaka, Kapaula, Hanawi, and Makapipi.

18. If the lack of water was not a problem, I would fish as my kupuna did, fishing for moi, ane, 'ō'io, 'awa, pakaawa, aholehole, uhu, crab, kole, poopaa, haukeuke, 'opihi, pipi, kupee pu'u, pilali, and wana in or near the mouths of Honopou, Waikamoi, Wahinepee, Honomanu, Piinau, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Waiaaka, Kapaula, Hanawi, and Makapipi.

19. If water were put back in the streams, I would continue to mālama the streams by only taking what we could eat. My 'ohana would continue to fish and hunt in and around these streams and swim in the muliwai.

20. If there was more water in the streams, I would appreciate the natural scenery. It would be nice to see the rivers flow to the oceans and see the waterfalls how they used to be.

I declare under penalty of perjury that the foregoing is true and correct.  
DATED: Kihei, Maui, Hawai'i, December 26, 2014.

  
AJA ARUNA

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII<sup>1</sup>

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMO, A,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PINAAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKEA, WAIHUE,  
PAAKEA, WAIKAHA, KAPAU, A,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF 'AWAPUHI  
CARMICHAEL

DECLARATION OF 'AWAPUHI CARMICHAEL

I, 'Awapuhi Carmichael, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni O Kō'olau Hui.
4. My father Henry Ben Kaauamo was from Wahinepee. My mother Sarah Ahkuna Hueau was from Ke'anae.
5. I grew up in Wailua/Ke'anae and was raised by my grandmother Ellen. We were raised traditionally. Although we had no money, we were still rich.
6. When I was growing up, we had so much food. Now no more. It seemed to change after Hawai'i became a state, and the state introduced foreign species.

7. I farmed kalo when I was a little girl with my grandmother. She farmed taro to feed our family, not to sell it, and we farmed in the traditional way and without the use of commercial fertilizers.
8. I learned traditional and customary gathering practices from my grandmother Ellen. Our 'ohana had our own traditions.
9. Traditionally, my 'ohana went all over to gather 'ōpae, watercress, lū'au, haha, pepeiao, hihiiwai, pupulo'i and goldfish in Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, Kopiliula Puakaa, Paakea, Waiaka, Kapaula, Hanawi, Makapii, and Waiohue. We would gather as far as Kaupo because we were invited. We liked to go to Hanawi at night.
10. Traditionally, we would gather 'opihi on the way home from gathering and also catch 'o'opu at Waiolehe and Ching's pond in Palauhulu.
11. My 'ohana also engaged in mālama 'āina and mālama kahalawai at Honomanu, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaka, Kapaula, Hanawi, Makapii, and Waiohue by gathering according to the moon and not always going to the same places so we didn't overharvest the stream. We would mālama our own kō'a's to make sure that we could keep the population going.
12. I noticed EMI started to take more water in 1985. I started noticing the stream went dry. We tried to do something about it, but as we talked, EMI took more water. They expected us to go out and clean the ditches.
13. Currently, my 'ohana and I gather 'ōpae, limu, and opihi in or near the mouths of Piinau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaka, Kapaula, Hanawi, Makapii, and Waiohue. We have to go farther, higher in the mountains than we used to to find the 'ōpae. We also used to go to Honomanu but it's dirty now.
14. I gather to feed my family.
15. I still engage in mālama 'āina and mālama kahalawai by gathering according to the moon and not always going to the same places so we didn't overharvest the stream.
16. We also enjoy swimming in Ching's Pond at Piinau.



17. If there were more water in the streams, my 'ohana would gather 'ōpae, limu, and ophi in or near the mouths of Piinau, Palauhulu, 'Ohi'a/Waianu, Waiokamilo, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.

18. If water were put back in the streams, I would continue to gather according to the moon and not always go to the same places.

19. The lack of stream flow is a problem for me because we need water so future generations can continue our traditions.

20. I thank God for all of the blessings, for the upbringing we had. We stayed together through the hardships, always together. I didn't really know my parents until I got married. I was raised by my grandmother. I went everywhere with my grandma. I left Ké'anae at 13 to go to Kamehameha. My parents sacrificed so much for me. After Kamehameha, I went to California to work at an insurance company and then Pacific Stock Exchange. I gave it up to be with my husband. When I came back to Maui and saw what my parents did with their lo'i and my brothers and sisters (only one of 13 of us never got a diploma), I was so appreciative. When I came home, I kissed the ground. I was happy to be on Maui.

21. My 'ohana taught me everything I know today. They showed us by example – they did, and we followed. I want to pass it on to the generations that come after us.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Keanae, Maui, Hawai'i, 11/11, 2014.

  
'AWAPUHI CARMICHAEL

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PINAAU,  
PALAUHULU, 'OHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKEA, WAIIOHUE,  
PAAKEA, WAIKAKEA, KAPULA,  
HANAWI AND MAKAPIPI STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF CARL WENDT

DECLARATION OF CARL WENDT

I, Carl Wendt, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni O Ko'olau Hui.
4. My family has an interest in property in proximity to Palauhulu and Waikani (Wailuanui) Streams.
5. I am a taro farmer. I grow kalo on property irrigated by Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, and East Wailuaiki streams.
6. Traditionally, my family gathered 'ōpae, 'o'opu, and hihiwai from Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakea, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.
7. My family also traditionally fished for moi, mullet, turtle, and akule in or near the mouth of Honopou, Hanehoi/Puolua, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena,

Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ohi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakea, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.

8. Traditionally, my family engaged in mālama 'āina and mālama kahawai by being good stewards.
  9. In addition to kalo farming, I also engage in mālama 'āina and mālama kahawai by cleaning the streams, specifically Palauhulu, Waiokamilo, and Kualani.
  10. For me, gathering and fishing from the streams is a way to provide food and pass on traditional practices.
  11. I appreciate the peace of mind I get when I'm outside and experiencing the natural scenery and beauty of Honomanu, Nuaailua, Piinaau, Palauhulu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, and East Wailuaiki.
  12. The lack of stream flow is a problem for me as a Hawaiian. It hurts me to see the 'āina and its resources suffering.
  13. Because of the lack of stream flow, we are losing our cultural practices.
  14. If there was enough water in the streams, I would gather and fish as my family before me did. I would gather 'ōpae and 'o'opu from Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Hanawi, Makapipi, and Waiohue. I would also gather pohole, water cress, banana, bamboo shoot, pepeiao, and mountain haha alongside those streams.
  15. If there was more water in the streams, I would spend more of my time teaching the next generation about our practices at Honomanu, Nuaailua, Piinaau, Palauhulu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, and East Wailuaiki.
  16. If water was returned to the streams, I would appreciate seeing mother nature working as intended.
- I declare under penalty of perjury that the foregoing is true and correct.

CARL WENDT



COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMO, A,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAU,  
PALAUHULU, 'OHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILJULA, PUAKAA, WAIOHUE,  
PAAKEA, WAIATAKA, KAPAULA,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF CHARLES  
BARCLAY

DECLARATION OF CHARLES BARCLAY

I, Charles Barclay, declare that:

1. The statements below are based upon my personal knowledge.
2. I am a member of Nā Moku Aupuni O Ko'olau Hui.
3. My family has an interest in property near Wailua Stream. We currently have about  $\frac{3}{4}$  acre to 1 acre in kalo, which is farmed by Carl Wendt.
4. I am farming this land based on my ownership (through my wife).
5. In the past, I gathered hiihiwai, papaya, guava, mountain apple, pohole, 'o'opu, prawns, and 'opae in Honomanu, Wailua, Waikani (Wailuanui), and East Wailuaiki. I also fished for kole, noho, aholehole, kumu, moi, anae, menpachi, enenue, palani, poopaa, kala, he'e, Manini, pāpio, ulua, uhu, aweoweo, lobster, and opihi in or near the mouths of Kailua, Nuaailua, Piinau, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, and Hanawi. I gathered and fished to feed my family.

6. I have also tried to mālama the stream by cleaning the 'auwai of Wailua.
7. The last time I swam in Waikani (Wailuanui) was about two years ago.
8. The way I see it, the lack of stream flow means no kalo and no 'opae. Without water, kalo becomes unhealthy, watercress becomes unhealthy. Goldfish, 'opae, and 'o'opu disappear. My family and I had to leave the area because there was not enough water and that made it harder to continue farming and gathering.
9. If there was enough water in the streams, I would appreciate the natural scenery and beauty of Waikamoi, Wahinepee, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, and Hanawi.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Waiehu, Maui, Hawaii, September 5, 2014.

  
CHARLES BARCLAY

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM

INSTREAM FLOW STANDARDS FOR

HONOPOU, HUELO (PUOLUA),

HANEHOI, WAIKAMOI, ALO,

WAHINEPEE, PUOHOKAMOA,

HAIPUAENA, PUNALAU/KOLEA,

HONOMANU, NUAAILUA, PIINAU,

PALAUHULU, 'OHIA (WAIANU),

WAIOKAMILO, KUALANI, WAILUANUI,

WEST WAILUAIKI, EAST WAILUAIKI,

KOPIULUA, PUAKAA, WAIOHUE,

PAAKEA, WAIATAKA, KAPAULA,

HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF DAN CLARK

DECLARATION OF DAN CLARK

I, Dan Clark, declare that:

1. The statements below are based upon my personal knowledge.
2. I am a member of Nā Moku Aupuni O Kō'olau Hui.
3. My family has an interest in property in proximity to Piinau Stream.
4. I am a taro farmer. My family grows kalo on 0.129 acres of property located in Ke'anae and irrigated by Piinau and Palauhulu. I am farming this land based on my leases with various property owners on the Ke'anae peninsula.
5. I have been kalo farming in Ke'anae for 15 years.
6. The Wailuanui-Ke'anae ahupua'a comprise one of the most beautiful spots on the earth. Once my work is accomplished, I take time to enjoy the beauty of the natural landscape.
7. The fact that the fishing resource is in the process of being restored is a consolation to the hard work required to keep the ecosystem alive. When you can gather, the resource (food) will be there.
8. Currently, my family and I clean both our section of the ditch and above our area at Piinau and Palauhulu in an effort to mālama the land and streams.

9. The lack of stream flow is a problem for me and my 'ohana because I need cool, fast running water to feed my lo'i for the best production of kalo. The low stream flow has caused a decrease in my kalo production and an increase in disease to my kalo.

10. If there was enough water in the streams, I would be able to harvest a much healthier kalo crop at Piinau and Palauhulu. Additionally, it would restore the entire ecosystem, which would benefit everyone.

11. If stream flow was restored, my family and I would continue to clean Piinau and Palauhulu, the streams that water our lo'i.

12. For me, recreation is enjoying the surroundings and gathering around a healthy ecosystem. If the water was to flow again, I would definitely enjoy seeing the Piinau and Palauhulu areas restored and in good health again. There are songs and legends associated with the spots we go to. It is a spiritual feeling.

13. If water was returned, I would appreciate viewing the beauty of Ke'anae's restored natural ecosystem.

14. Please return the stream flows.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Keanae, Maui, Hawai'i, September 28, 2014.

  
DAN CLARK

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKAA, WAIHUE,  
PAAKEA, WAIKAHA, KAPAU, A,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF DARRELL  
AQUINO

DECLARATION OF DARRELL AQUINO

I, Darrell Aquino, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. My father is Eusebio M. Aquino. My mother is Flora Aquino. My mother's father is Harry Palukoa. My mother's mother is Maryann Pauhokoa from Wahinepee. She gave my mom 1/2 acre, which is where we began farming.
4. When I retired, I was still farming. I thought I would be a full time farmer but I don't farm anymore.
5. My family grows kalo on about a 1/2 of property irrigated by Palauhulu Stream.
6. My sister Georgina Garrido is farming this land based on her knowledge from her younger days farming taro. We were taught by my parents when we were old enough to walk and do anything that would contribute to taro farming, including pulling weeds, throwing away rubbish, mowing, cleaning the auwai, etc.

7. I learned how to farm taro from my father. He used to have 52 lo'i and produce about 30 bags a week. In the 1960s, he had 30-40 lo'i. He stopped farming in 1996.

8. I learned how to gather 'ōpae from my mother.

9. Traditionally, my family gathered 'ōpae, bamboo shoot, and frogs in and around Piinau, Palauhulu, 'Ōhi'a, and Kopiliula. They gathered 'O'opu from Palauhulu. My 'ohana gathered hihwai from Hanawi where the water was colder.

10. We used to swim in a swimming hole off Palauhulu and stay in the pond all day.

11. My family also traditionally fished for poopaa, aholehole, and puhi in or near the mouths of Piinau, Palauhulu, and 'Ōhi'a.

12. My family engaged in mālama 'āina and mālama kahawai in Piinau and Palauhulu by cleaning the ditches/auwais up to the flume. If nobody cleans it it's not going to flow.

13. Currently, I gather 'ōpae, hihwai, and 'o'opu in Wahinepee, Puohokamoa, Haepuena, Piinau, Palauhulu, 'Ōhi'a, Kopiliula, Hanawi, and Makapii.

14. I also hunted all the time before I was injured three and a half years ago. I hunt in most of the areas the streams flow, and I notice there is not as much water in the streams.

15. I throw net and dive for lobsters, kumu, uhu, kala, palani, aholehole, and moi in or near the mouth of Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Paakea, Waiaka, Kapaula, Hanawi, Makapii, and Waiohue.

16. I gather and fish for subsistence and also because I enjoy it. I also like teaching my son what I learned growing up.

17. I would practice mālama 'āina and mālama kahawai when I was farming by cleaning and maintaining the ditch/auwai near home that are fed by Piinau and Palauhulu.

18. When I was living in Ke'anae full time, I would swim in the swimming hole at Palauhulu.

19. Now I notice there is hardly any water running. I remember Makapii stopped running in the late 1980s to early 90s. Even the swimming hole in Ke'anae is low. The water is disappearing someplace; it's even dry before the diversion in some places. The rivers really only run when there is lots of rain.



20. The problem with not enough water is that lo'i needs water. It also affects 'ōpae. The water problem combined with the prawns that eat the 'ōpae really changed the population.

21. If water got put back into the stream, I would continue to gather 'ōpae, hihiwai, and 'o'opu in Wahinepee, Puohokamoa, Haepuaena, Piinaau, Palauhulu, 'Ōhi'a, Kopiliula, Hanawi, and Makapipi.

22. If stream flow was restored, I would continue to throw net and dive for lobsters, kumu, uhu, kala, palani, aholehole, and moi in or near the mouth of Punalau/Kolea, Honomanu, Nuailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu Waikamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Waiehu, Maui, Hawai'i, Dec. 17, 2014.

  
DARRELL AQUINO

## COMMISSION ON WATER RESOURCE MANAGEMENT

### STATE OF HAWAII

|  |  |
|--|--|
| PETITION TO AMEND INTERIM<br>INSTREAM FLOW STANDARDS FOR<br>HONOPOU, HUELO (PUOLUA), HANEHOI,<br>WAIKAMOI, ALO, WAHINEPEE,<br>PUOHOKAMOA, HAIPUAENA,<br>PUNALAU/KOLEA, HONOMANU,<br>NUAILUA, PIINAU, PALAUHULU,<br>'ŌHI'A (WAIANU), WAIOKAMILO,<br>KUALANI, WAILUANUI, WEST<br>WAILUAIKI, EAST WAILUAIKI,<br>KOPILIULA, PUAKAA, WAIOHUE,<br>PAAKEA, WAIATAKA, KAPAUULA,<br>HANAWI and MAKAPIPI STREAMS | CASE NO. CCH-MA13-01<br>DECLARATION OF DAVIANNA<br>MCGREGOR, PhD |
|--|--|

#### DECLARATION OF DAVIANNA MCGREGOR, PhD

1. I am submitting this expert testimony in support of the petitions filed by Na Moku Aupuni O Ko'olau Hui to amend interim instream flow standards for various East Maui streams located on the Ko'olaupoko, Maui coastline.
2. Attached as Exhibit "A" is a true and correct copy of PETITIONERS' DIRECT EXPERT TESTIMONY OF DAVIANNA POMAIKAI MCGREGOR, Ph.D, filed in the contested case hearing docket DLNR File No. 01-05-MA.
3. Exhibit A is testimony I prepared for and presented to the Board of Land and Natural Resources in 2005 in the contested case proceeding involving Na Moku Aupuni O Ko'olau Hui's challenge to the request of Alexander and Baldwin/Hawaiian Commercial and Sugar/East Maui Irrigation Company for a 30-year lease of the four East Maui water license areas.
4. Attached as Exhibit "B" is a true and correct copy of my most current curriculum vitae.

5. I recognize that in 2008 the CWRM voted to partially restore 5 of 8 streams then under consideration by amending the IFS for Wailuanui, Waiokamilo, Pi'ina'au, Hanehoi, and Honopou Streams, in order to respond to the claims of active taro farmers depending on those streams for the irrigation of taro crops in Wailuanui, Ke'anae, Hanehoi, and Honopou valleys.

6. However, I further understand that EMI's compliance with those amended IIFS continues to be an outstanding issue before the CWRM in this contested case hearing.

7. Accordingly, I affirm that the substance of the testimony I presented to the BLNR in 2005 is still applicable and material to the current IIFS contested case hearing before the CWRM and I now offer it for consideration in this proceeding.

8. I have reviewed the Declarations of Na Moku Members submitted in 2001 in support of the stream flow petitions, attached as Exhibit "C" hereto that were provided to me by the Native Hawaiian Legal Corporation.

9. I have reviewed the Declarations contained in Exhibit "D" which were provided to me by the Native Hawaiian Legal Corporation and submitted in 2010 during the CWRM's 90-Day factfinding process.

10. I have reviewed the Witness Statements for CCH-MA-13-01 of Emily Akiona Wendt, Aja Akuna, Terrance D.K. Akuna, Darrell Aquino, Charles Barclay, Leonora (Smith) Barclay, Danny Carmichael, Healoa Carmichael, Dan Clark, Harry Hueu, Sandy Hueu, Jonah Jacintho, Juliana Jacintho, Lezley Jacintho, Kames F. "Kimo" Kaaa, Gladys Kanoa, Sanford Kekahuna, Jerome K. Kekiwi, Jr., Pualani Kimokeo, Norman "Bush" Martin, Jr., Lurlyn "Lyn" Scott, Edward Wendt, and Joseph "Jojo" Young.

11. Based on my prior research, it is my opinion that the 2001 Statements, the 2009 submissions, and the 2014 Witness Statements referenced above, describing the areas of use for traditional and customary practices of gathering in streams ranging from Makapipi to Honomanu are consistent with my prior research as presented in the Ke'anae-Wailuanui Cultural Landscape study of July 1995. The statements are also consistent with my prior testimony provided in Exhibit A, in which I reported that community members from the Keanae-Wailuanui region engage in traditional and

customary gathering activities throughout the traditional practices region (Makapipi to Honomanu) including in unoccupied areas in order to maintain the resources.

DATED: Honolulu, HI, December 23, 2014.



\_\_\_\_\_  
Davianna Pomaikai McGregor, Ph.D



EXHIBIT A

NATIVE HAWAIIAN LEGAL CORPORATION  
1164 Bishop Street, Suite 1205  
Honolulu, Hawai'i 96813  
Telephone: 521-2302

ALAN T. MURAKAMI 2285  
MOSES K. N. HAIA III 6277

Attorneys for Petitioners  
Na Moku Aupuni O Ko'olau Hui,  
Beatrice Kekahuna and Marjorie Wallett

RECEIVED  
OFFICE OF CONSERVATION  
AND NATURAL RESOURCES

2005 AUG -1 P 4:00

DEPT. OF LAND &  
NATURAL RESOURCES  
STATE OF HAWAII

BOARD OF LAND AND NATURAL RESOURCES  
STATE OF HAWAII

In the Matter of the Contested Case Hearing ) DLNR FILE NO. 01-05-MA  
Regarding Water Licenses at Honomanu, )  
Keanae, Nahiku, and Huelo, Maui )  
PETITIONERS' DIRECT EXPERT )  
TESTIMONY OF DAVIANNA POMAIIKAI )  
MCGREGOR, Ph.D.; CERTIFICATE OF )  
SERVICE )  
)  
)  
) Hearing )  
) Date. ) October 10, 2005  
) Time. ) 9:00 a.m.  
) Officer. ) Hon. E. John McConnell, Esq.

PETITIONERS' DIRECT EXPERT TESTIMONY OF  
DAVIANNA POMAIIKAI MCGREGOR, Ph.D.

- Q. Please state your name for the record.  
A. DAVIANNA POMAIIKAI MCGREGOR.  
Q. Where do you live?  
A. I live in Kaiwiula, Kapalama, O'ahu and Ho'olehua, Moloka'i.  
Q. Where do you work and what is your title?  
A. I am a Professor of Ethnic Studies at the University of Hawaii, Manoa.  
Q. What is your educational background and training?

A. I graduated from the University of Hawaii with a Bachelor of Education degree in Secondary Education in 1972 and a Bachelor of Arts degree in Asian/Pacific History in 1973. I did my graduate work at the UH, where I obtained a Master of Arts degree in Pacific Islands Studies in 1979. I also earned a PhD in Hawaiian and Pacific History from the University of Hawaii in 1989.

Q. What was your doctoral dissertation topic?

A. The title of my doctoral dissertation is "Kupa'a I Ka 'Aina: Persistence On The Land." It examines the conditions of Hawaiians from 1898 to 1930, the first 32 years of direct U.S. rule over Hawaii. It compared the conditions of Hawaiians in urban O'ahu with that of Hawaiians in rural Hawaiian communities on the island of Molokai, the moku of Hana, Maui and the ahupua'a of Waipi'o, Hawaii.

Q. Did you prepare a *curriculum vitae* to reflect your education and training?

A. As part of my testimony, I have submitted my *curriculum vitae* which contains information on my academic training, my teaching, my research, and my publications.

Q. Have you previously been qualified to testify as an expert witness?

A. I have served as an expert witness regarding traditional Hawaiian subsistence, cultural, and religious customs and practices in the following Civil Cases: *Kelly v. 1250 Oceanside Partners*, Civ. No. 00-1-0192K (Haw. 3<sup>rd</sup> Cir.); *Office of Hawaiian Affairs, et al vs. Housing and Community Development Corporation of Hawaii, et al*, Civil No. 94-4207-11 SSM, 1994 - 2001; *Kanaka v. Department of Defense; Pele Defense Fund v. Paty*, Civ. No. 89-089 (Haw. 3<sup>rd</sup> Cir.); *Pele Defense Fund v. Campbell Estate*, Civ. No. 89-089 (Haw. 3<sup>rd</sup> Cir.); and *Hanakeawe v. Nonsay Hawaii, Inc.*, Civ. No. 90-316 (Haw. 3<sup>rd</sup> Cir.). I have also testified as a cultural expert in the following criminal trespass cases. *State of Hawaii v. Spalding* (Haw. 3<sup>rd</sup> Cir.); *State of Hawaii v. Naeole* (Haw. 3<sup>rd</sup> Cir.); *State of Hawaii v. Kaleo Patterson* (Haw. 3<sup>rd</sup> Cir.); *State of Hawaii v. Keli'ioa* (Haw. 3<sup>rd</sup> Cir.).

Q. Have you ever been qualified before administrative bodies to testify as an expert?

A. I appeared as an expert before the State of Hawaii's Water Commission in the Waiahole Water Case, Docket No. CCH-0A95-1, and *In re Waiola O Molokai*, Docket No. CCH-MO96-1; before the Public Utilities Commission in Docket # 7259 Relating to Hawaiian Electric Light Company, Regarding Integrated Resource Planning, 1993; and before the Public

Utilities Commission in Docket # 6617 To Require Energy Utilities in Hawaii to Implement Integrated Resource Planning, 1990.

Q. Have you had the opportunity to study the nature and extent of cultural, religious, and subsistence activity in which the Native Hawaiians have engaged to support themselves?

A. Yes. I first studied rural Hawaiian communities where Native Hawaiians comprised the majority of the population and continued to support their extended 'ohana through traditional Hawaiian subsistence farming, fishing, hunting, and gathering customs and practices when I wrote my PhD dissertation. Subsequently, I conducted a number of studies of the traditional and customary practices of Native Hawaiians, which mirror long-held cultural practices of ancient Hawaiians in several rural communities throughout the state. While all have unique features associated with those communities, these traditions and customs I've recorded are resilient and persistent. In many instances, the continuation of these cultural practices is financially necessary for many families. These studies have taken me to East Maui, where I conducted extensive and expanded research, as well as Molokai and the Island of Hawaii.

Q. What prompted your expanded research for East Maui?

A. In June 1993, the Hawaii State Legislature approved what later became Act 156 to implement a preexisting statutory mandate requiring planning for the state's physical environment and for socio-cultural enhancement, which recognizes the significance of the state's "cultural landscapes." Accordingly, it established a task force to examine Hawaiian cultural landscapes. This task force was responsible for developing designation criteria, specifying activities and uses consistent with cultural landscape districts, developing procedures for definition of cultural landscape districts and their boundaries, and reporting their findings to the legislature.

Q. What happened as a result of this effort?

A. In January 1994, the DLNR Cultural Landscape Task Force reported back to the Legislature on the importance of landscape preservation within a vital daily living context. The Task Force defined cultural landscapes as geographic areas, which exhibit monolithic characteristics of an ethnic, economic or cultural nature. They reflect the interaction of cultural, economic, and natural forces on the environment. They are a definable area, which clearly defines the settlement or use of the land, water, and/or living systems (plants and animals) over a long period of time, as well as cultural values, norms, and attitudes toward the land, water and/or



living systems. These geographic areas possess a significant concentration, linkage or continuity of landscape components (i.e., vegetation, buildings and structures, archaeological sites, roads and trails, waterways, religious and natural features and resources), which are united by human use and past events and/or aesthetically by plans or physical development. Typically, these landscapes could involve abandoned villages or agricultural systems, taro-producing areas, sugar lands, ranches, fishing areas, traditional gathering areas, and entire islands.

Q. What were the recommendations of the Task Force?

A. The Task Force supported a model project focusing on the Ke'anae-Wailuanui area on Maui, because it recognized that this community is a taro-growing area with long continuity of use and with local support for preservation.

Q. What was the purpose of this model project?

A. The project involved a cultural landscape study to inventory and assess the resources of the Ke'anae-Wailuanui communities. The Maui County General Plan of 1990, on which the Hana Community Plan is based, has themes, one of which under "land use" is: To preserve for present and future generations existing geographic, cultural and traditional community lifestyles by limiting and managing growth through environmentally sensitive and effective use of land in accordance with the individual character of the various communities and regions of the County.

Maui County adopted the Hana Community Plan as part of its adoption of County General Plan in July 1994, under Section 2.80.050 of the Maui County Code. To implement the Hana Community Plan, the Maui County Planning Department initiated the resulting Ke'anae-Wailuanui Cultural Landscape study. The Hana Community Plan calls for county government to "compile special plans and studies necessary to implement the recommendations of the Community Plan." It also establishes the following goals, policies and implementing actions:

- Land Use:** Preservation and enhancement of the current land use patterns which establish and enrich the Hana Community Plan region's unique and diverse qualities.
- Identify and inventory exceptional open space resources and viewsheds. Explore protective management measures such as covenants, easements, and other planning tools.
  - Explore alternative land use and overlay zoning designations that recognize and preserve the unique natural and cultural characteristics of each community within the Hana region.
  - Encourage the availability of agriculturally suitable lands to provide opportunities for small diversified agricultural activities with residential tenancy for farmers.

Q. What was the specific goal of the Ke'anae-Wailuanui Cultural Landscape study of July 1995?

A. The goal was to describe and quantify conditions and traditions which have shaped the land and which still affect the patterns of land use. Land use management policies based on a broad foundation of knowledge of resources will better enable the community and its representatives in county and state government to make effective decisions appropriate to this and other rural and agricultural areas.

Q. What were the specific tasks of the study?

A. There were three major tasks: (1) identify the historic context of the landscape, through archaeological research to determine the depth of wetland taro cultivation and a literature search, including a summary of Land Commission Awards for the Ke'anae and Wailuanui ahupua'a, focused on agricultural or other uses of the claims; (2) identification of cultural landscape components, including farm land, crops, vegetation types, water control, gathering, hunting, home sites, ocean-related activities, and lands associated with Hawaiian legends; and (3) preliminary mapping using historical maps, aerial photographs, and detailed land classification maps to identify existing land use areas and the boundaries of the cultural landscape.

Q. What was the methodology for conducting this study and who was the team responsible for conducting the work?

A. The methodology is described on pp. 13-17 of the report. Basically, (1) Cultural Surveys Hawaii, Inc. conducted a literature search, including a review of aerial photographs, (2) Cultural Surveys Hawaii, Inc. and Group 70 conducted field surveys, including mapping of taro lo'i; and (3) I conducted personal interviews, relying heavily on kupuna (9 of 13 interviewees) from Ke'anae and Wailuanui.

Q. How reliable are the sources of oral history, as related by those Hawaiians you interviewed?

A. The oral history interviews were consistent with each other and were cross validated with the information gathered through the literature search and the field surveys.

Q. What are the cultural landscape area boundaries?

A. The team identified the Ke'anae-Wailuanui core Cultural Landscape area boundaries in Figure 3 of the report. The area encompasses the Ke'anae peninsula and runs southeast along the coast to the southeast ridge of Wailuanui Valley. On the west, it is bounded by the Ke'anae YMCA, Ke'anae Arboretum and the Palauhulu stream. Inland it extends 600 feet mauka of the Hana Highway, stretching from the YMCA camp to the ridge on the east side of Waikani Falls. The informants also identified a wider traditional cultural practices region shown in Figure 4 of the report, for fishing, hunting and gathering. This extends from Makapipi Stream and forest access road in the east, to Honomanu and the Kaumahina ridge on the west and mauka to Pohaku Palaha on the northern rim of the Haleakala Crater.

Q. In summary, what did these sources of information show?

A. The literature search documented the cultural and natural setting of the cultural landscape area, which has a rich and long history of supporting Hawaiians who tilled the land, grew taro and other food crops, and fished the nearshore ocean seas as far as 11 miles offshore. In the various land commission testimonies, maka'ainana from the Ke'anae-Wailuanui community described their agricultural pursuits in the 1840's. The field surveys, combined with the literature search, yielded information that enabled the team to map the cultural landscape - historic locations of buildings, taro lo'i, 'auwai, and other cultural features of the communities that settled the area. The interviews helped me link current uses of land and streams by residents to their historic uses and verified those practices that continued to be followed along the traditions of their ancestors. The relative isolation of this cultural landscape enabled it and its residents to avoid or resist intensive modern land developments and retain many of the ancient traditions passed down through the generations of Hawaiians who resided in this area.

Q. Why was the Ke'anae-Wailuanui area selected for this cultural landscape study?

A. Aside from the land use planning angle I've previously mentioned, it was particularly appropriate because it is associated with a deep and long tradition of growing taro, the staple crop of Native Hawaiians for generations. The earliest Polynesian voyagers to Hawai'i brought taro with them. It has been linked mythologically to the origins of Hawaiians as a people. The plant itself has attributes which are embedded in the notion of the family and kinship relations. All parts of the taro plant are used for food. Much of the traditions surrounding the cultivation and use of taro have persisted in Ke'anae-Wailuanui to a much

greater extent than most other parts of Hawai'i. With such an intimate association with the people and culture of Hawai'i, Ke'anae-Wailuanui was a prime candidate for designation as a cultural landscape. Today, large-scale taro cultivation is confined to isolated areas in Hawai'i - Hanalei/Waioili, Hanapepe and Waimea on Kaua'i, Waikane/Waiahole on O'ahu, Onokohau, Waihe'e, Ke'anae-Wailuanui on Maui, and Waipi'o Valley on the island of Hawai'i. The taro landscape of Ke'anae-Wailuanui is a viable traditional economy which has maintained historic and cultural integrity, traditional lifestyles, and social continuity to an equal or greater extent than any of the other taro growing landscapes in Hawai'i.

Q. What physical attributes of Ke'anae-Wailuanui did your study examine?

A. The 1995 study identified 12 components for examination. They are listed on page 44 of the report. Among them are taro cultivation, the Ko'olau Ditch built and maintained by EMI, and cultural resources and use areas.

Q. What did you learn about the taro cultivation in Ke'anae-Wailuanui?

A. Wetland taro cultivation is the most important single component of the cultural landscape of Ke'anae-Wailuanui. Wetland taro cultivation requires a precisely defined, stable field system with a continuous and reliable source of water. The system must be designed so that cool, fresh water can be delivered constantly to every field. In this sense, a taro landscape is designed as a single system with interrelated elements (fields, streams and 'auwai). Alteration of any of these elements could affect the entire system. The ancient Hawaiians who designed this landscape were limited in the degree to which they could alter the natural topography. They dealt with this constraint by flexibility of design. Seen as a whole, the taro landscape appears as a simple network of inter-connected rectangles defined by banks, which hold in water. Upon closer inspection, it is apparent that field design, water flow, and water delivery are a response to subtle variations in the natural landscape. A taro landscape is extremely complex in its internal workings.

Q. What areas of taro cultivation exist in Ke'anae-Wailuanui?

A. There are five major locations of active taro cultivation - Ke'anae peninsula, Wailuanui, Ke'anae Arboretum, Waianu Valley, and Lakini. An additional small area of cultivation exists at Waioakamilo Stream just makai of its crossing of Wailuanui Road. There are small lo'i on both sides of the stream. In addition, throughout the district old taro terraces can be found and taro still grows in the wild in the valleys, along streams. Informants speak of going



out and gathering lu'au leaves from the wild taro because it has a good flavor, distinct from the cultivated varieties. Some of the areas for the gathering of wild lu'au include Pi'ina'au, Nua'ailua, Kupa'u, Waipio, Awioio, Pohole and Pahoa.

Q. Please describe the Waiuanui taro area.

A. This is the largest taro system of the cultural landscape, with 339 lo'i, that Cultural Surveys plotted off a 1982 aerial photograph in Figure 15. They lie mainly west of Waiuanui Stream and to the north and east below Hana Highway. It is an area of mixed cultivation and uncultivated areas. There is also a smaller set of lo'i above Hana Highway in the area known as Lakini. See, Figure 21.

The essence of Waiuanui is water (wai = water). Waiuanui is best viewed looking mauka. The taro lo'i as seen from makai, are framed by the steep green slopes of the valley with Waikani Falls to the east and Waioakamilo Stream waters entering from the center and west. The lo'i themselves, as they ascend the slopes, decrease in size to accommodate the requirements of water control. Nowhere else in Hawai'i are such miniature fields still cultivated in this kind of topography with such integrity. See, p. 126.

Q. Please describe the Waiuanui 'auwai system.

A. It is evident that at Waiuanui Valley, the 'auwai and lo'i systems were constructed first and subsequent residences and circulation networks accommodated the already established systems. The pattern of cultivated lo'i at Waiuanui is likely close to what existed at the time of the Mahele, but for the time when rice was cultivated just prior to and after the dawn of the 20<sup>th</sup> century.

Cultural Surveys was able to produce a schematic of the 'auwai as it takes water from Waioakamilo Stream and passes through Lakini. Figure 21. The water flows past these lo'i, partially returning back to Waioakamilo Stream, but mainly flowing under the existing Hana Highway to irrigate the valley lo'i below that point.

There is another major diversion of Waioakamilo Stream below Hana Highway that irrigates the extreme western end of the valley. See, Figure 22.

Cultural Surveys approximated the direction of flow in the 'auwai system servicing the valley, as the system was complex and our team did not have the time or resources to make a definitive map of all aspects of it.

Q. Did you discover any major changes in the use of the valley for taro cultivation since the time of the Mahele?

A. Our team did not find any historic map of the valley. Taro cultivation is well documented for the entire area in the 1850's Land Commission Award documents. In Appendix A of the report, the various claims for Land Commission Awards in Ke'anae-Waiuanui are rendered in a table. The table illustrates the extent to which taro was grown on the claimed parcels. The table summarizes the testimonies submitted in support of the requests for Land Commission Awards and reflects the presence of taro cultivation at the time of the Mahele for these parcels. While it indicates what was happening on those parcels at that time, it does not indicate which of the pieces claimed were actually awarded by the Land Commission.

Nevertheless, the table gives an accurate indication of the extent to which active taro cultivation existed and on which parcels in the valley. This activity also indicates where irrigation water from the streams was being applied in pursuit of this activity at the time of the Mahele.

Q. Did you discover any other evidence of the extent of taro growing in the valley during different times in history following the Mahele?

A. Apparently, as an 1896 map (Figure 9) of the lower section of the valley reveals, by then there was a sizable area devoted to rice cultivation, although much of the southeastern portion along Waiuanui Stream remained in taro. This pattern apparently persisted through 1903, according to a similar map of the area (Figure 10). Some of the residents I interviewed indicated that rice was preferred at that period because water temperature was not the crucial consideration as it is for taro cultivation, reflecting a diminished water supply to the valley for irrigation. Chinese farmers grew rice in significant parts of the valley between 1880 and 1927, when the market collapsed because of the competition from California.

A 1936 photograph (Figure 16) shows that a majority of the valley was under taro cultivation, with considerably less tree and bush vegetation than was present in 1994 when I conducted my field research. By 1966, in contrast, while all cultivated areas appeared to be in taro, there is a dramatic increase in forest growth along the periphery of the valley, compared to 1936, as Figures 17 and 18 reveal. Contrasted with current conditions, as depicted in the photographs taken in 2004 and this year in June, it appears that there is now substantially different, as well as fewer, areas of taro lo'i than was being actively cultivated in 1966.



This evidence shows there was apparently a period of decline in taro cultivation in the valley between 1936 and 1966, as well as between 1966 and 1994. However, while to varying degrees, the Wailuanui valley residents, especially Hawaiians, continued a tradition of taro cultivation that continues through the present. This cultural landscape is distinctive in terms of this long tradition, and continues on to this day, reflecting how critical taro production is to this community.

Q. Do you have an opinion as to whether the current taro cultivation reasonably approximates the amount of water used to cultivate taro at the time of the Mahele?

A. Yes.

Q. And what is that opinion?

A. While the rice cultivation earlier last century may have altered some of the pattern of lo'i in the valley, the broad pattern remains since both crops are wetland agricultural products and the irrigation system plays a critical role in their cultivation. The mechanics of irrigation systems must follow gravity. Residences are found on slightly elevated areas at the edges of the fields, not in the center of the lo'i, which would be the low spot and subject to periodic flooding. The roadway network serving these residences skirt the cultivated areas and does not cut into the system of lo'i. This pattern involves frequent tending and fits the horticultural character of Hawaiian agriculture where the cultivated fields are relatively small and are within walking distance of residences. It is a pattern developed before automobiles and mechanized agriculture. The field was central, not the residence. This pattern is found even in areas where residences are not nearby. See, p. 126.

There was far more taro cultivation in the valley in the 1800's than presently. There is also far less water flowing naturally into the valley as a result of the major EMI diversion into the Ko'olau Ditch mauka of Kupau and Akeke Spring. This reduction in taro production is significant compared to historic levels.

Q. On what basis do you make this conclusion?

A. During the fieldwork for this study, which included field trips as well as interviews, it became apparent that the Ke'anae-Wailuanui communities have a long history of small commercial ventures associated with processing and marketing of local taro. Besides the People's Store, which once stood at Ke'anae landing, there were six separate poi mills, each in operation over a different span of time. Each sold local taro processed into poi to the community

itself and also exported taro. Taro was exported in two separate directions: to Hana and to Ha'iku/Kahului/Wailuku. The Alama Poi Shop operated from the 1920's to the 1950's. The Ching Poi Mill operated in the 1930's through the 1950s, exporting poi to Kahului and Hana. The Ng family operated a mill that exported poi to Hana. The Alu family ran the Kupa'u Mill from the late 1930's to the early 1950's. The Lum Hoy Poi Mill exported poi to Wailuku from the 1930's through the 1940s. The last mill, Ke'anae-Wailua Poi Mill was started in 1975 by Mr. Ed Wendt and operated through 1984. The current level of taro production contrasts sharply with what historic records show.

Q. Do you have an opinion, based on your training, research, and expertise, whether the land uses of Wailuanui residents are linked to Hawaiian cultural mores and practices?

A. Yes.

Q. What is your opinion?

A. The land use patterns of the Ke'anae-Wailuanui region have been shaped by Hawaiian cultural mores and practices. The 'ohana values and practices of the community stress the conservation of natural resources for the benefit of present and future generations. Rules of behavior are based on respect of the 'aina, the virtue of sharing, and a holistic perspective of organisms and ecosystems that emphasize balance and coexistence. The Hawaiian outlook which shapes these customs and practices is lokahi or maintaining spiritual, cultural, and physical balance with nature. In the course of their travels through the various 'ili of the traditional cultural practices region, practitioners of Ke'anae and Wailuanui are able to renew their knowledge and understanding of the landscape, the place names, names of the winds and the rains, traditional legends, wahi pana, historical cultural sites, and the location of various native plants and animals. The region is thus experienced as a part of their 'ohana, necessitating the same care as would a member of their family.

Q. Do you have an opinion, based on your training, expertise, and research, on how important traditional and customary gathering of 'o'opu, 'opae, and hihikai is to the Hawaiians of Wailuanui?

A. Yes.

Q. What is that opinion?

A. Ke'anae-Wailuanui is one of the few remaining areas in the Hawaiian Islands where 'opae can be gathered. Virtually every stream has 'opae at some time during the year.

However, it is easier to gather 'opae in the tunnels of the EMI ditch system. The irrigation ditch itself is an excellent breeding area for the 'opae because it has flowing water year round. Some streams below the ditch, however, don't have enough flowing water to sustain the 'opae year round when the water is diverted into the ditch system. Commercial sale of 'opae is prohibited under a state law that went into effect in 1993. 'Opae is still a popular delicacy among the families in the district. They also gather 'opae to share with family and friends outside and on different islands. 'Opae, the 'a'aniu net used to gather it, and the methods of preparing it will continue to be a distinctive aspect of the cultural lifestyle for which Ke'anae-Wailuanui is known and distinguished.

'O'opu and hihiwai are becoming increasingly scarce in the Hawaiian Islands. Certain species of 'o'opu are endangered and others are rare. They require pristine and flowing stream waters to exist. Ke'anae-Wailuanui is one of the few areas where they still can be found in sufficient size to be occasionally caught for subsistence food.

The gathering of hihiwai is also carefully managed. The location of the hihiwai is knowledge that has been passed down from generation to the next for their protection and proper management. It is not information that is made available to the general public.

Q. What is the geographic range of this gathering activity?

A. Family members of all ages engage in some level of gathering activity in the Ke'anae-Wailuanui district. Kupuna like Helen Nakanelua still go out and gathers 'opae with her homemade 'a'aniu net in the 'auwai that runs through her property at Lakini. Waiokamilo Stream still has 'opae which is accessible to the kupuna. The Ka'auamo family is best known for their traditional and customary gathering activities. Awapuhi Ka'auamo Carmichael still goes out gathering for 'opae, hihiwai, and 'opihi from Kailua and over through Kuliwa. Awapuhi Carmichael identified some of the area which she regularly accessed for gathering of 'opae, hihiwai, and 'o'opu:

We have our own names. Kapa'ula, gather 'opae. We use Puakaa, we call it Kaunoa. Above the road, the ditch above the road, we use that stream, and then it branches off. Even Makapipi, we use Makapipi stream. We use all the way to the tunnel. We use it. Kuliwa gulch is used by our family. Kuliwa gulch we use also. Makapipi is just mauka. Kuliwa is mauka.

Gathering from a variety of places is important in order to maintain the resources. The choice of place to gather is determined by the weather and other natural signs. Awapuhi Carmichael described the factors which affected her decision as to where to gather on a particular expedition:

It depends on what we're getting, and how we feel . . . We never go to the same place. You know how the Hawaiians used to do, they don't go back to the same place, so can restore. It depends on the weather, and then we go by the moon, the stars. If use one place, then go to another place, depends on the moon and the stars. We go up far . . . We all go to the same places, although each of us have our favorite hole, places, where we go for 'opae, you know. All mauka for 'opae. And then below have the 'o'opu and the prawns, they introduced the prawns, and hihiwai. Above the road is more the 'opae. Above the road is where all the 'opae are. Above the main highway. And then below the road has hihiwai, 'o'opu, you know.

Within the traditional cultural landscape area for Ke'anae-Wailuanui unoccupied areas with flowing pristine streams and the forested areas are integral to the livelihoods of the families in the district. For example, nobody lives in the area from Wailuiki to Kopili'ula and over to Hanawi but there are many gulches and streams flourishing with hihiwai and 'o'opu.

Q. What was the importance of subsistence gathering to the health of Hawaiian gatherers who engaged in this traditional activity – historically and in current times?

A. Through subsistence, families attain essential resources to compensate for low incomes. They can also obtain food items, especially seafood, that may be prohibitively costly under a strict cash economy. If families on fixed incomes were required to purchase these items, they would probably opt for cheaper, less healthy foods that would predispose them to health problems. In this respect, subsistence not only provides food, it also ensures a healthy diet.

Subsistence generally requires a great amount of physical exertion (e.g., fishing, diving, hunting) that is a valuable form of exercise and stress reduction and contributes to good physical and mental health. It is also a form of recreation that the whole family can share in. Family members of all ages contribute at different phases of subsistence, be it active hunting, fishing or gathering or cleaning and preparing the food for eating. Older family members teach the younger family members how to engage in subsistence and prepare the food, thus passing on ancestral knowledge, experience and skill.

Q. What was the pattern of these subsistence activities amongst those traditional and customary gatherers of Ke'anae-Wailuanui you interviewed?



A. Subsistence gathering, hunting and fishing is an integral part of the lives of the residents of Ke'anae-Waiuanui. There is general agreement among the informants that their traditional cultural practices region extends from Honomanu in the west to Makapipi in the east and mauka from Pohaku Palaha on the rim of the Haleakala crater makai to the shoreline, and into the ocean as far as the buoy 11 miles offshore. Additional areas are used by residents of Ke'anae-Waiuanui depending on where their family ancestors originated and established subsistence practices. For example, some families fish and gather as far as Kaupo or as far west as Honopou and mauka to Waikamoi. The location and distribution of water is the primary determinant of the distribution of natural resources. Traditional land use boundaries were defined in relation to the amount and location of water. The change of season from wet to dry does affect the distribution and availability of subsistence resources. When there is a lot of rain, the resources are more abundant and spread out over a larger area. During the dry period, the amount of resources shrink and they are distributed near to water sources.

Most subsistence areas can only be accessed by land through a trail or a dirt road. The Pi'ilani Trail affords an important route of access between 'ili along the coastline. The Ke'anae-Waiuanui residents also use an extensive network of mauka to makai trails to carry out their subsistence activities. Hunters say that one can readily catch a decent sized pig without venturing far up the mountain. However, the network of trails allows access to upper regions where the larger animals roam. Fishing resources vary by ocean depth. Along the rocky shoreline fishermen gather crab, 'opihī, ha'u'ke'u'ke, and other shellfish. In the reef, residents gather limu and catch squid, lobster, and reef fish such as 'uhu, kala, and manini. At greater depths bottom fish are caught such as weke, ehu, 'opakapaka and uku. In the bays, nets are used to surround 'akule. 'Aholehole, 'ama'ama and uouoa are also caught with gill nets. In the deep ocean and out to the buoy the fishermen troll for ono, aku, 'ahi, marlin, and mahimahi. Ocean resources are accessed by land through mauka-to-makai trails and along the Pi'ilani Highway. Boats are also used for ocean subsistence activities. The launching areas are Honomanu Bay, Ke'anae Landing, Waiuanui Bay and Hana Harbor.

Resource gathering patterns are also influenced by ho'aiona or spiritual signs in natural phenomena. Ke'anae-Waiuanui residents stay alert to the direction and patterns of clouds, winds, rain, the flight of birds, rainfall and all natural elements to inform them about where the ideal place is to gather on any given day. They also keep track of the moon phases and the effect

on the shifts in the tides. Ancestral knowledge of the interpretation of place names in the district also informs Hawaiians about the special features or qualities of that particular area for subsistence and cultural use.

Q. Is this a traditional pattern of subsistence activity?

A. Traditional factors shape the pattern, nature and purpose of the ongoing subsistence fishing, gathering, farming and hunting activities. These include family and ancestral connections to particular features of the landscape; the distribution of water; access; the type of resource to be obtained; the life cycle of that resource; the diet and feeding habits of fauna; the weather and seasonal changes; and ho'aiona. The subsistence activities are also guided by traditional values and customs which include but are not limited to the following:

1. Only take what is needed.
2. Don't waste natural resources.
3. Gather according to the life cycle of the resources. Allow the resources to reproduce. Don't fish during their spawning seasons.
4. Alternate areas to gather, fish and hunt. Don't keep going back to the same place. Allow the resource to replenish itself.
5. If an area has a declining resource, observe a kapu on harvesting until it comes back. Replant if appropriate.
6. Resources are always abundant and accessible to those who possess the knowledge about their location and have the skill to obtain them. There is no need to overuse a more accessible area.
7. Respect and protect the knowledge which has been passed down intergenerationally, from one generation to the next. Do not carelessly give it away to outsiders.
8. Respect each other's areas. Families in Ke'anae-Waiuanui usually fish, hunt, and gather in the areas traditionally used by their ancestors. If they go into an area outside their own for some specific purpose, they usually go with people from that area.
9. Throughout the expedition keep focused on the purpose and goal for which you set out to fish, hunt, or gather.
10. Be aware of the natural elements and stay alert to natural signs, e.g. falling boulders as a sign of flash flooding.
11. Share what is gathered with family and neighbors.

12. Take care of the kupuna who passed on the knowledge and experience of what to do and are now too old to go out on their own.

13. Don't talk openly about plans for going out to subsistence hunt, gather, or fish

14. Respect the resources. Respect the spirits of the land, forest, ocean. Don't get loud and boisterous.

15. Respect family 'aumakua. Don't gather the resources sacred to them.

Q. To what extent, if any, does taro cultivation relate to the traditional and customary gathering of 'o'opu, 'opae, and hihiwai?

A. These native aquatic marine species and taro rely upon pristine, clear, cold, free running streams that flow year round. All of the great historical taro growing areas of Hawai'i rely on pristine streams where native aquatic species thrive - Ke'anae-Wailuanui, Kahakuloa on Maui; Hanalei on Kaua'i; Waipi'o on Hawai'i, the windward valleys of Moloka'i. 'O'opu, 'opae and hihiwai have been a part of the traditional diet of taro farmers in these areas.

Q. Were you able to determine the degree to which traditional and customary gathering of 'o'opu, 'opae, and hihiwai in Wailuanui has changed since the 1890's?

A. Auntie Helen Nakanelua who was 83 in 1994 was born in 1911 and described how she used to go out and gather 'opae with her grandmother who would have been born and learned how to gather 'opae before the 1890's:

And I used to go along with my grandma, with a five gallon can, you know those tall ones, and I pack some wood, and I pack salt, so that whenever my grandma goes with the upena net, do you have an idea what the upena net looks like and they have a little bag there? Some of the bags are small, but she used to have these long bags, and then she cleans that where I am, she takes that out, we clean it and we cook it in this can. Salt it and cook it there, the wood that I take we cook it. And after it's cooked, I begin spreading it on a table oil cloth and a mat I used to pack along and then she leaves me there I attend that opae while it's drying. By the time she comes back here, it's partly dried, I gather that 'opae again, and separate it in another bag, because that's partly dried, and we continue on, she gets another bag to do the same thing, cook, so that by the time she ends up her day, most of the opae, except the last one she has is partly half dried already. Do you know how the upena look like? I show you, cause I have made some for me, because I use it.

Although Auntie Helen continues to gather 'opae, it is not as plentiful as it had been in her youth. An indicator of the decline of 'opae is the passage of a state law in 1993 which prohibits its commercial sale due to its scarcity.

Q. Do you have an opinion as to the importance of the Ke'anae-Wailuanui region to Hawaiian cultural history?

A. Yes.

Q. What is that opinion?

A. The most distinctive historic association of the Ke'anae-Wailuanui landscape is its unbroken relationship to the foundations of Hawaiian culture through the traditional cultivation of taro, the major component of the cultural landscape. The traditional cultural practices region is also significant as a surviving enclave of Hawaiian subsistence, cultural, and spiritual beliefs, customs, and practices. Rural Hawaiian communities like Ke'anae-Wailuanui are cultural kipuka - places where Hawaiians have maintained a close relationship to the land through their livelihoods and customs - that play a vital role in the survival of Hawaiian culture as a whole. There is a growing recognition that protection of the natural resources and the integrity of the lifestyle and livelihoods within rural districts is essential for the perpetuation of Hawaiian culture. However, the survival of these cultural kipuka and the traditions and customs related thereto are continually eroded by an ever increasing lack of water.

Q. Do you have an opinion on how significant the Ke'anae-Wailuanui region is as judged against federal criteria for cultural significance?

A. Yes.

Q. What is that opinion?

A. The Ke'anae and Wailuanui cultural landscape is significant under the four National Register criteria of significance and an additional Hawai'i state criterion. Under Criterion A, Ke'anae-Wailuanui is associated with significant events affecting broad patterns of history. The evolution of Hawaiian culture and society in the Hawaiian Islands over the past 1500 years was sustained by highly developed and well-managed systems of wetland taro cultivation. Ke'anae-Wailuanui is an extraordinary example of a highly developed historic Hawaiian wetland irrigation system which sustained the complex social organization and sophisticated customs and practices of the Native Hawaiian culture. The cultural landscape also includes the historic network of irrigation ditches and tunnels which were developed in the late



nineteenth and early twentieth centuries. The last completed segment of the Hana Belt Road is also in this cultural landscape.

Under Criterion B, Ke'anae-Waihanui is associated with events which involved famous people such as the landing of Uni-a-Liloa's war canoes during his 14th century battle over Hana against Ho'olae-Makua and the staging of the battles between Kalaniopu'u and Kahekili in the 18th century.

Under Criterion C, Ke'anae-Waihanui epitomizes the quality and integrity of a historic landscape centered around the historic wetland cultivation of taro. In addition, the 2 churches, its public school facility and the Waikani Bridge are also excellent examples of each of these types of historic architecture.

Under Criterion D, Ke'anae-Waihanui provides excellent potential to yield information important in the prehistory and history on the origins, chronology and development of Hawaiian taro cultivation, as well as the complex social structures which both sustained and perpetuated by this kind of agricultural technology.

Q. To what extent are those that now gather and attempt to farm taro in the valley genealogically linked to the Hawaiians that lived in the valley during the 1800's?

A. The informants that I interviewed said that they lived and farmed lands that their ancestors had lived on and farmed in the 1800's.

Q. Do you have any opinion based on your training and education of whether there is any correlation historically between the amount of traditional gathering from the streams and the amount of fish and limu that could be taken from the coastal areas of the valley and the sea for subsistence purposes?

A. Yes.

Q. What is that opinion?

A. The abundance of aquatic and marine resources are dependent upon the pristine, clean, free flowing year round streams flowing into the ocean. The bays where the fresh water mixes into the ocean water are important spawning grounds for the fish. Moki Day, a Hawaiian fisherman from the area, described how the bays are important breeding grounds which deserve protection:

You can consider all the shoreline area between here and Kaupo as breeding grounds for all these shoreline species of fish. They come into our rivers here because we have the fresh water, and they come in here and breed here and lay their eggs here.

According to the late Uncle Harry Mitchell, who had been a long-time resident of the area, the streams and the ocean together provided the breeding ground for 'o'opu. He described the lifecycle of the 'o'opu as follows:

The first heavy rains usually arrived in August or September, carrying the 'o'opu to the ocean where they spawned. Once they laid their eggs, the mother 'o'opu died. The baby 'o'opu, called hinano, would hatch and develop in the salt water from August/September through November. The salt water made them strong enough to climb up the stream where they would mature. About November, the hinano began to make their way up stream to the large fresh water pools in the mountains. Their migration upstream coincided with the arrival of the migratory birds from the north which fed upon the hinano as they made their perilous journey to the uplands.

Q. Do you have an opinion on how significant the diversion of stream water from Waihanui Valley by EMI has been on the ability of its residents to continue their tradition of taro growing and gathering from the streams and coastal areas?

A. Yes.

Q. What is that opinion?

A. The diversion of streams in the Ko'olau watershed, via the East Maui Irrigation (EMI) Company system, has reduced the surface water flow in the region mauka of the cultural landscape. The system currently provides most of the irrigation water for central Maui's large-scale agriculture and is the main source for county water supplies to upcountry Maui residents and farmers.

While the degree of reduction has not been quantified, the volumes of water carried by the ditch are significant and impact on the stream ecology in Ke'anae-Waihanui is probable. Native endemic and indigenous species such as 'o'opu and 'opae and hihiwai are likely to have been affected within the last few generations, with consequent impact on the traditional gathering practices that are part of the local lifestyle. During interviews for the study, some residents expressed concern over the impact of the diversion of water by EMI Co. on the ecology of the region. They also questioned the effects that the EMI diversion may have on the temperature and consistent flow of stream water to taro lands.



- Q. Do you have an opinion on what positive steps should be taken to promote the perpetuation of the cultural landscape of Ke'anae-Waihanui?
- A. Yes.
- Q. What is that opinion?
- A. Provide incentives for taro growing, such as tax relief for parcels used for taro farming. Provide support to the community to maintain the water sources and the 'auwai, such as state and county support to clean and maintain the agricultural irrigation systems. Maintain the Pi'ilani Trail along the shoreline as well as the trails and unimproved roads running makai from the highway to the beach, and the trails and unimproved roads running mauka into the forest reserve should be maintained and their significance in the cultural landscape assessed. The watershed's forest should be protected. Access for cultural, subsistence, and spiritual customs and practices should be afforded to those residents of the community who will maintain traditions of respect and stewardship of the land and water resources. Develop the Ke'anae Arboretum to offer interpretation and education, with emphasis on practical and hands-on experience. Improve lookout points with better paving, approach signage, interpretive signage, landscaping and benches. Preserve and maintain the 2 large heiau and other cultural sites. Document and protect historic taro terraces. Perpetuate significant aspects of the cultural landscape without hampering changes beneficial to the community and its residents.
- Q. Are you familiar with crucial definitions of traditional land divisions used by Hawaiians?
- A. Yes.
- Q. What are the land divisions that were common in delineating the various land uses made by Hawaiians?
- A. The traditional Hawaiian land divisions according to Malo (1951:16-18) consist of the following district, subdistricts, land divisions and land parcels:
- island: *Moku-puni* (cut off surrounded)
  - Large District: *Apana* (pieces) or *Moku-o-loko* (interior division), e.g. Hana.
  - Sections: *'Okana* or *Kalana*, e.g. Honua'ula. [*'Okana* is also a district or sub-district and usually comprising several *ahupua'a*; *Kalana* is smaller than a district (Pukui & Elbert 1971: 113, 258)]
  - Subsection within *'Okana*: *Poko*. [Dividing a District, or *ahupua'a* into two or more sections, e.g.: Hamakua *Poko*; Hamakua *Loa*]

- *Ahupua'a*. (running *mauka-makai*, from the mountains to the sea) [a sub-district land division, some contain a few hundred acres, others 10,000 acres, or more]
- *'Ili-'aina* [*'Ili-'aina*, a sub-division of an *ahupua'a*; *'ili lele*, a discontinuous *'ili-'aina*, consisting of two or more parcels of land in the same *ahupua'a* and having the same name]
- *Mo'o-'aina* [*mo'o-'aina* is a cultivated garden within an *'ili-'aina* or *'ili-lele*]
- *Pauku-'aina* (joints of lands) [*pauku-'aina* is a land section smaller than a *mo'o-'aina*]
- *Kihapai* (patches or farms) [dry land garden]
- *Ko'ele* [*ko'ele*, a cultivated garden, the produce of which went to the *ali'i* of the district or island]
- *Hakuone* (land cultivated by 'ohana with crops going to *konohiki*) [produce of which went to chief of the *ahupua'a*]
- *Kuakua* (broad *kuauna* or *kuauna*, an embankment) [embankments between wet taro gardens, usually cultivated] (Malo 1951: 16-18). Information in brackets [ ] added.

<sup>1</sup> Harry Mitchell, April 22, 1988.

# CERTIFICATE OF SERVICE

I hereby certify that two (2) copies of the foregoing document were duly served on Linda L. Chow, Deputy Attorney General, for Hearings Officer, The Honorable E. John McConnell on August 1, 2005, by hand delivery. I further certify that one (1) copy was served on the remaining parties as indicated, on August 1, 2005.

Linda L. Chow, Esq.  
Deputy Attorney General  
For Hearings Officer  
The Honorable E. John McConnell (Ret.)  
465 S. King Street, Room 300  
Honolulu, Hawaii 96813

☐ U. S. MAIL  
☒ HAND DELIVERY

Randall K. Ishikawa, Esq.  
Ishikawa Morihara Lau & Fong, LLP  
841 Bishop Street, Suite 400  
Honolulu, Hawaii 96813

☒ U. S. MAIL  
☐ HAND DELIVERY

Elijah Yip, Esq.  
David Schulmeister, Esq.  
Cades Schutte  
1000 Bishop Street, 10<sup>th</sup> Floor  
Honolulu, Hawaii 96813

☒ U. S. MAIL  
☐ HAND DELIVERY

Isaac Hall, Esq.  
2087 Wells Street  
Wailuku, Maui, Hawaii 96793

☒ U. S. MAIL  
☐ HAND DELIVERY

Robert H. Thomas, Esq.  
1001 Bishop Street  
Pauahi Tower, Suite 1600  
Honolulu, Hawaii 96813

☒ U. S. MAIL  
☐ HAND DELIVERY


Brian T. Moto, Esq.  
Jane Lovell, Esq.  
Deputy Corporation Counsel  
County of Maui  
200 S. High Street  
Wailuku, Hawaii 96793

☒ U. S. MAIL  
☐ HAND DELIVERY

Richard Kiefer, Esq.  
David Merchant, Esq.  
444 Hana Hwy, Suite 204  
Kahului, Hawaii 96732

☒ U. S. MAIL  
☐ HAND DELIVERY

DATED: Honolulu, Hawai'i, August 1, 2005.

  
ALAN T. MURAKAMI  
MOSES K. N. HALE III  
Attorneys for Petitioners  
Na Moku Aupuni o Ko'olau Hui, et al.

# EXHIBIT B

## CURRICULUM VITA

Davianna Pōmaika'i McGregor  
1942 Naio St.  
Honolulu, Hawai'i 96817

### Personal Data

Birthplace: Honolulu, Hawai'i

### Education

Ph.D., University of Hawai'i, Manoa, Hawaiian/Pacific History, 1989  
M.A., University of Hawai'i, Manoa, Pacific Islands Studies, 1979  
P.D., University of Hawai'i, Manoa, Secondary Education, 1973  
B.A., University of Hawai'i, Manoa, Asian/Pacific History, 1973  
B.Ed., University of Hawai'i, Manoa, Secondary Education, 1972  
High School Diploma, Sacred Hearts Academy, Honolulu, 1968

### Doctoral Dissertation

"Kupa'a I Ka 'Aina: Persistence On The Land," University of Hawai'i - Manoa, 1989.

### Masters Thesis

"Hawaiian Resistance: 1887 - 1889," University of Hawai'i - Manoa, 1979.

### Fellowships, Scholarships & Awards

Awards for book, Na Kua'aina: Living Hawaiian Culture

- Kenneth W. Bairidge Prize for best book in any field of history written by a resident of Hawai'i from 2005-2007.
- Hawai'i Book Publishers' Assn, 2008 Po'okela Award, Honorable Mention for Excellence in Hawaiian Culture.

Hung Wo and Elizabeth Lau Ching Foundation Award for Faculty Service to the Community, 2005

Smithsonian Institution Asian Pacific American Program, Inaugural Scholar-In-Residence, Spring 2000

Na Pokii Graduate Fellowship, 1986 - 1987, 1988-89

Mary Kawena Pukui Hawaiian Studies Scholarship, 1986-87

Ford Foundation Fellowship, 1978 - 1980

### Teaching Experience

Ethnic Studies Program/Department, University of Hawai'i - Manoa, Professor, 2005 to present  
Associate Professor, 1995 to 2005  
Assistant Professor, 1987 - 1995  
Instructor, 1974 to 1986



#### Courses Taught:

ES 101 Introduction to Ethnic Studies: Basic concepts and theories for analyzing dynamics of ethnic group experiences, particularly those represented in Hawai'i and their relation to colonization, immigration, problems of identity, racism and social class.

ES 221 Hawaiians: Relationship between changes in Hawaiian lifestyle and development of Hawaiian economy; land use and tenure; Hawaiian institutions; Hawaiian resistance movements.

ES 301 Ethnic Identity: Individual and group problems of identity, identity conflict, culture conflict, inter-ethnic relations.

ES 310 Community, Ethnicity and Identity: Overview of ethnic communities with site visits to museums, social welfare unites and community guest lecturers including police, health and education professionals.

ES 340 Land Tenure and Use in Hawai'i: Transformation of the traditional Hawaiian land system into a system of private property that is not completely Western given the ongoing recognition of the rights of access for traditional and customary Native Hawaiian practices. Examination of contemporary issues and concerns related to land and development.

ES 350 Economic Change and Hawai'i's People: Development of modern Hawaiian economy and impact on Hawai'i's people. Sugar, pineapple, and tourism industries; role of local and multinational corporations; scenarios for Hawai'i's future development.

ES 380 Field Work in Ethnic Studies: Oversee student field work projects relating to Hawaiian community issues.

ES 392 Change in the Pacific - Polynesia: examines shared traditional cultural customs and practices and contemporary political, economic, and social trends in the island societies which have been labeled "Polynesia."

ES 399 Directed Reading in Ethnic Studies: Oversee student research into aspects of Hawaiian history or contemporary Hawaiian issues.

ES 495/History 495 Hawaiian Labor History: Conditions of work under varying political, social, and economic transformations in Hawai'i; anthropological, sociological, and historic data.

Hawai'i History Institute, Summer 1992 and Summer 1995: Co-taught institute for secondary teachers of Hawai'i history. The institute reviewed key issues in Hawai'i's history; the findings of most recent research in the field; and historic sites and community resources for teaching Hawai'i history. It was sponsored by the National Endowment for the Humanities and the Historic Hawai'i Foundation.

#### Areas Of Research and Teaching Interest

Native Hawaiians:

- Persistence of subsistence, cultural & religious customs & practices
- Resistance in Nineteenth and Twentieth Centuries
- Well-Being in Territorial and Statehood Periods

- Traditional and Contemporary Land Use & Tenure
- Origin and Implementation of Hawaiian Homes Commission Act
- Sovereignty Movement - Recognition, Rights, Claims, Organizations

Indigenous Land Stewardship and International Rights

U.S. Empire in the Pacific

Cultural Impact Studies On Behalf Of Indigenous and Pacific Island Communities

#### Administrative Experience

Acting Director, Ethnic Studies Program, University of Hawai'i, Manoa, 1974 - 77, 1990

Served as director for the fledgling Ethnic Studies Program at the University of Hawai'i - Manoa during its formative years when its faculty struggled to develop the curriculum to establish it as a permanent program, between 1974 - 77.

Served as Acting Director while regular director was on leave in Spring 1990.

Principal Investigator, Ethnic Studies Oral History Project, 1976-78

Set up the Ethnic Studies Oral History Project within the administrative framework of the University of Hawai'i - Manoa campus together with the project staff. Funding for the program was attained through direct legislative funding.

Programmer, University of Hawai'i - Manoa Campus Center, 1974

Coordinator for summer student programs and non-credit courses.

#### Published Works

##### Book of Original Scholarship

Na Kua'aina: Living Hawaiian Culture, Honolulu: UH Press, 2007, xi, 372p..

##### Edited Textbook

Our History, Our Way: An Ethnic Studies Anthology, co-edited with Gregory Y. Mark and Linda A. Revilla, Dubuque, Iowa: Kendall/Hunt, 1996, ix, 469p.

##### Articles in Refereed Journals

"Statehood: Catalyst of the Twentieth Century Kānaka 'Ōiwi Cultural Renaissance and Sovereignty Movement," Journal of Asian American Studies, October 2010, Volume 13, Number 3: pp 311-326

Guest Editor, Journal of Asian American Studies, special issue on Pacific Islander Americans, Volume 7, Number 3, October 2004, Introduction: "Weaving Together Strands of Pacific Islander, Asian and American Interactions," p. vii - xii Article: "Engaging Hawaiians in the Expansion of the U.S. Empire," p. 209-222

Co-editor with Rebecca King-O'Rian, Peace Review, A Journal of Social Justice special issue on Justice for Asian and Pacific Islander Americans, 2004.

"Research in Action: Ethnohistory of Puna," Social Process in Hawaii, Volume 39, 1999, p. 181 - 207.

- "A Holistic Assessment Method of Health and Well-Being for Native Hawaiian Communities," with Jon Matsuoka and Luciano Minerbi, Pacific Health Dialog, Fall, 1998 Vol 5 (2) p. 361 - 369.
- "An Introduction to the Hoʻaʻaina and Their Rights," The Hawaiian Journal of History, vol. 30 (1996) p. 1 - 27
- "Waipi'o Valley, a Cultural Kipuka in early 20th Century Hawai'i," The Journal of Pacific History, 30(2), 1995, p. 194 - 209.
- "Kaua'i: Between Hurricanes," with Jon Matsuoka, in Ibrahim Aoude, (ed.), The Political Economy of Hawai'i. Social Process in Hawai'i Volume 35. Honolulu: Department of Sociology, University of Hawai'i, 1994, p 103 - 123.
- "Sociodemographic Differences Related To Attitudes Concerning Economic Development In A Hawai'i Community," with Jon Matsuoka, Social Development Issues, 15 (2), 1993.
- "Mai Ke Kai Mai Ke Ola, From The Ocean Comes Life", an article on Hawaiian customs and Practices on Kaho'olawe relating to the surrounding ocean, co-authored with Noa Emmett Aluli, M.D., Hawaiian Journal of History, vol. 26 (1992): 231 - 254.
- "Aina Ho'opulapula: Hawaiian Homesteading," an article reviewing the original goals and purposes of the Hawaiian Homes Commission Act, as envisioned by the Hawaiian men who drafted the legislation, Hawaiian Journal of History, vol. 24 (1990): 1 - 38.
- "Hawaiians: Organizing in the 1970's," Amerasia Journal, "Hawai'i: Issues and Perspectives," 7:2 (1990): 29-55
- Articles in Scholarly Journals**
- "A Community-Based Master Land Use Plan for Moloka'i Ranch? This effort deserves serious reflection," herel Urbanism, Design and Planning, Molokai, Department of Urban and Regional Planning, University of Hawai'i, Manoa, 2 Winter 2007, 68 - 87.
- "Hawaiian Subsistence and Community Sustainability", herel Urbanism, Design and Planning, Molokai, with Jon Matsuoka and Luciano Minerbi, Department of Urban and Regional Planning, University of Hawai'i, Manoa, 2 Winter 2007, 40 - 67.
- "Kaho'olawe: Rebirth of the Sacred", Amerasia Journal, "The Politics of Remembering" edited by Henry Yu and Mae M. Ngai, Volume 28: 3, (2002): 68 - 83.
- "Voices of Today Echo Voices of the Past: 1845 Petitions," in Malama Hawaiian Land and Water. Honolulu: Bamboo Ridge Press, 29(Winter) 1985, 44 - 58.
- "A Comparison of the Terms Malo Used for 'Steal', 'Theft', 'Rob', and 'Covet'. With the Terms Used to Translate These Concepts in Baibala Hemolele and the First Penal Codes," Ka 'Uluhi, The Translator 1(May) 1980.
- "A Translation and Analysis of No Ka Moe Kolohe, A Law of King Kamehameha Enacted on September 21, 1828," Ka 'Uluhi, The Translator 1(May) 1980.

## Book Chapters

- 'Aina: Ke Ola O Na Kanaka 'Owi / Land: The Health of Native Hawaiians with Noa Emmett Aluli, in \_\_\_\_\_, edited by Dr. Benjamin Young, in press, Honolulu: UH Press.
- "Wao Kele O Puna and the Pele Defense Fund" with Noa Emmett Aluli, M.D. in A Nation Rising: Hawaiian Movements for Life, Land, and Sovereignty, edited by Noelani Goodyear-Ka'opua, Ikaika Hussey and Kahunawaika'ala Wright, Durham: Duke University Press, 2014.
- "Our History, Our Way" Ethnic Studies for Hawai'i's People!" with Ibrahim Aoude, in A Nation Rising: Hawaiian Movements for Life, Land, and Sovereignty, edited by Noelani Goodyear-Ka'opua, Ikaika Hussey and Kahunawaika'ala Wright, Durham: Duke University Press, 2014.
- "Recognizing Native Hawaiians: Reality Bites," in Sovereign Acts, edited by Frances Negron-Muntaner, in press.
- "Recognizing native Hawaiians: A Quest for Sovereignty in Asian American Studies Now: A Critical Reader, edited by Jean Yu-wen Shen Wu and Thomas Chen, New Brunswick, N.J.: Rutgers University Press, 2010.
- "An Ecological Model of Wellbeing," with Paula Tanemura Morelli, Jon Kei Matsuoka, and Luciano Minerbi in International Handbook of Social Impact Assessment: Conceptual and Methodological Advances, edited by Henk Becker and Frank Vancley, 2003, translated into Farsi (Persian), Tehran: Office of Social and Cultural Studies, 2010 p 108-128.
- "Using Geographical Information Systems for Cultural Impact Assessment," with Luciano Minerbi and Jon Matsuoka, in International Handbook of Social Impact Assessment: Conceptual and Methodological Advances, edited by Henk Becker and Frank Vancley, 2003, translated into Farsi (Persian), Tehran: Office of Social and Cultural Studies, 2010, p 195 - 210.
- "Nā Kua'aina: Living Hawaiian Culture" in We Go Eat: A Mixed Plate from Hawai'i's Food Culture, Honolulu: Hawai'i Committee for the Humanities, 2008
- "Hawaiians in 2000" in The New Face of Asian Pacific America: Demographic and Cultural Change 2000 and Beyond, 2003, p 79 - 84.
- "Constructed Images of Native Hawaiian Women," in Asian/Pacific Islander American Women: A Historical Anthology, edited by Shirley Hune and Gail Nomura, NYU press, 2003, p 25 - 41.
- "An Ecological Model of Wellbeing," with Paula Tanemura Morelli, Jon Kei Matsuoka, and Luciano Minerbi in International Handbook of Social Impact Assessment: Conceptual and Methodological Advances, edited by Henk Becker and Frank Vancley, 2003, p 108-128.
- "Using Geographical Information Systems for Cultural Impact Assessment," with Luciano Minerbi and Jon Matsuoka, in International Handbook of Social Impact



- Assessment: Conceptual and Methodological Advances, edited by Henk Becker and Frank Vancley, 2003, p 195 - 210.
- "Recognizing Native Hawaiians: A Quest for Sovereignty," in Pacific Diaspora: Island Peoples in the United States and Across the Pacific, edited by Paul Spickard, Joanne L. Rondilla, Debbie Hippolite Wright, Honolulu: University of Hawaii Press, 2002, p 331 - 354.
- "Hawaiian Subsistence, Culture and Spirituality and Natural Biodiversity: A Complementary Contribution to the Global Biodiversity Assessment," in Cultural and Spiritual Values of Biodiversity, United Nations Environment Programme, 1999.
- "Native Hawaiian Women," in The Reader's Companion to U.S. Women's History, edited by Wilma Mankiller, Gwendolyn Mink, Marysa Navarro, Barbara Smith, and Gloria Steinem, Boston: Houghton Mifflin Company, 1998, p 423 - 425.
- "Moloka'i: A Study of Hawaiian Subsistence and Community Sustainability," in Sustainable Community Development: Case Studies in Economic, Environmental & Cultural Revitalization, with Jon Matsuoka and Luciano Minerbi, ed. by Marie D. Hoff, St. Lucie Press, 1997, 25 - 44.
- "The Cultural and Political History of Hawaiian Native People," and "Self-Determination and Native Peoples: The Case of Hawai'i" in Our History, Our Way: An Ethnic Studies Anthology, ed. Gregory Yee Mark, Davianna Pomaika'i McGregor, Linda A. Revilla, Dubuque, Iowa: Kendall/Hunt, 1996, p 333 - 396.
- "Ho'i Ho'i Ea Hawai'i: Restoring Hawaiian Sovereignty," in New Politics in the South Pacific, ed. by Ron & Marjorie Crocombe, Tony Deklin, Werner vom Busch, Esther Williams and Peter Larmour. Suva, Fiji: Institute of Pacific Studies, 1994, p 31 - 54.
- "The Healing of Kaho'olawe," with Noa Emmett Aluli in Ulla Hasager and Jonathan Friedman (eds.), Hawai'i: Return to Nationhood. Copenhagen: International Working Group for Indigenous Affairs, Document no. 75, 1994, p 197 - 209.
- "'Au'a'ia' To 'Mele O Kaho'olawe: Voices of Power and Vision" in Franklin Ng, Judy Yung, Stephen S. Fugita, Elaine H. Kim (eds.), New Visions In Asian American Studies, Diversity, Community, Power, Pullman: Washington State University Press, 1994, 253 - 270.
- "Endangered Culture: Hawaiians, Nature, and Economic Development" with Jon Matsuoka in M. Hoff and J. McNutt (eds.), Social Work and The Environment. London: Avebury/Gower House Publishers, 1994.
- "Pele vs. Geothermal: A Clash of Cultures," in Bearing Dreams, Shaping Visions: Asian Pacific Americans Facing the 90's, Seattle: Washington State University Press, 1993.
- "Redress for Indigenous Peoples' Rights: The Case of Native Hawaiians," in Restructuring for World Peace: On the Threshold of the Twenty-First Century, ed. by Katharine and Majid Tehranian, Cresskill: Hampton Press, Inc, 1992, p 161 - 181.

- "Ho'omau Ke Ea O Ka Lahui Hawai'i: The Perpetuation of the Hawaiian People," in Ethnicity and Nation-building in the Pacific, ed. by Michael Howard, Tokyo: United Nations University, 1989, p. 74 - 97, 74 - 97.
- "Hanauna," essay on Queen Lili'uokalani in Hanai: A Poem For Queen Lili'uokalani, John Dominis Holt, Honolulu: Topgallant Publishing Co., Ltd., 1986, p. 51 - 70.
- "Hawaiian History Timeline Series of Hawaiian History," Honolulu: Editions Limited, 1985.
- "The Hawaiian Monarchy Timeline Series of Hawaiian History," co-writer, Honolulu: Editions Limited, 1985.
- Scholarly Publications**
- "Native Hawaiians and Pacific Islanders" in Asian Americans: An Encyclopedia of Social, Cultural, Economic and Political History edited by Zhao Xiaojian and Edward Park, in press
- Foreword to Edward Bailey, A Life on Maui, Linda McCullough Decker, Honolulu: Rainsong, 2010, p. xvii - xx.
- "Kai Ākea," in Ho'i Hou Ka Wena I Kaiw'ula: Restoring Bishop Museum's Hawaiian Hall Bishop Museum Press, 2009, p 20 - 23.
- Introduction to Kailua: I Ke Oho O Ka Malana/In the Wisp of the Malana Breeze, Kailua: Kailua Hawaiian Civic Club, 2009, p xvii - xx.
- "Aloha Āina" issue paper, 2005 Sustainability Plan, UHM College of Social Sciences Public Policy Center, 2007.
- Technical Reports**
- "Cultural Impact Assessment for Construction and Public Use of the Ala Palā'au Project, Palā'au State Park, Moloka'i" for Ke Aupuni Lōkahi, Moloka'i Enterprise Community, November, 2009.
- Tropical Storm/Typhoon, Tsunami Response Study Commonwealth of the Northern Marianas Islands, 2007-2008, for U.S. Army Corps of Engineers Honolulu District by Group 70 International and University of Hawai'i, Manoa School of Social Work and Ethnic Studies Department, June 30, 2008.
- Hurricane Evacuation Behavior Study for Guam and the Commonwealth of the Northern Marianas for the U.S. Army Corps of Engineers with Jon Matsuoka, December 31, 2006.
- Cultural Assessment Report for the La'au Point Rural-Residential Development, assisted by Sean McNamara, November 15, 2006.
- Cultural Assessment for the Mo'omomi Preserve, Kaluako'i, Island of Moloka'i, for The Nature Conservancy, June 15, 2006, assisted by Blake La Benz.
- Cultural Assessment for the Kamakou Preserve, Makakupa'ia and Kawela, Island of Moloka'i, for The Nature Conservancy, June 15, 2006, assisted by Blake La Benz.

- "The Cultural, Political and Legal History of Hawaiian Native People," with Professor Rob Williams, Professor James Anaya, Professor Eric Yamamoto, Alan Murakami, Esq., Elizabeth Pa Martin, Esq., Joyce McCarty, Esq., and Professor Emeritus Stephen Boggs, Ford Foundation, 1994.
- "Native Hawaiian Ethnographic Study for the Hawai'i Geothermal Project Environmental Impact Study," with Jon K. Matsuoka and Luciano Minerbi for the Oakridge National Laboratories Environmental Impact Study for the U.S. Department of Energy, 1993.
- "Kaua'i Island Study," with Jon Matsuoka and Masters in Social Work Students at the Kaua'i Community College, Fall 1991.
- "Native Hawaiian and Local Cultural Assessment Project," with Jon K. Matsuoka and Luciano Minerbi, State of Hawai'i Department of Health Hawai'i Environmental Risk Ranking Project, 1991 - 1993.
- "Sociocultural Impact Assessment" in the Environmental Impact Statement for the Commercial Satellite Launching Facility, Palima Point, Ka'u, Hawai'i, with Jon Matsuoka, 1991.
- Grants and Contracts**
- Title: Cultural Impact Assessment for Construction and Public Use of the Ala Palā'au Project, Palā'au State Park, Molokai"
- Principal Investigator: Responsible for 100% of the report, 2009
- Funded: Ke Aupuna Lōkāhi, Molokai Enterprise Community, \$1500
- Title: Tropical Storm/Typhoon, Tsunami Response Study, Commonwealth of the Northern Marianas Islands, 2007 - 2008
- Researcher: Responsible for 50% of the report
- Funded: U.S. Army Corps of Engineers and Group 70, International, \$103,000
- Title: 2050 Sustainability Plan Project - Issue paper and technical support on cultural stewardship, paper entitled, Aloha 'Aina.
- Principal Investigator: Responsible for 100 percent of the paper
- Funded: UHM College of Social Sciences Public Policy Center, 2007 Sustainability Plan Project, \$5,000.
- Title: Tropical Storm/Typhoon, Tsunami Response Study: Guam and Commonwealth of the Northern Marianas Islands, Survey Instrument Development Phase.
- Researcher: Responsible for 50% of the report, 2005 - 2006
- Funded: U.S. Army Corps of Engineers and Group 70, International, \$100,00
- Title: Cultural Assessment for the Mo'omomi Preserve, Kaluako'i, Island of Molokai and Cultural Assessment for the Kamakou Preserve, Makakupa'ia and Kawela, Island of Molokai;
- Principal Investigator: Responsible for 80 percent of the report, 2005
- Funded: The Nature Conservancy, \$10,000
- Title: Molokai Responsible Tourism Initiative
- Principal Investigator: Responsible for 100 percent of the study and report 2004 - 2005

*Davianna Pāmaika'i McGregor 9*

- Molokai Responsible Tourism Initiative: A Community-based Visitor Plan for Molokai, for Ke 'Aupuni Lokahi-Molokai Enterprise Community, February 2006.
- Phase III: Native Hawaiian Access Rights Project, Recommendations for SMA Rules and Process, for Hawai'i Coastal Zone Management Program, Office of Planning, Department of Business, Economic Development and Tourism, Pursuant to National Oceanic and Atmospheric Administration, Award No. NA87OZ0233, 2002.
- "Cultural and Socio-economic Assessment," with M.P. Crosby, J.W. Milon, D. Rosen, and D.O. Suman in Alternative Access Management Strategies for Marine and Coastal Protected Areas, A Reference Manual for their development and assessment, U.S. Man and the Biosphere Program, 2000.
- Phase II: Native Hawaiian Access Rights Project for Hawai'i Coastal Zone Management Program, Hawai'i Office of Planning, State of Hawai'i, Department of Business Economic Development and Tourism Pursuant to National Oceanic and Atmosphere Administration Award No. NA87OZ0233, 2000.
- Phase I: Native Hawaiian Access Project for Hawai'i Coastal Zone Management Program, Hawai'i Office of Planning, State of Hawai'i, Department of Business Economic Development and Tourism Pursuant to National Oceanic and Atmosphere Administration Award No. NA77OZ0185, 1999.
- Hawai'i Externalities Workbook, "Chapter 8.0 Native Hawaiian Impacts." Co-authored with Jon Matsuoka and Luciano Minerbi, under contract with Energy Research Group, Inc. for Hawaiian Electric Company, July 1997.
- "Contemporary Subsistence Fishing Practices Around Kaho'olawe: Study Conducted for the NOAA National Marine Sanctuaries Program." Co-authored with Noa Emmett Aluli, Manny Kuloloio, Malla Akulagawa, and Kehau Walker. Kaunakakai: Protect Kaho'olawe Fund, May 1997.
- "Hawaiian Cultural and Resource Management" in CRM: Cultural Resource Management, National Park Service, V. 19, no. 18, pp 17-20, 1996.
- "Traditional Hawaiian Cultural, Spiritual, and Subsistence Beliefs, Customs, and Practices and Waihole, Waikane, Hakipu'u, and Kahana" for Native Hawaiian Advisory Council, September 1995.
- "Kaho'olawe Use Plan," with PBR-Hawai'i, for Kaho'olawe Island Reserve Commission, 1995.
- "Kalo Kanu O Ka 'Aina: A Cultural Landscape Study of Ke'anae and Wailuanui, Island of Maui," with Group 70, Inc. and Cultural Surveys Hawai'i, Inc., for the County of Maui Planning Department and the Maui County Cultural Resources Commission, May 1995.
- "Governor's Molokai Subsistence Task Force Report," with Jon K. Matsuoka and Luciano Minerbi, Molokai Department of Business, Economic Development, and Tourism, 1994.

*Davianna Pāmaika'i McGregor 8*



Funded: Rural Development Project of Maui Community College and Ke Aupuni Lokahi Molokai Enterprise Community Governance Board, \$10,000

Title: Phase III: Native Hawaiian Access Rights Project for Hawai'i Coastal Zone Management Program, Hawai'i Office of Planning, State of Hawai'i, Department of Business Economic Development and Tourism Pursuant to National Oceanic and Atmosphere Administration Award  
Principal Investigator - responsible for 45 percent of the study and report  
2000 - 2002

Funding: Hawai'i Office of Planning, State of Hawai'i, Department of Business Economic Development and Tourism Pursuant to National Oceanic and Atmosphere Administration Award, \$25,100.

Title: Community Assessment of a Community Center in Wai'anae  
Co-Principal Investigator - responsible for 30 percent of the study and report  
2000 - 20003

Funded: Consuelo Zobel Alger Foundation Community and Department of Hawaiian Homelands, \$18,622.

Title: Research and Development Planning For Hawaiian Well-Being  
Researcher - responsible for 35 percent of the study  
1999 - 2000  
Funded: Office of Hawaiian Affairs

Title: Phase II: Native Hawaiian Access Rights Project for Hawai'i Coastal Zone Management Program, Hawai'i Office of Planning, State of Hawai'i, Department of Business Economic Development and Tourism Pursuant to National Oceanic and Atmosphere Administration Award No. NA87OZ0233  
Principal Investigator - responsible for 35 percent of the study and report  
1999

Funded: Hawai'i Office of Planning, State of Hawai'i, Department of Business Economic Development and Tourism Pursuant to National Oceanic and Atmosphere Administration Award No. NA87OZ0233, \$20,000.

Title: Phase I: Native Hawaiian Access Project for Hawai'i Coastal Zone Management Program, Hawai'i Office of Planning, State of Hawai'i, Department of Business Economic Development and Tourism Pursuant to National Oceanic and Atmosphere Administration Award No. NA77OZ0185.  
Principal Investigator - responsible for 35 percent of the study and report  
1998

Funded: Hawai'i Office of Planning, State of Hawai'i, Department of Business Economic Development and Tourism Pursuant to National Oceanic and Atmosphere Administration Award No. NA 77OZ0185, \$22,000.

Title: Hawaiian Externalities for the Hawaiian Electric Company Integrated Resource Plan  
Participating Researcher- responsible for 25 percent of the study and report  
1997  
Funded: Hawaiian Electric Company

Title: Traditional Hawaiian Cultural, Spiritual, and Subsistence Beliefs, Customs, and Practices and Waiahole, Waikane, Hakipu'u, and Kahana  
Pro bono study for the Native Hawaiian Advisory Council  
1995  
Funded: Office of Hawaiian Affairs

Title: Kaho'olawe Land Use Plan  
Pro bono member of the planning team - responsible for 15 percent of the study and report, 1995  
Funded: Kaho'olawe Island Reserve Commission

Title: Ke'anae-Waluanui Cultural Landscape Survey  
Participating Researcher - responsible for 15 percent of the study and report  
1994  
Funded: Maui County Planning Department - \$22,000

Title: Mo'omomi Community-Based Subsistence Fishing Area Management Plan  
Pro bono Participating Researcher - responsible for 15 percent of the study and report  
1994  
Pro bono: Moloka'i Office of Department of Business and Economic Development and Hui O Mo'omomi

Title: Native Hawaiian Ethnographic Study for the Hawai'i Geothermal Project  
Environmental Impact Study  
Participating Researcher - responsible for 30 percent of the entire study  
1993 - 1994  
Funded: U.S. Department of Energy to Oak Ridge National Laboratory- \$100,000

Title: Governor's Moloka'i Subsistence Task Force Study  
Participating Researcher - completed 40 percent of the study and report  
1993 - 1994  
Funded: Department of Business and Economic Development - \$36,000

Title: Kaho'olawe Cultural Resources Ocean Study  
Participating Researcher - responsible for 40 percent of the study and report  
1993 - 1994  
Funded: National Oceanic and Atmospheric Administration to Protect Kaho'olawe Fund - \$24,800

Title: Native Hawaiian and Local Cultural Assessment Project, Hawai'i Environmental Risk Ranking Project  
Participating Researcher - completed 35 percent of the study and report  
1992 - 1993  
Funded: State of Hawai'i Department of Health - \$14,600

Title: Status and Entitlements of Hawaiian Natives  
Historical Researcher - completed 10 percent of study and report  
1992  
Funded: Ford Foundation to the Native Hawaiian Advisory Council, 1992 - \$90,000  
Title: Hawaiian Sovereignty Education Grant

Pro bono Curriculum Development Consultant - during the first year, contributed to the development of 5 percent of the curriculum materials, including a documentary video 1991 - 1992

Funded: Administration for Native Americans to Hui Na'auao Hawaiian Sovereignty Education Project - \$364,061 - year 1; \$342, 240 year - 2; \$285, 515 year - 3

Title: Kaua'i Island Study

Participating Researcher - completed 10 percent of the study and report 1991

Pro bono: in conjunction with Social Work research course at the Kaua'i Community College

Title: Sociocultural Impact Assessment of a Commercial Satellite Launching Facility at Palima Point, Kau, Hawai'i.

Participating Researcher - completed 30 percent of the study and report 1991

Funded: Department of Business, Economic Development and Tourism - \$27,000

Title: The Cultural Landscape of Heiau Sites in Hawai'i

Principal Investigator - completed 2 percent of the study 1990-91

Funded: Hawai'i State Department of Land and Natural Resources, Division of Historic Preservation - \$3,997

Educational Improvement Fund, University of Hawai'i, 1987, "Experiential Education at the Kanewai Cultural Garden," Principal Investigator.

#### Audio-Visual Media

"Ho'ala," documentary video reviewing changes in the sovereignty of Native Hawaiians at key periods in history from the pre-contact period through Annexation in 1988. Helped to write the script for producers and directors, Hui Na'auao (consortium of 30 Hawaiian sovereignty organizations) and Juniroa Productions, 1992

"Kaho'olawe: Aloha 'Aina," documentary videotape on the natural and cultural resources of Kaho'olawe. Helped to write the script with producers and directors Na Maka O Ka 'Aina, the Protect Kaho'olawe Fund, and Talk Story, Inc. with funding from the Hawai'i Committee for the Humanities and the State Foundation on Culture and the Arts, 1992.

"Pele's Appeal", documentary videotape on the significance of the volcano and the rainforest to native Hawaiian culture and its threatened destruction by geothermal energy development, served as script consultant to the producers and directors, Pele Defense Fund and Na Maka O Ka 'Aina, 1989.

"Na Wai E Ho'ola I Na 'Iwi? Who Will Care For The Bones?," documentary videotape on the Honokahua Burials issue, script consultant to Na Maka O Ka 'Aina, 1988.

"Kapu Ka'u," documentary videotape on the cultural and historical significance of the Ka'u district of Hawai'i islands, script consultant to Na Maka O Ka 'Aina, 1987.

"Ti Mangyuna: Those Who Led The Way," docudrama on Filipinos in Hawai'i, co-writer, 1981.

#### On Line Resources

"Healing Elements: A Native Hawaiian Perspective," Voyage to Health Higher Education Module, U.S. National Library of Medicine, 2011  
http://www.nlm.nih.gov/exhibition/avoyage/health/education/HEHealingelements.html

#### News Articles

"Proper Recognition: Is the Akaka Bill the Best Prescription for Hawaiians? Yes: Independence Does Not Offer Same Guaranteed Protection of Native Rights," The Honolulu Advertiser, Sunday Editorial Section, p. B-1, April 25, 2004

"Prince Jonah Kuhio: An introduction to his life," Honolulu, Hawai'i, Center for Biographical Research, 2002, 2p.

"There's more to History than Overthrowers Told" The Honolulu Advertiser, Sunday September 7, 1997, Focus, p. B-1& B-4.

"The Hawai'i Land Reform Act: Public Interest or Hawaiian Rights?" Ka Huiiau newspaper, January - February 1985.

#### Refereed Conference Contributions

Annual Conference of the Association for Asian American Studies (AAAS)

2013 Seattle, Washington

Paper: "Revitalizing a "Sacred" Landscape: Kanaloa Kaho'olawe, Hawai'i"

2012 Washington D.C.

Plenary: Asian American Empire: Revisiting Pacific Island Studies and Pacific Islanders in

Asian America/n Studies

Paper: Alter-Native Energy for Hawai'i: Challenging Lines of Power

2010 Austin, Texas

Plenary: Celebrating the 40th Anniversary of the AAAS

2008 Chicago, Illinois

Paper: Un-melting 20<sup>th</sup> Century Myths of the Chicago School About Hawai'i

2007 New York, New York

Paper: Molokai: Not for Sale. Just Visit" - Tourists Encounter the Last Hawaiian Island

2005 Los Angeles, California

Paper: Hawaiian Diaspora and the Culture Drain

2004 Boston, Massachusetts

Paper: Engaging Hawaiians in the Expansion of the U.S. Empire

2003 San Francisco, California

Paper: Natives and Locals: Contested Identities of Hawai'i



- 2002 Salt Lake City, Utah  
Paper: Indigenizing Asian American Studies: Hawai'i and the Pacific
- 2001 Toronto, Canada:  
Paper: "Nature, Class and Constructed Image: Native Hawaiian Women,"  
Panel Chair and Discussant: Locating Hawai'i and the Pacific in Asian American Studies: The Politics of Culture
- 2000 Scottsdale, Arizona  
Paper: Sunbathers vs. Fishermen or Tourism vs. Subsistence: Researching Divergent Rights of Access
- 1999 Philadelphia, Pennsylvania  
Paper: Original Hawaiian and Local Cultures in the New Millennium?
- 1998 Honolulu, Hawai'i  
Paper: Planning to Keep Molokai Hawaiian  
Panel Chair and Discussant: Representing Hawaiians and Hawaiian
- 1997 Seattle, Washington:  
Paper: Models of Sovereignty in the Pacific
- 1994 Ann Arbor, Michigan  
Paper: Sovereignty: Hawaiians and Locals
- 2003 First Annual Kamehameha Research Conference on the Education and Well-being of Hawaiians  
Paper: Cultural Kipuka and the Perpetuation of Native Hawaiians  
Panel: A Holistic Model of Native Hawaiian Well-Being
- Western History Association Conference  
1997 Denver, Co.  
Paper: Cultural Change and Continuity in Rural Hawaiian Communities
- 1992 Yale University, New Haven, Connecticut  
Paper: Perpetuation of Hawaiian Custom, Belief and Practice in Rural Hawaiian Communities
- Invited Conference Presentations**  
"Statehood: Unexpected Catalyst of the Hawaiian Cultural Renaissance and Sovereignty Movement" Plenary Panel on Challenging Inequalities Among Nations, Association for Asian American Studies 2009 Conference
- "Ka Wai Ola: The Living Water," Panel on Planning Pono - Hawaiian Values, Tradition & Customary Uses & Views of Resources Protection & Process for the Water Use & Development Plans at the Hawaii Water Works Association Conference, October 2008
- Reserved Rights of Native Hawaiians, Weaving Together Natural Resource Management, and Native Hawaiian Cultural Needs, U.S. Fish and Wildlife Service/Native Hawaiian Workshop, Winter 2007.

Davianna Pōmaika'i McGregor 14

- U.S. and Hawai'i: Dis-Connecting the Native from the Land, the Demise and Rebirth of the Sacred, University of the Ryukyus, Okinawa, Japan, 2006
- "Recognizing Native Hawaiians: Reality Bites," Conference on The Space of Sovereignty: Land, Law and Citizenship at Columbia University, 2005.
- "Cultural Impact Assessments " Hawai'i State Association of Counties Conference on "Smart Growth: A Step in the Right Direction," 2001.
- "Practicing Native Hawaiian Access and Gathering Rights," Hawai'i Congress of Planning Officials Conference, October 2000.
- "Background and History of the Kanaka Maoli Through the Study of the U.S. Apology to the Kanaka Hawai'i Maoli," The Native Hawaiian Convention, 1999
- "He Mo'olelo: From Kapu to Kuleana," Hawaiian Historical Society Conference on "Ka 'Aina: Rethinking Our Kuleana," 1998.
- "Life After PASH," Native Hawaiian Bar Association Conference, 1997
- "GIS Overlay Mapping of Native Hawaiian Cultural and Natural Resources," 15th Annual Pacific Island Coastal Zone Management Conference, 1997.
- "Native Hawaiian Sovereignty in Hawai'i's Future in the Global Economy," Hawai'i State Association of Counties, 1996.
- "The 'Aina in History," Hawaiian Historical Society Conference, 1996.
- "Oral Traditions And Writing Hawaiian History" Hawaiian Historical Society, October 1994.
- "Hawaiian Sovereignty and Land Use," HCPO, September 1994.
- "Restoring Hawaiian Sovereignty," Second National Conference on Relations Between the United States and American Samoa, Guam, the Northern Mariana Islands, Puerto Rico, and the United States Virgin Islands, May 1994.
- "Protecting Hawaiian Cultural Kipuka " Hawai'i State Association of Counties Conference on Shaping Tourism's Future, Honolulu, 1994.
- "Protocol in Conducting Research in Hawaiian Communities," Native Hawaiian Health Conference, Honolulu, 1994.
- "The Continuity of Hawaiian Customs, Beliefs and Practices: New Threats to the Perpetuation of Hawaiian Culture," Colloquium; "The Hawaiian 'Ohana/Family," Lecture in Asian American Family Class:
- "Pele versus Geothermal Energy," Lecture in Asian American Women Class; Department of American Ethnic Studies, University of Washington, April 1993.
- "Hawaiian Culture and Health Environmental Risk Ranking," HPCO, 1993.

Davianna Pōmaika'i McGregor 15



"Hawaii": 1778 - 1992, A Troubled Paradise,"  
 "Hawaiians: 1893 to 1993, From Conquest to Sovereignty"  
 Lectures at University of Michigan, 1992.

"Hawaiian Sovereignty," Lecture at University of California, Berkeley 1992.

"Hawaiian Perspective On Conflict Resolution," Hawai'i State Association of Counties  
 Conference on Conflict Resolution, Hilo, 1991.

#### University Committees

2012 - 2013 Personnel Committee - ES Department (chair), Center for Pacific Islands  
 Studies(chair), Hawaiian Studies  
 2011 Tenure and Promotion Review Committee UH Manoa  
 Personnel Committee - ES Department (chair), Center for Pacific Islands Studies  
 (chair),  
 Hawaiian Studies  
 2010 Personnel Committee - ES Department (chair), Center for Pacific Islands Studies  
 2009 Department Personnel Committee (chair), Center for Pacific Islands Studies  
 2008 College of Natural Sciences, UH Manoa Program Review Committee  
 2003 to Present  
 Associate faculty in Culture and Ethnicity with the College of Social Sciences  
 Public Policy Center  
 2002 to 2005  
 University Council on Program Reviews  
 2000 - 2001  
 Arts and Sciences Educational Planning and Policy Core Curriculum  
 Committee  
 2000 West Oahu College Selection Committee for Hawaiian Studies Position  
 Social Sciences Core Curriculum Committee  
 1999 to 2004  
 Ka Papa Lo'i O Kanewai Coordinating Committee  
 1997 to present  
 Ethnic Studies Department Personnel Committee  
 1997 WASC Standard 7 Review Committee  
 1995 - 2002  
 Manoa Forum II

#### Professional Service

Bishop Museum Affiliate Faculty, Hawaiian and Pacific Studies, 2004 to present  
 Asian Pacific American History Collective, 2002 to present  
 Association of Asian American Studies, Board of Directors, 1999 - 2002  
Journal of Asian American Studies Editorial Board, 1998 to present  
The Contemporary Pacific Journal Editorial Board, 1998 to present

#### Community Service

Asian American/Pacific Islander Scholars Expert Panel of the National Park System  
 Advisory Board, 2014.

Native Hawaiian Cultural Communications Course, Department of Defense, 2009, 2010;  
 2011; June 2012, February 2014

Director, Moloka'i Land Trust, 2007 to present; Vice-President 2014 to present.

Native Hawaiian Cultural Communications Course, National Museum of the American  
 Indian Executive Training Session, Department of Defense, December 13, 2007,  
 Washington D.C.

Weaving Together Natural Resource Management and Native Hawaiian Cultural Needs,  
 U.S. Fish and Wildlife Service/Native Hawaiian Workshop, Winter 2007.

Continuing Medical Education Presentation, "Queen Emma Foundation: Auhea Ho'i He  
 Kauoha? Where is the Bequest," 2007

Co-chairperson, Humanities Scholar for Hawaiian Historical Society 2005 Conference, "  
 'Olelo Makuahine: New Hawaiian Language Based Resources"

Participant in the Moloka'i Ranch Community-Based Master Land Use Planning  
 Committee as a project of the Ke Aupuni Lokahi Moloka'i Enterprise Community  
 Governance Board, 2004

Sustainable Tourism Study, Native Hawaiian Advisory Committee, 2003

"Kaho'olawe: Rebirth of A Sacred Hawaiian Island," script writer and coordinator,  
 Exhibit at the Smithsonian Arts and Industries Building, June 5 to September 2, 2002.  
 Joint project of the Bernice Pauahi Bishop Museum, Community Development Pacific,  
 and Protect Kaho'olawe Fund in cooperation with the Smithsonian Asian Pacific  
 American Program, 2000-2002.

Bishop Museum New Trade Winds U.S.-China Trade Advisory Committee to Renovate  
 Hawaiian Hall, 2000, 2007, 2008

Hawaiian Historical Society, Board of Directors, 2000 – 2004

Reader to screen applicants, Inaugural Gates Millennium Scholars Program, 2000,  
 2001, 2002

U.S. Department of Interior, research and review of Report on the Reconciliation  
 Process Between the U.S. Government and the Native Hawaiian People, "From Mauka  
 to Makai The River of Justice Must Flow Freely," 2000

Grant Writing Team, Moloka'i Rural Empowerment Zone Application, submitted to  
 United States Department of Agriculture October 9, 1998 by The Community of  
 Moloka'i. The Moloka'i Community was designated a Rural Enterprise Community and  
 was awarded \$2.5 million.

Historic Hawai'i, Board of Directors, 1997 - 2005

PASH/Kohanaiki Study Group, convened by the Office of State Planning of the Hawai'i  
 State Department of Business, Economic Development, and Tourism to report to the

Hawai'i State Legislature on issues arising from the Supreme Court Ruling in PASH v. Nansay and options to help resolve the issues, 1997

Historian consultant, "Lili'uokalani: Hawai'i's Last Queen," produced by Vivien Ducat for the American Experience series of the Public Broadcasting System, 1996.

Vice-chairperson, Hawaiian Sovereignty Elections Council, initially appointed by the Governor of Hawai'i as the Hawaiian Sovereignty Advisory Commission, 1994 - 1996. The Council conducted the Native Hawaiian Vote in 1996.

Kohemālamalama O Kanaloa/Protect Kaho'olawe Fund, Board of Directors, 1996 to present. Secretary-Treasurer, 2006 to present.

Protect Kaho'olawe 'Ohana - O'ahu Access Coordinator, Liaison for the 'Ohana with the U.S. Navy, 1984 to 1999; Access Co-coordinator 2000 – present.

Expert Witness  
Civil Cases:  
Kostick v Nago, Civil No. 12-00184 JMS-LEK-MMM

Apiki Omerod v C. Brewer and Company, Ltd., Civil No. 03-1-0026

Arakaki v Lingle, Civil No. 02-00139 SOM-KSC

Walter John Kelly v 1250 Oceanside Partners, Civil No. 00-0912K I

Barrett v. Cayetano, Civil No. 00-00645 SOM/UEK

Office of Hawaiian Affairs, et al vs. Housing and Community Development Corporation of Hawaii, et al, Civil No. 94-4207-11 SSM, 1994 - 2001

Malama Makua v. Donald H. Rumsfeld, Civil No. 00-00813 (SOM) (LEK), 2001

Hanakeawe v. Nansay Hawaii, Inc., Civ. No. 90-316 (Kona)

Pele Defense Fund v. Campbell Estate

Pele Defense Fund v. Paty

Kamaka v. Department of Defense

Criminal Trespass Cases:  
State of Hawai'i v. Lloyd Pratt  
State of Hawai'i v. Kaupiko, CR. No. 97-116  
State of Hawai'i v. Kei'ikoa  
State of Hawai'i v. Kaleo Patterson  
State of Hawai'i v. Spalding  
State of Hawai'i v. Naeole

Administrative Hearings:

Before the State of Hawai'i Water Commission in the Na Moku Aupuni O Ko'olau Hui Case, 2005

Before the State of Hawai'i Water Commission in the Kamiloloa Aquifer Case, 1997

Before the State of Hawai'i Water Commission in the Ewa Marina Case, 1996

Before the State of Hawai'i Water Commission in the Waiahole Water Case, 1996

Before the Public Utilities Commission, Docket # 7259 Relating to Hawaiian Electric Light Company, Regarding Integrated Resource Planning, 1993

Before the Public Utilities Commission, Docket # 6617 To Require Energy Utilities in Hawai'i to Implement Integrated Resource Planning, 1990

Humanities consultant, Japanese-American National Museum, Kona Coffee Exhibition, 1994

Vice-chairperson, Hawaiian Sovereignty Advisory Commission, appointed by the Governor of Hawai'i to advise the Legislature on the organizing of a convention to draft an organic document for a sovereign Hawaiian nation, 1993.

Member, Hawaiian Electric Company Advisory Groups on Supply-Side Resources and Integration Plan for the Integrated Resources Management Plan. Statewide Panel Presentations on "Externalities," 1992 - 1993.

Consultant, U.S. Navy advisory group to develop a Cultural Resources Management Plan for Kaho'olawe Island as a historic property on the National Register of Historic Places, 1992.

Governor's Planning Committee on Kaho'olawe, 1990 - 1993.

Hui Malama I Na Kupuna O Hawai'i Nei - member, organization is taking responsibility for proper treatment of native Hawaiian burials, 1989 - 1991.

Interim O'ahu Advisory Council on Burials, Department of Land and Natural Resources, State Historic Preservation Office - member, 1989 - 1991.

Pele Defense Fund - Consultant on the Integrated Resource Plan, pro bono, 1989 to 1994.

Selection Committee for Hawai'i Filmmaker's section of the Hawai'i International Film Festival, 1990.

Academic Humanist Scholar for Projects of the Hawai'i Committee for the Humanities:

2009 Hawai'i Book and Music Festival, Essay on "Importance and Significance of "Place" as Kānaka 'Ōiwi," Sense of Place Tabloid, Moderator of Panel on this topic.

"Timeless Craft: Building Mauloa" documentary film, Humanities Scholar, 2009

"Biography Hawai'i: Five Lives, A Series of Public Remembrances," Scholar for programs on Prince Jonah Kūhiō Kalaniana'ōle, and Kōji Ariyoshi, sponsored by the Center for Biographical Research of the University of Hawai'i, Manoa and Hawai'i Public Television, 2002 - 2004.



COMMISSION ON WATER RESOURCE MANAGEMENT  
STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILLO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKAA, WAIÖHUE,  
PAAKEA, WAIĀAKA, KAPAULA,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF EARL SMITH, SR.

DECLARATION OF EARL SMITH, SR.

I, Earl Smith, Sr., declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I live in Kaupō.

4. My family has about four to five acres of on property irrigated by Waiokamilo Stream. Not all of our lo'i are open because there is not enough water.

5. Traditionally, my family gathered 'ōpae, 'o'opu, and hihiwai from Hanawi, Makapii, and One'o streams.

6. My family also traditionally fished along the East Maui shoreline near the mouth of Honopou, Hanehoi/Puolua, Waikamoi Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaka, Kapaula, Hanawi, Makapii, and Waiōhue.

"The Panalā'au Years: Survivor - Hawaiian Style," with the Bishop Museum, 2002.

"1898 – 1998: Rethinking the U.S. in Paradise," with the American Friends Service Committee, Principal Humanities Scholar, 1998.

"Indigenous Voices", East-West Film Festival, Principal Humanities Scholar, 1993.

Papakolea: Where the Shorebirds Land, " Humanities Scholar, 1992-93.

"Kaho'olawe: Aloha 'Aina Film Project," Principal Humanities Scholar, 1988 - 1994.

"Hollywood's Hawaii", panel discussant, Principal Humanities Scholar on the portrayal of Hawaii's people in film, 1992.

"Let's Talk About It," lecture/discussion on Ho'i Ho'i Hou and Malama Hawaiian Land and Water collections of poems and essays in various community libraries, 1989, 1990.

"Let's Talk About It," lecture/discussion on Hawaii's Story By Hawaii's Queen, 1986, 1988, 1989, 1990

"People Speaking," discussion on outstanding women of Hawai'i in conjunction with a play on Mother Jones and Mary Bethune, 1986

Humanities in the libraries, discussion on video regarding the issue of reparations for Native Hawaiians, 1986

"Papa Hana Lanai: Future Changes and Alternatives for the People of Lanai," 1977  
Pacific Concerns Resource Center, Advisor, Steering Committee, 1981 to 1989.

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAAU,  
PALAUHULU, \*OHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILILUA, PUAKAA, WAIHUE,  
PAAKEA, WAIKAAKA, KAPAUOLA,  
HANAWI and MAKAPIPI STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF EDWARD WENDT

DECLARATION OF EDWARD WENDT

I, Edward Wendt, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.

3. I am the president of Nā Moku Aupuni O Ko'olau Hui.

4. I am a taro farmer. I farm kalo on more than one acre of land irrigated by Waiokamilo, Kualani, and Wailua.

5. My family has been in Wailuanui for six generations. I still farm on lands that trace back to the Māhele on my mother's side (Kaiha'a-Waila'ahia-Lu'ukia). I farm the same taro patches, 'auwai, and rivers in the same traditional and customary manner. That knowledge was passed on to me through the generations.

6. My ancestors are buried in Lakini and at St. Gabriel's Church located in Wailuanui.

7. Traditionally, my family engaged in mālama 'āina and mālama kahawai in the above streams by only taking what they needed for their 'ohana and to share with family and neighbors.

8. Currently, my 'ohana gathers 'ōpae, hiliwai, and 'o'opu in Hanawi. It's the only place where I can find these living things. The other streams are dead.

9. Currently, my 'ohana fishes for moi, aholehole, manini, and eneneue along the East Maui shoreline near the mouth of Honopou, Hanehoi/Puolua, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaiilua, Piinaau, Palauhulu, \*Ohi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopililua Puakaa, Paakea, Waiakaa, Kapaula, Hanawi, Makapipi, and Waiohue. There has been a depletion of fish. Eneneue used to be there by the schools but now there are less. Only the strong survive.

10. My family also practices mālama 'āina/mālama kahawai in and around the above streams by only taking what we need, not to sell. I work with marine biologists so the scientists can survey/research environmental impacts and depletion of resources from Hana to Keanae. I also plant native plants.

11. I gather and fish for home consumption and to share if I have more than enough. I also gather and fish to teach my kids and grandkids how to live off the land and sea (fishing, gathering, hunting) to survive after I'm gone.

12. In the past, my family used to wash clothes and swim in the stream.

13. When I go to the streams, I take in the beauty. I don't alter what's there, what's beautiful. The way it was, that's the way I leave it.

14. The lack of stream flow is a problem for me because my grandkids don't have the experience or resources to gather what they need from the land and water. The lack of water has caused too much pilikia. When nobody cares, nobody understands our practices and our need to harvest. It pains me. It's very emotional.

I declare under penalty of perjury that the foregoing is true and correct.

EARL SMITH, SR.



7. Traditionally, my family gathered 'ōpae, 'ō'opu, and hihiwai from Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.
8. My family also traditionally fished for uhu, u'u, kole, ulua, 'uku, kumu, moi, honu, and anae in or near the mouth of Honopou, Hanchoi/Puolua, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.
9. Traditionally, my family engaged in mālama 'āina and mālama kahawai by being careful not to overharvest the stream animals as well as clearing the vegetation or rubbish blocking stream flow in and around Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.
10. Currently, I gather 'ō'opu and hihiwai in Honomanu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Hanawi, Makapipi, and Waiohue. I also fish for moi, enenue, manini, uaouao, ulua, and anae in or near the mouth of Honomanu, Nuaailua, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Hanawi, Makapipi, and Waiohue.
11. I also engage in mālama 'āina and mālama kahawai by clearing stream banks of vegetation and rubbish that otherwise block stream flow in and along Honomanu, Piinaau, Palauhulu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Hanawi, and Waiohue.
12. For me, gathering and fishing from the streams enables me to provide a protein source to my 'ohana and neighbors, including kupuna, who may be unable to gather and catch their own fish. I also aim to teach the 'ōpio the traditional practices to mālama streams and gather and fish from the streams and coast lines.
13. I appreciate viewing and visiting Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, and East

Wailuaiki. Every morning, my wife and I walk up to Waikani (Wailuanui) waterfall to enjoy the view and experience the beauty of this area.

14. Dewatering the streams prevented my generation from teaching 'ōpio how to mālama streams and use techniques wisely to gather from streams and fish along coastline near the muliwai.
15. The diminished stream flow has negatively affected the muliwai and the coastal fisheries, including a fish sanctuary in Hana that depends on the water. Much of my kalo could not survive the emptying of these streams, so it has made farming more difficult. The lack of stream flow has also allowed vegetation along the stream banks to block the stream beds, and has permitted invasive snail species and African tulips to take over the taro crop. Additionally, some of my neighbors have abandoned kalo farming because the streams had stopped flowing. Ultimately, the loss of stream water has changed the whole way of life in Wailuanui-Ke'anae. It takes more time to find the resources to gather, which robs me of my time for recreation and time with my 'ohana.
16. If there was enough water in the streams, I would gather and fish as my family before me did. I would gather 'ōpae, 'ō'ōpū, and hihiwai from Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. My family would fish for uhu, uu, kole, ulua, 'uku, kumu, moi, and honu (if it were legal, of course) in or near the mouths of Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Hanawi, and Waiohue.
17. If there was more water in the streams, I would continue to clear stream banks of the vegetation and rubbish that would otherwise block stream flow.
18. If water was returned to the streams, I would appreciate viewing and visiting Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.
19. Many original members of Na Moku have died since we first petitioned for the return of water to these streams. It makes me sad and lose hope. They never lived to see the



water return to the lo'i in 2008. I am afraid I will not live to see the return of the water we are now fighting for.

20. Without the water, my whole way of life would be lost. Corporations last forever. Traditional people do not. Crown lands should be set aside for the benefit of the people.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Honolulu, Hawai'i, September 10, 2014.

  
EDWARD WENDT

# COMMISSION ON WATER RESOURCE MANAGEMENT

## STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PINAAU,  
PALAUHULU, 'OHIA (WAIANU),  
WAJOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILULA, PUAKAA, WAIHUE,  
PAAKEA, WAIKAA, KAPAULA,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01

SUPPLEMENTAL DECLARATION OF  
EDWARD WENDT

### SUPPLEMENTAL DECLARATION OF EDWARD WENDT

I, Edward Wendt, declare that:

1. The statements below are based upon my personal knowledge.
2. My family has been in Wailuanui for six generations. I still farm on those lands.
3. I am very familiar with the layout of Wailuanui.
4. I know who is farming and where their farms are located.
5. During my lifetime, I became aware of taro farmers leasing the State land consisting of approximately 120 acres, located in the ili of Kupau in Wailuanui Valley, and designated as TMK 1-1-08-5, on the map marked as Exhibit A-143.
6. Exhibit A-142 is a large map made up of three separate tax maps (Tax Maps 1-1-04, 1-1-05, and 1-1-06) depicting areas of taro farming based on what I know and have seen in Wailuanui over the many years that I have lived in the valley.
7. I have also identified on this map, marked as Exhibit A-142, where the supporting 'auwai system is located and how the water flows in it.

8. This map is a true and accurate depiction of the location of 'io'i (as shown in green highlighting), the farmers associated with each (as shown on orange labels), and the supporting 'auwai system (as shown in blue highlighting).

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Wailua, Maui, Hawai'i, December 24, 2014.

  
EDWARD WENDT

# COMMISSION ON WATER RESOURCE MANAGEMENT

## STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PINAAU,  
PALAUHULU, 'OHIA (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKAA, WAIOHUE,  
PAAKEA, WAIATAKA, KAPAUULA,  
HANAWI and MAKAPIPI STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF EMILY WENDT

### DECLARATION OF EMILY WENDT

I, Emily Wendt, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I was born April 7, 1925 in Hana.
4. My parents were James Akiona and Ellen Higgins.
5. My family consisted of my parents, five brothers and three sisters.
6. I was the fourth born of the family.
7. Until 15 years old, from 1925 through 1940, I lived in a house in Keanae peninsula.
8. Thereafter, my family sent me to Maunaloa Seminary, where I boarded and received my education until the 10<sup>th</sup> grade.

9. While going to school, I visited Wailuanui periodically to visit and stay in touch with my 'ohana.
10. I got married to Donald Wendt and raised my family of five children in Kahului, where I still reside.
11. During the years I was raising my children, my husband and I visited Wailuanui-Keanae as frequently as weekly.
12. My grandmother, Helena Akiona, who used to live at Lakini, is still buried at St. Gabriel's Church located in Wailuanui.
13. My father died when I was nine years old.
14. When I was between the ages of 10-13, I and my older cousin, Dorothea Lum Ho, who taught me how to gather, would gather 'ōpae, 'o'opu, and hihiwai from Palauhulu, Waioamilo, Kualani, Hanawi, Wailuanui Streams.
15. My family also traditionally fished for popa'a, hinalé'a, and kupipi from the shoreline near the mouths of West Wailuaiki and Wailuanui Streams.
16. My brother Jimmy, who was my senior by six years, would bring me by canoe to the shoreline near the muliwai of Wailuanui, Kopiliula, and Waiohue Streams to swim and pick opihi. He taught me the most about how to fish and gather.
17. My father, uncle, brothers and cousins also shared and supplied the family with u'u, enenue, kole, ulua, kumu, moi, honu, aholehole and anae, which they fished in or near the mouth of Wailuanui and West Wailuaiki.
18. My family raised pigs, chicken, and cattle while I was growing up in Keanae.
19. My brother Jimmy and I helped raise and brand pipi in our back yard
20. For me, gathering and fishing from the streams and coastlines near streams was a very important food source to my 'ohana. In fact, most of the food we ate came from what my 'ohana fished, gathered or raised.
21. I recall my relatives, the Akinas, Nakanceluas, and Ka'auamos, as well as my neighbors, all raising taro in Wailuanui and Keanae valleys as the staple for our diets.
22. Many of these families pounded their own poi, as I was taught to do when I was old enough.

23. When my father typically went shopping for food, he only purchased a few items, like sugar, cream, rice, and cookies.
24. The rest of our diet came from what we raised, fished and gathered.
25. As a youth in Wailuanui-Keanae, my 'ohana lived a very basic life living off the land and sea.
26. As I was growing up in Wailuanui-Keanae, I was not aware of any complaints against East Maui Irrigation Company about how much water was available in the lo'i and auwai of the valleys.
27. To this day, my nephew Norman Akiona and son Ed catch fish like papio, enenue, pala, manini, and kole from the Wailuanui-Keanae area for me to eat.
28. It makes me sad and lose hope when I see so many original members of Nā Moku who have died since we first petitioned for the return of all water to these streams; water that would support more taro growing, gathering, and fishing along the mouths of those streams.
29. I do not understand why Nā Moku members who started in 2001 have had to wait so long for the return of the water.
30. I think the priority should be to leave water in East Maui streams so the people who used it traditionally can continue to survive like my 'ohana used to be able to do.
31. To me, I don't know why Hawaiian Commercial and Sugar insists on diverting water that is so important to Hawaiian traditions and customs.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Kahului, Maui, Hawai'i, December 17, 2014.

  
EMILY WENDT

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PINAAU,  
PALAUHULU, 'OHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKAA, WAIOHUE,  
PAAKEA, WAIKAKA, KAPAULA,  
HANAWI and MAKAPIPI STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF GLADYS KANOA

DECLARATION OF GLADYS KANOA

I, Gladys Kanoa, declare that:

1. The statements below are based upon my personal knowledge.
2. I am a member of Na Moku Aupuni O Ko'olau Hui.
3. I am the wife of Isaac Kanoa.
4. Isaac and I farm kalo and lū'au on about four acres of property in Ke'anae irrigated by Palauhulu stream. I also farm about five acres of land in Waianu Valley, located between Wailuanui and Ke'anae, that are irrigated by water from Waiokamilo.
5. As part of farming, I help take care of the streams by cleaning the 'auwai to make sure water reaches everyone who needs it.

6. We enjoy swimming in the ponds of Waiokamilo, Palauhulu, and Piinaau.
7. I appreciate the natural beauty of Ke'anae, including its streams, when I am out on the farm.
8. One of my biggest concerns with the lack of water is the warmth, which is not good for the taro. The water is warm in our patches, some of which are near the top of the 'auwai system.
9. Apple snails are a big problem in Ke'anae and affect the quality of the taro. They like warm water. They hibernate in the winter because they don't like cold water.
10. The lack of water has also created a tension in the community as farmers and families compete for water.
11. If there was more water in the streams, Isaac and I would open up more patches. We would continue to clean the 'auwai to make sure enough water reaches all of the patches that feed our community.
12. If there was more water, we would enjoy swimming in the ponds of East Maui.



COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

CASE NO. CCH-MA13-01  
DECLARATION OF HARRY HUEU

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMO,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAAU,  
PALAUHULU, 'OHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILILUA, PUAKAA, WAIOHUE,  
PAAKEA, WAIATAKA, KAPAILA,  
HANAWI and MAKAPII STREAMS

DECLARATION OF HARRY HUEU

I, Harry Hueu, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni O Kō'olau Hui.
4. I was born on May 29, 1939. I was born and raised in the Ke'anae/Wailua area.
5. My father was James Hueu. He was a taro farmer and a foreman for EMI. My father had about three acres of taro. He never had a problem with the water.
6. Growing up I was always in the taro patch. When we came of age, we did it.
7. In 1976, my main focus became growing taro. The lo'i I farmed was about five acres on family land as well as land now owned by Dr. Keppler and EMI that was irrigated by Piinau and Palauhulu. I also once farmed some land in Wailua irrigated by Waiokamilo. The land used to farm taro produced about 75 85-pound bags a week.
8. My son, Aukai Hueu, took over the farming about six years ago.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Ke'anae, Maui, Hawai'i, December 21, 2014.

  
GLADYS KANOA



9. Traditionally, my 'ohana gathered 'ōpae and 'o'opu in Honomanu, Nuailua, Palauhulu, and 'Ōhi'a. We would also get akule from Honomanu and Nuailua and pohole from 'Ōhi'a.
10. Traditionally, my 'ohana dove or fished for kole, moi, enenue, pāpio, uhu, kumu, menpachi, and 'opihi in or near the mouths of Piinau and Palauhulu.
11. My 'ohana also engaged in mālama 'āina and mālama kahawai at Palauhulu and Waikomilo by cleaning the stream and no make dirty. When I was farming, I would clean the flume every two weeks.
12. We also used to go to Waiole to picnic and catch akule. The kids would catch 'o'opu with small poles. We would go barbecue at Ke'anae landing.
13. Currently, my kids and grandkids gather 'ōpae, 'o'opu and hihiwai in Honomanu, Nuailua, Palauhulu, and 'Ōhi'a. There's not as much hihiwai now.
14. My kids also dive for kole, moi, enenue, pāpio, uhu, kumu, menpachi, and whatever else they can get in or near the mouths of Piinau and Palauhulu. They also gather 'opihi. I want to show my grandkids how to put the net.
15. The ditch is better for gathering than the streams. There is more 'ōpae. By the hundreds.
16. My son Aukai malamas Palauhulu by cleaning the ditches to make sure water is not blocked.
17. Our 'ohana still picnics at Waiole and barbecue at Ke'anae landing.
18. There is a big difference in stream flow since 1976. There is a big rock, maybe five to six feet tall, in Palauhulu by Ching's Pond. When there is plenty water, the water covers the rock almost to the top. Now it's low. Also, the water used to be bubbling; now no more nothing.
19. The water in Piinau has changed too. There used to be a pond called Lalaau near where Isaac Kanoa lives. It was always there when I was a kid, but not anymore.
19. I miss the sound of the water roaring.
20. I hate to say it, because it was my dad's working place, but I think EMI is taking more water now.
21. The lack of water has changed people in the community. Now people don't always mālama everyone.

22. The lack of water in the streams hurts the taro because instead we gotta depend on rain. If no rain, no water in lo'i. You gotta have water to raise taro.
23. If there was more water in the streams, my kids and grandkids would continue to gather 'ōpae, 'o'opu and hihiwai in Honomanu, Nuailua, Palauhulu, and 'Ōhi'a, fish in or near the mouths of Piinau and Palauhulu, mālama the 'auwai off Palauhulu, and swim, picnic, and enjoy each other's company at Waiole and Ke'anae landing.
24. If there was more water in the stream, I would be more confident that my son could continue farming our family lands and other property he takes care of for other community members.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Keanae, Maui, Hawai'i, 7 May, 2014.

  
HARRY HUEU

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PINAAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKEA, WAIHUE,  
PAAKEA, WAIKAHA, KAPAU, A,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF HEALOHA  
CARMICHAEL

DECLARATION OF HEALOHA CARMICHAEL

I, Healoha Carmichael, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni O Kō'olau Hui.
4. I grew up in Wailua/Ke'anae.
5. I learned traditional and customary gathering practices from my grandmother, 'Awapuhi Carmichael.
6. Traditionally, my 'ohana gathered 'ōpae, watercress, lū'au, hāha, pepeiao, hihiwai, pupulo'i and goldfish in Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaiiua, Pinaau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiōhue.

7. Traditionally, my family would also 'opihī on the way home from gathering and also catch 'o'opu at Waiōhue and Ching's pond in Palauhulu.

8. My 'ohana also engaged in mālama 'āina and mālama kahawai at Honomanu, Pinaau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiōhue by gathering according to the moon, not always going to the same places so we didn't overharvest the stream, and taking care of the kō'a's to keep the population up.

9. Currently, I gather 'ōpae in Pinaau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiōhue. I gather hihiwai in Waiōhue and Kopiliula. We have to go high in the mountains to find the 'ōpae and hihiwai. I understand the traditions my grandmother taught me, including what colors not to wear when gathering, how we should be quiet when we practice, and how we should walk on the sides of the river. I was taught to always look up at the mountain to look for big water.

10. I currently fish for moi, abolehole, uouo, and mullet in and around the mouths of Pinaau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi. I also dive for kole and pick 'opihī. Now, there's not much moi.

11. I gather to feed my family and as recreation.

12. I still engage in mālama 'āina and mālama kahawai as my grandmother taught me by gathering according to the moon and not always going to the same places so we don't overharvest.

13. We also enjoy swimming in Ching's Pond at Pinaau. Also, in some places the water is dirty and just sits because there's not enough flow. I got a staph infection four times just swimming in the water.

14. I've noticed the change in water flow. For example, at East Wailuaiki, you can see the ditch, see the water dropping, and look below and see the pond is completely dry. At Hanawi, one side is water, one side has nothing, then you see EMI's pipe. Mountain Pond at Pinaau is bone dry. So is Kikokiko Spring.

15. Most of the time, you have to wait for it to rain. If you wait a couple days for the rain to clear up, the streams are beautiful. Otherwise it's dry.

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PINAAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKAA, WAIHUE,  
PAAKEA, WAIKAHA, KAPULA,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF IRE KIMOKEO

16. If there were more water in the streams, I would gather ōpae and hihiwai in Piinau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapula, Hanawi, Makapii, and Waiohū.
17. If water were put back in the streams, I would continue to gather according to the moon and not always go to the same places.
18. If there was more water, I would keep fishing for moi, aholehole, uouo, and mullet in and around the mouths of Piinau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapula, Hanawi. I would also dive for kole and pick 'opihi.
19. If there was more water in the streams, I would swim in the ponds that are often dry today.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Keanae, Maui, Hawaii, 11/11/2014.

  
HEALOHA CARMICHAEL

DECLARATION OF IRE KIMOKEO

I, Ire Kimokeo, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni O Ko'olau Hui.
4. I am a taro farmer. My family grows kalo on about 1 acre of property in Keanae irrigated by Palauhulu and another water source that may be connected to Piinau.
5. My mother is Pualani Kimokeo. I have an interest in the land I farm based on my connection to Kailimoku, on my grandmother's side.
6. Traditionally, my 'ohana gathered pohole, 'opihi, 'ōpae, kalo, fish, lū'au leaf, pipi, bananas, strawberry guava and mango in and around Waikamoi, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula



Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. My family also hunted wild pig in those areas.

7. Traditionally, my 'ohana fished for moi, kole, uhu, ahole, enenue, kumu, and weke in or near the mouths of Puohokamoa, Haipuaena, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Wailua, and West Wailuaiki.

8. My 'ohana also engaged in mālama 'āina and mālama kahawai at Waikamoi, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue by always throwing the small fish back into the ocean. Also, when my family would hunt wild pig, we would try and let go the pregnant sows and babies to preserve for the future.

9. Currently, my 'ohana and I gather 'ōpae, fish, 'opihī, and hihīwai in and around Waikamoi, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. I also hunt wild pig in those areas.

10. I fish for moi, kole, and ahole in or near the mouth of Punalau/Kolea, Honomanu, Piinaau, Palauhulu, Wailua, and West Wailuaiki.

11. I farm, gather, and fish to feed my family, give to kupuna and to the people that cannot go. I just like māhele with the community.

12. I engage in mālama 'āina and mālama kahawai by cleaning the ditches and the flume by grandpa's house to allow for better water flow for the farmers and our family's lo'i around Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.

13. We also enjoy Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, and Wailua for recreation. We hunt, fish, and work taro patch.

14. I appreciate the natural scenery and beauty when I go down to Bird Island and down Nuaailua. I enjoy the scenery around Wahinepee, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, and Makapipi.

15. The lack of stream flow is a problem for my family because there is hardly any water for the taro patch. I also noticed we lost a lot of 'ōpae.

16. If there was more water in the stream, I would worry less about my kalo. I would expect more cool water to reach my loi

17. If there were more water in the streams, my 'ohana would gather 'ōpae, 'o'opu, hihīwai, and pohole in or near the mouths of Waikamoi, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.

18. If had more water, we would fish for moi, kumu, kole, ahole, and enenue in or near the mouths of Honomanu, Nuaailua, Piinaau, 'Ōhi'a (Waiuanu), Wailua, West Wailuaiki, and East Wailuaiki.

19. With more stream flow, I would clean the ponds and keep trying to conserve 'ōpae for the next generation in Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, and Kopiliula.

20. If there was more water in the streams, we would enjoy going down Bird Island and enjoy going up the mountain. I love to go up to the mountain and work on the watershed in the area of Wahinepee, Puohokamoa, Haipuaena, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Paakea, and Makapipi. It's what I enjoy the most. Being up in the mountains feels free.

21. There is something spiritual about being around the streams. I love Ke'anae and my family. With more water, I would continue to experience the natural beauty of this area, including Wahinepee, Puohokamoa, Haipuaena, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, and Makapipi.

I declare under penalty of perjury that the foregoing is true and correct.

IRE KIMOKEO

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKAA, WAIHUE,  
PAAKEA, WAIKAA, KAPAULA,  
HANAWI and MAKAPIPI STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF ISAAC KANOA

DECLARATION OF ISAAC KANOA

I, Isaac Kanoa, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. My mother is Victoria Young. Her mother's name was Keomailani Young.
4. My father's name is Isaac Kanoa. His father was Martin Kanoa, from Ke'anae. My father's mother was Esther Pueo Kahookole, from Nahiku.
5. I have about four acres in kalo and li'i'au. I currently farm land in Ke'anae from my grandmother's side. I also farm property owned by Bill Kepler, Janet Akau, Naome Ching, Jojo Chong Kee, the State, and EMI. These lands are irrigated by Palauhulu.

6. I also farm about five acres of land in Waianu Valley, located between Wailuanui and Ke'anae, that are irrigated by water from Waiokamilo.
7. As far as gathering, I follow in the tradition of my father, who showed me how to do it.
8. Traditionally, my 'ohana gathered 'ōpae, hihiwai, and 'o'opu in all the streams from Honopou to Makapii.
9. Traditionally, my 'ohana would throw net, dive, or troll for aholehole, moi, aku, enenue, u'u, uhu, and kole all along the coast from Honopou to Makapii. My 'ohana also gathered 'opihi.
10. I gather 'ōpae, hihiwai, and 'o'opu in Piinau, Palauhulu, Kopiliula, PUakaa, Paakea, Waiakaa, Kapaula, Hanawi, and Makapii. Hardly get any 'o'opu because of the introduced prawns. I also catch akule in Waiohue.
11. I currently fish for the same types of fish in the same way my grandfather did along the coast from Honopou to Makapii. I slowed down fishing about eight years ago.
12. Besides making a living and feeding my family, the purpose of my farming, gathering, and fishing is to teach my kids, my son-in-law, and my grandkids the traditions that my father taught me.
13. I currently mālama Piinau, Palauhulu, and Waiokamilo by cleaning the ditches and streams and cleaning the bamboo out of Palauhulu. Also, during droughts, I close off some of my patches to ensure that more water goes to the people below.
14. My 'ohana enjoys swimming in ponds in Waiokamilo and at Ching's Pond in Palauhulu. My kids have also fished in Ke'anae stream, which is where Palauhulu and Piinau meet.
15. Appreciating the beauty of this place where I live and farm is a given. We are farmers. Piinau and Palauhulu are beautiful.
16. The water is warm even up in my patches, which are right near the flume. My patches that are further down are much warmer. Warm water indicates low flow. If my water is warm, then the guys on the bottom must have really warm water. If I had more lo'i, there wouldn't be enough cool water to sustain them.



17. If there was more water in the streams, I would open up more patches.
18. If streamflow came back, my kids and grandkids would gather 'ōpae, hihiwai, and 'o'opu in Piinau, Palauhulu, Kopiliula, Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, and Makapipi, catch akule in Waiohue, fish as I learned along the entire East Maui coast from Honopou to Makapipi, and continue to mālama Palauhulu and Piinau by cleaning the rivers that feed us.
19. If there was more water in the stream, I would be more confident that my son-in-law could continue farming our family lands and other property he takes care of for other community members.
20. I am very familiar with the layout of Ke'anae.
21. I know who is farming and where their farms are located.
22. Or I have identified on maps marked as Exhibits A-140 and A-141 and showing the tax map numbers 1-1-03 and 1-1-07, respectively, the areas of taro farming (as shown in green highlighting) and the farmers associated with each area (as shown on orange labels) based on what I know and have seen in this area over the many years that I have lived in Ke'anae.
23. I have also identified on the map marked as Exhibit A-140 where the supporting 'auwai system is located and how the water flows in it (as shown in blue highlighting).
24. Both maps are true and accurate depictions of the location of lo'i and/or the supporting 'auwai system.

I declare under perjury that the foregoing is true and correct.

I declare under penalty of perjury that the foregoing is true and correct.  
DATED: Ke'anae, Maui, Hawai'i, December 21, 2014.

Isaac Kanoa  
ISAAC KANOA

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAU,  
PALAUHULU, 'OHIA (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILUULA, PUAKAA, WAIHOUE,  
PAAKEA, WAIKAHA, KAPAUHA,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF JAMES KIMO  
KAAA

DECLARATION OF JAMES KIMO KAAA

I, James Kimo Kaaa, declare that:

1. The statements below are based upon my personal knowledge.

2. I am Hawaiian.

3. I am a member of Nā Moku Aupuni O Ko'olau Hui.

4. I am a taro farmer. I am trying to grow taro on property irrigated by Piinaau, Palauhulu, Waiokamilo, Kualani, and Wailua streams. Unfortunately, the source is not dependable. I am at the end of the line so I don't get sufficient water to maintain the correct levels and temperatures. If the water level gets too low, the weeds start to grow and overtake the field. Without a constant, continuous, cool flow, it's hard to make it work.

5. I am farming this land based on my responsibility to maintain the culture by keeping alive the traditions and practices that the people before me exercised here. Money is not the driving force. It's about doing what is right in the place that I live. It's about respect for all the generations that came before.

6. I learned how to farm taro from many taro farmers, including Ed and Carl Wendt and Bush Martin. I try to gain information from everyone I know who grows taro and is willing to share their knowledge. Different farmers have different ways of farming based on knowledge each one gathered over time – types of taro grown, how and when to care for the lo'i, and the amount and quality of water ideal for growing.

7. I gather 'ōpae and 'o'opu from Wailua stream and fish for mullet and moi in or near the mouth of Wailua. I learned how to gather and fish from kupuna and fishermen who shared their knowledge with me. It started when I was young.

8. I mālama 'āina and mālama kahawai in and around Waiokamilo, Wailua, and Waikani by education, awareness, and involvement. Education is key. To know where the streams ran in the early days, how they were maintained, how they flowed, what areas they fed, where the gathering spots for certain species like 'ōpae and 'o'ōpū can be found. Also to be aware of the effects of the lack of water flow on the ecosystem. Get involved, whether it be by community stream clean up or even discussions on what more needs to be done. For myself, I look at things differently from others. These streams are more than just places to gather from. I see 27 streams that used to be 27 nurseries for both land and sea. What happens to these streams impacts the whole island. Life that depended on this water flow has no other place to go, whether it be for spawning or just protection (a lot of fish sleep upstream for protection, i.e., mullet, aholehole, and even pāpio). The streams not only affect gathering but the island itself. Like everything in life needs water, so does the 'āina. Take care of Haloa. Haloa take care of you. Take care of 'āina, 'āina take care of you.

9. I appreciate the natural scenery of Waikani (Wailuanui).

10. For me, gathering and fishing from the streams is to support my family and sustain life.

11. Because of the lack of stream flow, I am unable to do the necessary farming and gathering needed to supplement my family's needs. At one point, the water was so low that I had to sponge water into my taro patch.

12. Sometimes I spend all day trying to find 'ōpae and 'o'opu, but see only one or two in the water. I return home empty-handed out of respect for the rehabilitation process. It is frustrating because it is a waste of an entire day. Because of the amount of time and effort to find

the resources, there is less time for recreation. Recreation used to be built into the whole day – hiking, catching fish, swimming, and then returning. It's not like that anymore.

13. Now that there is more effort involved in just finding the 'ōpae and 'o'opu, because they have to travel further upstream, there's no time for recreation or to stop and enjoy the natural beauty. The further you have to go, the more difficult it is to do recreation. However, farmers do what they do because there is enjoyment that comes with it – no matter how hard or back breaking the work is.

14. There are many invasive species below the diversion. One example is the African tulip. Native species are being crowded out. This requires additional work to weed out the African tulips from taking over the loi. This additional work takes time away from our other work and opportunities to be with our families.

15. There has also been a lot of displacement of families due to the lack of resources.

16. People are opening up new patches which require more water. As I understand it, there have been leases arranged for approximately fifteen more patches. More patches means more water is needed.

17. If there was enough water in the streams, I would gather 'ōpae and 'o'opu from Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. I would also fish for mullet, moi, ahole, manini in or near the mouth of Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. I would also continue to mālama these streams and the areas around them by clearing the streams to prevent blockage of the natural water flow.

18. If there was more water in the streams, I would appreciate the natural scenery that comes from restoring water and health to this area. There is beauty in putting life back into the streams and seeing them as they are supposed to be.

I declare under penalty of perjury that the foregoing is true and correct.  
DATED: Wailuku, Maui, Hawai'i, December 24, 2014.

  
JAMES KIMO KAAA



COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKEA, WAIHUE,  
PAAKEA, WAIKAHA, KAPULA,  
HANAWI AND MAKAPIPI STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF JEROME K.  
KEKIWI, JR.

DECLARATION OF JEROME K. KEKIWI, JR.

I, Jerome K. Kekwi, Jr., declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni O Kō'olau Hui.
4. My family has an interest in property in proximity to Palauhulu and Waikani (Wailuanui) Streams.
5. I am farming this land based on my family roots dedicating my life to Haloa and the Hawaiian culture here in Wailuanui.
6. I am a taro farmer. My family grows kalo on about five acres of property irrigated by Piinau, Palauhulu, Waioakamilo, Kualani, and Wailua.
7. Traditionally, my family gathered 'ōpae, 'o'opu, and hihiwai from Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau,

Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapii, and Waiohūe. My 'ōhana also gathered watercress, pepéiao, bamboo shoot, banana, and pohole in those same streams.

8. My family also traditionally fished for turtle, moi, mullet, aholehole, uha, akule, and enenue in or near the mouth of Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapii, and Waiohūe. My 'ōhana also gathered limu in or near the mouths of those streams.

9. Traditionally, my family engaged in mālama 'āina and mālama kahawai by being good stewards at Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapii, and Waiohūe.

10. Currently, I gather 'ōpae, hihiwai, and prawns in Honomanu, Piinau, Palauhulu, Waioakamilo, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Hanawi, and Makapii. Before, there was plenty 'ōpae. You could just grab them from the water. Now, not so much. It takes about four hours to walk to where you can gather. Before you could just get out of the car and you would see them. These days there is sometimes nothing and you need to turn around empty-handed.

11. Currently, I fish for moi, aholehole, anae, pāpio, and enenue in or near the mouth of Honomanu, Nuaailua, Wailua, Waikani (Wailuanui), West Wailuaiki, and East Wailuaiki.

12. I engage in mālama 'āina and mālama kahawai by clearing the streams, cutting the grass, removing hau bush and big stones in and around Honomanu, Piinau, Palauhulu, Waioakamilo, Wailua, and Waikani (Wailuanui).

13. I gather and fish from the streams to eat and keep our traditions going.

14. When gathering, I will stop for a while to take in the natural beauty of Wahinepee, Honomanu, Nuaailua, Piinau, Palauhulu, 'Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, and Puakaa.

15. I also use the streams for other purposes, including washing dishes and bathing.

16. Without water, I have a hard time farming kalo. The kalo I do grow is more often diseased because of the lack of stream flow.

17. The lack of stream water below the diversions means I need to walk much farther to gather 'opae, hihiwai, and prawns. There is also less fish near the shoreline for me and my 'ohana to catch. Because of all of this, many of my 'ohana had to move away to find a "better" life.

18. If there was enough water in the streams, I would gather and fish like my kupuna did. My family and I would gather 'opae, 'o'opu, hihiwai, prawns, water cress, pepeiao, bamboo shoot, banana, and pohole from Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waikamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. My family and I would fish for moi, mullet, aholehole, uha, akule, enenue, pāpio, and anae in or near the mouth of Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waikamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.

19. If the water was to flow again, I would continue to go to the streams to mālama Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waikamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.

20. If stream flow was restored, I would be able to enjoy the recreational activities that our kupuna enjoyed, including, for example, swimming in Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waikamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.

21. If water was returned to the streams, I would appreciate the beauty of Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waikamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. To me, more water means more beauty.

I declare under penalty of perjury that the foregoing is true and correct.  
DATED: Wailua, Maui, Hawai'i, September \_\_, 2014.

  
JEROME K. KEKIWI, JR.  
11/4/2014



COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOAO,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKAA, WAIHOUE,  
PAAKEA, WAIKAA, KAPULA,  
HANAWI and MAKAPIPI STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF JOSEPH "JOJO"  
YOUNG

DECLARATION OF JOSEPH "JOJO" YOUNG

I, Joseph "Jojo" Young, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a taro farmer.
4. My family grows kalo on property irrigated by Waiokamilo Stream.

Approximately three to four acres of our ten acres are in taro.

I am farming this land based on my lease and ownership of certain Wailua parcels that have been farmed by my family for generations.

I learned how to farm taro on these lands from my father, Joseph Young Sr., who fed and supported his entire family as a full-time taro farmer. The traditional knowledge my father passed down to me was passed down to him by my grandparents, Kemalani Wong and Aima Young, who farmed taro on these lands during their lifetime.

7. Traditionally, my family gathered 'ōpae from West Wailuaiki, East Wailuaiki, Puakaa, Hanawi, and Makapiipi. My 'ohana gathered hiihiwai from Hanawi.
8. My family also traditionally fished for moi, aholehole, anae, 'opihi, akule, enenue, and aweoweo in or near the mouth of Honopou, Hanehoi/Puolua, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaka, Kapaula, Hanawi, Makapiipi, and Waiohue.
9. Traditionally, my family engaged in mālama 'āina and mālama kahawai in West Wailuaiki, East Wailuaiki, Puakaa, Hanawi, and Makapiipi by gathering only as much 'ōpae as they needed and nothing more.
10. Currently, in addition to kalo farming, I gather 'ōpae in Piinau and Palauhulu only. The other streams do not have enough water to support my gathering. I gather maybe two or three times a year in order to supply food for 'ohana gatherings on special occasions.
11. I no longer fish because I'm older now. I am 65 years old.
12. I continue to practice mālama 'āina and mālama kahawai in Piinau and Palauhulu by gathering 'ōpae for my current needs. I never take more than I need.
13. I am unable to gather from all of the streams I would have in the past because many of the streams are now "dead." They are not getting enough water. The lack of stream flow is a problem for me because it puts more pressure on other resource areas I wouldn't normally use or access. I also have to rely on other family members to provide food I used to be able to gather myself. I also sometimes have to spend money to provide substitute foods for meals and special occasions, though there really is no substitute for the 'ōpae I get myself.
14. If there was enough water in the streams, my 'ohana would gather 'ōpae in any stream that has 'ōpae but only as much as we needed for our 'ohana. My family would continue to gather 'ōpae from West Wailuaiki, East Wailuaiki, Puakaa, Hanawi, and Makapiipi.
15. If there was more water in the streams, the next generation of my 'ohana would fish for moi, aholehole, anae, 'opihi, akule, and enenue aweoweo in or near the mouth of Honopou, Hanehoi/Puolua, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani,

Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue as my kupuna did.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Lahaina, Maui, Hawai'i, November \_\_, 2014.

  
JOSEPH "JOJO" YOUNG

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PI'NA'AU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKAA, WAIOHUE,  
PAAKEA, WAI'AAKA, KAP'ULA,  
HANAWI and MAKAPIPI STREAMS

CASE NO. CCH-MAI13-01  
DECLARATION OF JONAH  
KUPONOIKEAUEA HUEU

DECLARATION OF JONAH KUPONOIKEAUEA HUEU

I, Jonah Kuponoikeauea Hueu, declare that:

1. The statements below are based upon my personal knowledge.

2. I am Hawaiian.

3. I am 19 years old.

4. For the last four years, I have lived with grandparents, Harry and Sandy Hueu in Ke'anae/Wailua.

5. I learned a lot about growing taro, gathering, and fishing from my grandpa.

6. According to my grandfather, my family used to gather 'ōpae and 'o'opu in Honomanu, Nuailua, Palauhulu, and 'Ōhi'a. They would also get akule from Honomanu and Nuailua and pohole from 'Ōhi'a.

7. Traditionally, my 'ōhana dove or fished for kole, moi, enenue, pāpio, uhu, kumu, menpachi, and 'opihī in or near the mouths of Pīnaau and Palauhulu.

COMMISSION ON WATER RESOURCE MANAGEMENT  
STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAUU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILILUA, PUAKEA, WAIOHUE,  
PAAKEA, WAIATAKA, KAPAULA,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF JONAH JACINTHO

DECLARATION OF JONAH JACINTHO

I, Jonah Jacintho, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. My family has an interest in property near Honopou. We grow kalo on that property, which is about two acres. I have my own lo'i as do my aunt and sister.
4. I am farming this land based on my family history and the practices passed down to me.
5. I learned how to farm taro from Aunt Beatrice Kepani Kekahuna and Lurlyn Scott.
6. Traditionally, my 'ohana gathered pohole, fish for enenue, 'o'opu, watercress, hihiwai, prawns, banana, limu, bamboo, and ulu in and around Honopou.

8. My 'ohana also engaged in mālama 'āina and mālama kahawai at Palauhulu and Waioakomilo by cleaning the stream and no make dirty. When I was farming, I would clean the flume every two weeks.

9. Currently, I help gather hihiwai from Palauhulu. I go swim in the pond and bring home hihiwai to my grandparents. There's not that much hihiwai.

10. I also fish and dive for whatever I can get down Ke'anae, which is fed by Piinaau and Palauhulu.

11. My grandfather wants me to work the taro patch. Sometimes I help Aukai at the lo'i, working the patch and cleaning the ditches.

12. If there was more water in the streams, I would definitely continue the traditions I learned from my grandpa. I would gather hihiwai from Palauhulu, fish in the waters off Piinaau and Palauhulu, work the taro patch, and help keep the streams and ditches clear.

I declare under penalty of perjury that the foregoing is true and correct.

JONAH KUPONOIKEAUEA HUEU



7. Traditionally, my 'ohana fished for moi, enenue, aholehole, 'opihi, kumu, tako or he'e, moanakali, kole, ulua, honu, mullet, omilu, pāpio, uhu, paanau, menpachi, and aweoweo in or near the mouth of Honopou.
8. My 'ohana also engaged in mālama 'āina and mālama kahawai at Honopou by cleaning the 'auwai to our family lo'i, pruning, and cleaning the buildup on the stones in the ponds. My family also fished and planted according to moon phases.
9. My mother, Juliana Jacintho, was baptized in Honopou.
10. I currently gather kalo, pohole, fruit, 'ulu, and watercress in and around Honopou.
11. I fish for enenue, ulua, uhu, 'opihi, haukiuki, poopaa, omilu, aholehole, lae, aweoweo, paanau in or near the mouth of Honopou.
12. I gather and fish to feed my family and myself.
13. My family engages in mālama 'āina and mālama kahawai by fishing and gathering by moon phases. We also clean Honopou for good consistent flow, which keeps the water cooler for planting.
14. I also swim, relax, and get together with my family along Honopou. I learned to swim there.
15. I appreciate the natural beauty of Honopou. I like listening to the stream flow as well as smelling the flowers and fresh flowing water. I love hearing the birds singing and the sound of the wind blowing through the trees. I enjoy the feeling of following what my grandfather did with kalo farming. I feel him with me.
16. The lack of stream flow is a problem because we cannot fish as much. We have to take only a small amount of fish, and much time is needed before the fish replenish. We have lost large amounts of ocean fish due to warmer waters and the fact that less nutrients get into ocean from the land.
17. If there was enough water in the streams, I would farm more kalo because the flow would be sufficient. I would fish more too, because the water would bring back the abundance of fish.
18. More water would also help meet our needs for home use and gardening.
19. If there was more water in the streams, I would fish for ulua, omilu, pāpio, moi, aholehole, uhu, paanau, enenue, he'e, and aweoweo in Honopou.

20. If water was put back in the streams, I would clean Honopou for kalo farming.
21. If water was restored, the streams would flow faster and at cooler temperatures that are ideal for growing taro.
22. More water in the streams would bring back fish, 'o'opu, prawns, and 'ōpae, which my family members rely on. Old ways of life would be more feasible.
23. If there was more water in the streams, I would continue swimming, family picnics, and prawning at Honopou.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Honopou, Maui, Hawai'i, December 13, 2014.

  
JONAH JACINTHO

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKEA, WAIHUE,  
PAAKEA, WAIKAHA, KAPAU, A,  
HANAWI AND MAKAPIPI STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF JOSEPH KIMO  
DAY

DECLARATION OF JOSEPH KIMO DAY

I, Joseph Kimo Day, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni O Ko'olau Hui.
4. My family has an interest in property in proximity to Wailuanui.
5. I was a taro farmer. My family used to grow kalo on property irrigated by Waikani Stream. I stopped farming about four years ago and primarily fish now.
6. I was raised by my grandparents, and on weekends, we would throw net and gather from the streams.
7. Traditionally, my family gathered 'ōpae, 'o'opu, hihiwai, aweoweo, and honu from Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu,

Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakea, Paakea, Kapaula, Hanawi, Makapii, and Waiohue. 'Ōpae was for eating and for use as bait for enene. Honu was for eating and its fat had medical uses. My 'ohana also hunted for pig up mauka near the streams and gathered black crab near the ocean.

8. My family also traditionally fished for moi, aholehole, and enene in and around Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakea, Paakea, Waiaaka, Kapaula, Hanawi, Makapii, and Waiohue. We would lay net at night and also dive for kole. Back then, fish were big and plentiful. We could catch more fish going a shorter distance by canoe.

9. Traditionally, my family engaged in mālama 'āina and mālama kahawai in and around Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakea, Paakea, Waiaaka, Kapaula, Hanawi, Makapii, and Waiohue. We knew not to overharvest, were mindful of seasonal spawning, and respected the cycle of life. We would also clean and clear debris in the streams.

10. Currently, my 'ohana gathers 'ōpae and hihiwai in Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakea, Paakea, Waiaaka, Kapaula, Hanawi, Makapii, and Waiohue.

11. I have been fishing since I could walk. I currently fish for deep seven bottom fish (onaga, ehū, 'ōpakapaka, kalekale, lehi, gindai, and hapuupuu), aku, 'ahi, mahimahi, moi, 'ō'io, kole, kumu, and 'opihi in and around Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakea, Paakea, Waiaaka, Kapaula, Hanawi, Makapii, and Waiohue. Now, we have to go longer distances to catch more fish because of the lack of stream water flowing to the ocean.

12. My family also practices mālama 'āina and mālama kahawai in and around these streams. Everything is seasonal. We fish to feed the family; it's our icebox. We take just what we need and that's it. We treat the resources as our icebox – that's how the village works. If we



don't teach our mo'opuna the same, it's a lost art, and they will have to go to the store for their food.

13. I gather and fish in order to put food on the table. It is for subsistence. We live off the land, from mauka to makai. I teach my traditions to my kids and grandkids. But how can I teach them if the streams are dry and there are no resources left? I don't want my kids eating out of a tin can. I want them to eat natural food.

14. I also take my kids and grandkids to the river below my home (Waikani) to swim, picnic, throw net, and go down to the beach. These are my family traditions. Every Sunday after church, we would dive for fish for the table. It was a community thing.

15. The places my grandfather took me to are sacred to me. As I've gotten older, I have learned to appreciate the surroundings, the beauty, because when I see it, I know I'm home.

16. The lack of stream flow is a problem for me because they are taking away the resources we had before and it's not here now. If water was in the streams, we could have our aquatic life back. The mighty dollar is the only thing that matters to HC&S/EMI – that's the bottom line to the big corporations and the state.

17. The lack of stream water has forced me to stop taro farming and close up my patches. I had about three to four acres worth. All of that used to be open, and I used to pull about 12-14 bags a week, even while working full time and fishing on the weekends. I want my kids to learn – that's the most important to me. But they can't without the water. My granddaughter asks me, "Papa, when we going to open up the farm again?"

18. If there was enough water in the streams, I would teach my kids and grandkids to gather 'ōpae, 'o'opu, hihiwai, and aweoweo from the same streams as me and my ancestors (Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuiki, East Wailuiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue).

19. If there was more water in the streams, I would fish for onaga, ehu, 'ōpakapaka, kalekale, lehi, gindai, and hapuupuu, aku, 'ahi, mahimahi, moi, aholehole, 'ō'io, kole, kumu, and 'ōpihi in and around Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuiki, East Wailuiki, Kopiliula Puakaa, Paakea, Waiaaka,

Kapaula, Hanawi, Makapipi, and Waiohue. I would teach my kids and grandkids what my grandfather taught me about where to fish and how to harvest.

20. If lack of stream flow was not a problem, I would continue to mālama 'āina and mālama kahawai in and around Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuiki, East Wailuiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue, making sure I only take what I needed and treating the streams and shoreline waters as my icebox.

21. My 'ohana and I would continue to swim, picnic, throw net, and go down to the beach in and around these streams if there was enough stream flow. I would also continue to appreciate the natural beauty of these streams, especially with more water.

I declare under penalty of perjury that the foregoing is true and correct.

JOSEPH KIMO DAY

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
 INSTREAM FLOW STANDARDS FOR  
 HONOPOU, HUELO (PUOLUA),  
 HANEHOI, WAIKAMOI, ALO,  
 WAHINEPEE, PUOHOKAMOA,  
 HAIPIAENA, PUNALAU/KOLEA,  
 HONOMANU, NUAAILUA, PIINAAU,  
 PALAUHULU, 'OHIA (WAIANU),  
 WAIOKAMILO, KUALANI, WAILUANUI,  
 WEST WAILUAIKI, EAST WAILUAIKI,  
 KOPILULA, PUAKAA, WAIHOUE,  
 PAAKEA, WAIATAKA, KAPAUULA,  
 HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF JULIANA P.  
 ALLEN JACINTHO

DECLARATION OF JULIANA P. ALLEN JACINTHO

I, Juliana P. Allen Jacintho, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am the granddaughter of Lokana Kepani Sr. I was delivered by my grandmother Juliana Koko Kepani, and to my knowledge, I was the last to be born in their home.
4. My family has an interest in property near Honopou. We grow kalo on that property, which is about two acres.
5. The stream has provided my family with an abundance of uses.
6. Traditionally, my 'ohana gathered 'opae, hihiwai, 'o'opu, pūpū, watercress, bamboo shoot, bamboo for fishing poles, ti leaf, java plum, rosy apple, Hawaiian crayfish, sweet potato, mango, banana, 'ulu, tamarind, guava, hibiscus, plumeria, ferns, pakalana, puakenikeni, 'avapuhi, and medicinal plants in and around Honopou.

7. Traditionally, my 'ohana fished for aholehole, pāpio, pūhi, honu, mullet, popaa, moi, ulua, uhu, enenue, limu, 'opihī, pipipi, and kupehe in or near the mouth of Honopou.
8. My 'ohana also engaged in mālama 'āina and mālama kahawai at Honopou by taking only what we could eat, using the moon to fish and plant, rebuilding stone walls, and maintaining the level of water for taro at Honopou. My grandfather paid special attention to the ditches and kept them flowing so the taro patch and the home below his house had water for their daily uses. He also made sure there was sufficient water to keep the taro growing by checking the flow at EMI gates.
9. As children, Honopou was our pool on hot days where all of us learned to swim. The mangos, guavas, java plum, and rosy apples provided us with snacks as we played and trekked up and down the stream on our adventures. It taught us to be aware of flash flooding, or "big water," as we called it. We knew it was coming by the sounds of big rocks moving, the water becoming muddy, and the change of the rushing waters. As the water reached the ocean, it provided the small pools, brackish water, for ocean fish to lay their eggs and a fertile place for food for the ocean fish.
10. My mother used to wash clothing by hand with a stick and the rocks as a clothes line. We also used the waters for bathing, washing dishes, cleaning house, to cleaning chickens or pigs. The water was also used to irrigate the plants growing around the properties, including flowers, sweet potatoes, and even grapes at one time.
11. At any time, just sitting along the stream gave me comfort and peace. It relaxed my mind and body, sometimes to recharge me and sometimes to just enjoy relaxing. I remember at night just listening to the rushing waters. It was relaxing and would put me to sleep. Listening to the sound of the frogs was also very peaceful.
12. I currently gather oranges, sugar cane, mangoes, bamboo shoots, 'ulu, flowers, ferns, ti leaf, pohole, prawns, and achote in and around Honopou.
13. My 'ohana currently fishes for aholehole, pāpio, pūhi, mullet, popaa, moi, ulua, uhu, enenue, limu, 'opihī, pipipi, and kupehe in or near the mouth of Honopou.
14. I gather and fish to feed my family, to be self-sufficient, and to be somewhat independent. I am proud of my work and abilities.

15. My family engages in mālama 'āina and mālama kahawai by fishing for appropriate sizes of fish, eating what we gather, sharing what we have, taking away 'ōpala, leaving areas clean and fit for the next person, as well as maintaining the streambed at Honopou.

16. I also swim, relax near the water, fish, and gather items as a family. I enjoy just strolling around the Honopou area.

17. I appreciate the scenery at Honopou. It is where my children were able to play and run freely, camp, gather, talk, and remember the past.

18. Water does not flow in the area as it did in my childhood. The lack of stream flow is a problem because there has been decreased productivity. Disease threatens our kalo. There has been a decrease in 'ōpae and hihiwai. The black 'o'opu is gone. We lack the ability to be self-sufficient.

19. If there was enough water in the streams, I would gather 'ōpae at Honopou. I would also fish, as we did traditionally, for aholehole, pāpio, puihi, mullet, popaa, moi, ulua, uhu, enenue, limu, 'opihi, pipipi, and kupehe in or near the mouth of Honopou.

20. If there was more water in the streams, I would continue to mālama as we did before by taking only what we could eat, using the moon to fish and plant, rebuilding stone walls, cleaning the ditches, and maintaining the level of water for taro at Honopou.

21. With more water, I would want my family to be able to do to the same sort of recreational activities I did as a child, including swimming, playing, and using water for other domestic needs.

22. If water was returned to Honopou, I would appreciate the natural beauty of the area. It would remind me of my childhood and family that is here as well as family members who have passed on.

23. Without water in the stream, Honopou would not be the same place I have known. It has supplied so much for the people of this area. It is a comfort knowing that the stream is there.

24. It is urgent that we maintain Honopou for our generation and our children. We are learning through trial and error how to improve taro farming as our kupuna have passed on to us.

I declare under penalty of perjury that the foregoing is true and correct.  
DATED: Honopou, Maui, Hawai'i, December 12, 2014.

  
JULIANA P. ALLEN JACINTHO



COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHNEPEE, PUOHOKAMO, A,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAU,  
PALAUHULU, 'OHIA (WAIANU),  
WAHOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAHI, EAST WAILUAHI,  
KOPIILUA, PUAKAA, WAOHUE,  
PAAKEA, WAIKAKA, KAPAU, A,  
HANAWI and MAKAPIPI STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF KAUI  
KANAKAOLE; EXHIBIT "1"

DECLARATION OF KAUI L. KANAKAOLE

I, Kaui L. Kanakaole, declare that:

1. The statements below are based on my personal knowledge and upon research that I have conducted.
2. I reside at 4195 Hana Highway, Hana, Hawaii 96713. I was born in Hilo on Hawaii Island, but moved with my family to Hana, Maui at age 4 and grew up in Hana until graduating from Hana High School.
3. Attached to my declaration as Exhibit "1" is a true and accurate copy of my resume.
4. I received my Bachelors of Arts in English and my Teaching Certificate in Secondary Education from University of Hawaii at Hilo. I started my professional career in teaching at Hilo High School then moved on to Ke Ana Laahana Public Charter School before returning home to my alma mater at Hana High and Elementary School. All of my teaching experiences have put me in the middle of high Native Hawaiian populations, from Keaukaha to Hana, public education was an important vehicle for me to reach the native "underprivileged" community and give back what I had gained from my own upbringing in these types of communities.

5. I served as Department Head at Hana High School, trying to rally the school population around reading and raising our students' reading test scores, which came to fruition in 2011 when we scored the highest in Maui County.
6. My hula career started as an 8 year old child in Hana with Namahana Kalama-Panui, learning about the stories and songs of the place I grew up in. Hula had me hiking through the mountains gathering kinolau (body forms of the gods) of the gods we danced about and this practice became my first introduction to the water diversions of East Maui.
7. We were curious about the fumes, waterways, and water pumps that cut through our sacred forest so our kumu and aunts told us about the sugar plantations on the other side of the island needing water and even as a young child I remember feeling angry and confused.
8. My hula career continued on in Hilo with renowned Halau o Kekuhi, which is also my family's halau on my father's side.
9. Hula comes from Edith Kanakaole, my father's mother, and was passed down matrilineal and continues in that vein today.
10. I was a dancer in the PBS broadcast of "Great Performances: Holo Mai Pele" (2000), went on tour for the hula drama "Kamehameha: Na Hoailona" (1999) and "Hanau Ka Moku" (2002).
11. Being an olapa dancer in Halau o Kekuhi has afforded me many cultural learning experiences and opportunities however the added responsibility of being of familial descent from this hula lineage gave this experience deeper meaning.
12. Hula has taught me about the many facets of our culture, from menial work to ritualistic prayer, from the bloom of a leaf-bud to the cycle of water in the forest, from obeying the request of an older sibling to embracing the transformation into your god-self.
13. Hula has given me an education that cannot be translated into any degree at a university, and my family has solidified those teachings and anchored me spiritually and it is this inherited DNA that I pass on to my two children.
14. In 2007, I participated in Halau o Kekuhi's Aha Ailolo Puaalohelohe, which is a rigorous rite of passage from olapa to kumu, and I was granted the right to teach the traditions of hula Aihaa and hula Pele that have been taught to me.

15. In 2009 I started my own hula halau and continue today with children and adult classes for Halau o Nakaulakuhikuhi.
16. I am a member of the Edith Kanakaʻole Foundation, which was started in 1990 by my father and his siblings in order to maintain and perpetuate the teachings, beliefs, practices, philosophies and traditions of their parents, the late Luka and Edith Kanakaʻole. I am currently contracted by Ala Kukui Retreat Center to conduct research on water in East Maui looking at it from a cultural perspective.
18. My research is entitled "Ke Ala Huli i Wāihana" and I use Papaku Makawalu to understand the cycles and significances of water in the Koolau, Hana, Kipahulu and Kaupo districts of Maui.
19. My ties to East Maui are from my mother's side, whose great grandmother, Kahele was a native of Kipahulu and married a Japanese stow-away immigrant by the name of Ishii.
20. My mother remembers her grandmother telling her stories of watching her mother Kahele down at the muliwai (estuary) feed the shark at Maulili. She was of pure Hawaiian descent and although not much was said about Kahele, this little piece of information has been passed down. From this we know that the shark is an aumakua (family deity) of our family and because of that we honor these ocean beings through chant and dance and have an affinity for the muliwai there at Maulili and the flow of fresh water from mauka to makai.
21. These combinatorial experiences, influences, lineages have given me the intimate connection and cultural prowess to understand this land that I live on and the natural cycles it goes through and especially our human role in those natural cycles.
22. East Maui, which is comprised of the four moku (land district) of Koolau, Hana, Kipahulu and Kaupo, is historically significant and is extolled in the chants and stories for time immemorial. In the epic saga of Pele and Hiiaka, when Hiiaka journeys up the island chain from Hawaii to fetch her older sister's lover on Kauai she lands first at Kauiki in Hana and chants about the majestic Kauiki hill, the outcrop of Mokuhanohano the sea and the fresh water spring of Punahoa that brings life to the area.
23. Through stories we know that the gods Kane and Kanaloa have traversed the region thrusting their staff into the ground at various places and fresh water bubbled up. People of the area worshipped these gods because of the abundance of water as in the story of

- Kalemakuaikaimano who was a man who lived in the Pauwahu area where the watercress patches are today.
24. When he lived there, there was no spring, just the water from the river that would flow when there was a lot of rain, however because he constantly importuned Kane and Kanaloa as his gods, grew and ate the kinolau of these gods, they visited him one day. At that visit he prepared a feast and chewed the awa for his gods and served them. In return Kane and Kanaloa thrust their staff and springs erupted out of the ground with a loud rumble that continued so one of the springs was closed up and the one that was flowing quietly was left.
25. There are countless stories and chants that communicate the importance of water in this East Maui region. It is this abundance that made and continues to make this particular land waiwai (valuable) to its inhabitants.
26. This high value was not taken for granted or misused at any cost but met with severe punishment if ever abused, punishment of death. There are a few stories about misuse or greed of the water resource in this area that were met with the death penalty because without water there would be significant repercussions. Found in the Hawaiian language newspaper Ka Nupepa Kuokoa was a story about "Na Akua" Kane and Kanaloa.  
*Ka Moololo o Na Akua*  
... na laua ka wai o Kou ma Kaupo, na laua i hoomake kahuna oia o Koino ma Kikoo i Kipahulu, a na laua i hoomake ka moopuna a Waiaru ma no ka hooaumia i ka wai, a na laua i wahi i ka pohaku a puai mai ka wai.  
*The Story of The Gods*  
... the water of Kou at Kaupo belongs to them (Kane and Kanaloa), they were the ones who killed the priest Koino who was from Kikoo at Kipahulu, and they were also the ones who killed the grandchild of Waiaru folks because of his defiling of the water there, and it was the gods who split the rock and water bubbled forth.
27. Tampering with a natural resource to the point where it prohibited the untainted continuance of the natural cycle was met with strict consequences and this was a pervasive understanding. It's an innate thought process for native people to think this way, which is why as a little girl I was angry and confused about the water diversions in the forest even without any preconceived notions of the sugar industry's effect on Hawaii.



28. It's fundamental to the psyche of the native Hawaiian that we understand the cycles of our natural world and find our fit, as humans, in it all. My Hawaiian ancestors categorized their world into a system of knowledge known as Papaku Makawalu, whose origin can be found in the Kumulipo (Hawaiian Creation chant).
29. Papaku Makawalu is a Hawai'i ontological knowledge system that assigns the Hawaiian universe to three Papa or houses of knowledge. The first of the three is Papahūhūnua, which includes all of the earthly elements such as the ocean, volcanic processes, and the water cycle. Kane (and Kanaloa for that matter) is a vital component of Papahūhūnua in his occupation as water, Kane is the entity in and of Papahūhūnua that mingles continuously with elements of Papahūhūnua (the second Papa).
30. Papahūhūnua is the atmospheric elements including the sun, weather, stars, planets, heavenly strata, and seasonality.
31. The third Papa is Papahānaumoku. This papa is comprised of the living components with the biological intelligence of procreation. Those who belong to the house of Papahānaumoku are the direct beneficiaries of Kane. These individuals include everything from plants, to birds, to coral, to fish, to mea kolo (creepers), and kanaka (man). The house of Papahānaumoku also includes the activities that kanaka engage in, including things like hula and caring for land. Kanaka functions including consciousness and inner conscious are also in the house of Papahānaumoku.
32. Water is one of the few elements that easily traverse all three Papa. It is the nature of the water cycle that make it a part of Papahūhūnua when it is on the earth in the form of streams, springs, aquifers or even a puddle. Kane and Kanaloa preside over these waters as in the chant "Ka Wai a Kane":

*E ui aku ana au ia oe,  
One question I put to you,  
Aia i hea ka wai a Kane?  
Where is the water of Kane?  
Aia i ke kuahivi, i ke kuaiono.  
Yonder on mountain peak, on the ridges steep  
I ke awawa, i ke kahawai;  
In the valleys deep, where the rivers sweep  
Aia i laila ka wai a Kane.  
There is the water of Kane.*

33. Then Laka presides over the evaporation/transpiration process, it gets taken up into the atmosphere, which is the realm of Papahūhūnua and falls to earth in the form of rain, mist, or snow.
34. The role of Laka is illustrated in this chant:
- A ke kuahivi, i ke kuaiono  
From the mountain tops, to the highland ridges  
Ku ana o Laka i ka mauna  
Laka presides over the forest  
Noho ana o Laka i ke po o ka ohu  
Laka is at the pinnacle of the gathering of the mist  
O Laka kumu hula  
Laka the source of movement*
35. As water accumulates it is the beneficiary of Papahānaumoku that ingest and rely on this element for life. The kanaka (man), the plants and animals, crawlers and winged creatures are the ones who are either made up of water and/or rely on it for survival.
36. Papaku Makawalu gives us a framework to understand the movement of water throughout the different papa (foundations) and this framework can be applied to our own localities to understand peculiarities about the cycles we experience everyday. In looking at the moku of Koolau for example, the water cycle there is a microcosm for what is happening in other moku in East Maui, Maui, Hawaii and the world.
37. Starting with Oopuola stream and continuing on to the end of the Koolau moku at Makapipi stream, each water source was given a name by our ancestors. These names tell us information about that particular source, which we can use to better acquaint ourselves with the land, elemental sources and cycles that occurred.
38. Kaaiea stream, for example, was named for the Aiea tree that grew abundantly in the area. The species of this endemic Hawaiian genus Nothocestrum consisted of soft-wooded shrubs and trees with oblong leaves, yellowish flowers and white/red berries, which grew from 1500-5000 feet elevation. The aiea tree acted as a caustic in the water cycle and it helped to accumulate water in the forest.
39. Ohia stream and spring was named such not for the ohia tree; ohia also means "tabooed, as food patches during famine". A native of the area, Henry Kahaleulaokewa Kamali, who has long passed, was born in 1886 at Pauwahu close to Ohia stream and grew up in the area. In his 1970 interview with Clinton Kanabele, which was conducted in Hawaiian and later translated and transcribed he described the water as such:

- "Ohia, That is the waters of Kanaioa and Kane. The water gushes forth from inside from a spring. Yes, that is healing water for coughs and all kinds of sicknesses. There the sick were taken. When you have your illness you go into there to bathe. Healed."
40. The native people in the area understood that this water was special, sacred, kapu (taboo) and only to be used in unique circumstances.
41. A wind of the Wailua area is named Kialeale, meaning stirring, moving, undulating, and rippling with force. This wind is also characteristic of the land because the water sources of Koolau moku (district) are powerful, full of energy and maintain a strong presence over the other elemental forces of nature.
42. The Kialeale wind occupies Papahūlani and is a manifestation of the god Lono and through its stirring force, clouds accumulate in the uplands and that is when the god Kane releases the rains that penetrate the earth and amass in the Kuahiwī (hill) and Kualono (mountain ridge), in the awaia (valley) of Honomānu, Waiohūe, Wailua, and Makaiwa. It is in this realm of Papahūhōnua that we kanaka (man) have most intimate dealings with this water. It is the kanaka (man) of Koolau who give praise to the god Lono who initiated the Kialeale wind that brought this precious resource to the earth where he is able to utilize its gifts, while still allowing the cycle to continue. It would be requisite of the kanaka to deny this resource its due diligence.
44. Kialeale is of Koolau moku only, it serves this area and it would be wrong to take the product (water) of its service elsewhere because that creates a void, a break in the cycle that is distinctly Koolau.
45. The unique natural cycles that occur in each locality belong to that particular place, the mana (spiritual power) that is created as a result of these cycles belongs to that particular place and the displacement or gross manipulation of that element whether it be water, earth, lava, wind or sun is counter to everything that the kanaka Hawai'i believe. And this is illustrated for us in the simple act of naming everything in their world.
46. The wind in Koolau moku is not known as just "Wind" but "Stirring, Moving, Undulating Wind".
47. The spring in Pauwahu is not named "Spring" but "Tabooed, as a food garden during famine Spring".

48. There is a reciprocity of energy that occurs between element and kanaka and it is imperative that these relationships are nurtured and continued so that the our island world lives and prospers.

The people of Koolau were not just called "Wailua-ans" or "Keanae-ans" but "Koolau Hauwalaau". It is a poetic saying, which means "Koolau of the Loud Voices" because inhabitants of the area were said to be loud of voice. And it is this hauwalaau that must be heeded, that must be reckoned with, that must be regarded because they are the mouthpiece of the land of which they occupy.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Hana, Maui, Hawai'i, December 17<sup>th</sup>, 2014.

*Kauli L. Kanakaole*  
KAULI L. KANAKAOLE

EXHIBIT 1

Kauli L. Kanakaole



Guiding Principles

- 1. A strong cultural foundation that is nurtured in all aspects of life will promote physical, mental and spiritual growth that will give one the foresight of his/her purpose not only to their lāhui but also to the global community.
- 2. My kupuna comprised a highly advanced society filled with a mix of people who had purpose; and whether that purpose was great or small the idea that everyone and everything was inextricably connected is what allowed them to excel to heights unfathomable by scientific standards today. It is this fact that pushes me to not only understand their view but also find applicability in my time.
- 3. Kuleana is a two-way street that is bestowed upon those who rise to accept the responsibility in order to enjoy the right. Familial duty is wrapped in this principle of Kuleana and it is paramount to the elevation of the family, principles, and race, that one takes the helm, no matter how great or small the vessel.

Education

1993-present Halau o Kekuhi Olapa

- Hiiakaikanoeau, Halauaola Hula Conference – Kauai: 2014
- Moku o Keawe International Hula Festival- Miyazaki, Japan: 2013-2014
- Joint Christmas Concert-Japan Tour: 2010
- Aha Ailolo Pualohelohe, Hawaii: 2007 Kumu Hula
- Hanau ka Moku-Maui: 2002
- World Performing Arts Festival, Wsshoh-Tokyo, Japan: 2000
- Holo Mai Pele, PBS Great Performances-Oahu: 2000
- Kilohi, Na Akua Wahine-Oahu, Maui: 2000
- Aloha Festivals Investiture-Hawaii: 1995-2000
- Kamehameha, Na Hoailona-West Coast Tour: 1999
- Holo Mai Pele-Oahu, Hawaii, Kauai: 1996
- 1999 University of Hawaii, Hilo: Teaching Certificate, Secondary Education
- 1998 University of Hawaii, Hilo: Bachelors of Arts, English

EXHIBIT 1

|                                     |                           |   |
|-------------------------------------|---------------------------|---|
| <b>Work Experience</b>              | 2002-2013                 | <b>Hana High &amp; Elementary School Teacher</b><br><i>9<sup>th</sup>-12<sup>th</sup> Grade English (American, British, World, Hawaiian Lit., Creative Writing, Expository Writing), Health, Public and Human Services, Hawaiian Dance, Hawaiian Language, Hawaiian Studies, Freshmen Transition, Junior and Senior class advisor, High School Department Chair</i> |
|                                     | 2001-2002                 | <b>Ke Ana Lashana Public Charter School Teacher</b><br><i>9<sup>th</sup> -12<sup>th</sup> Grade English</i>   |
|                                     | 1999-2001                 | <b>Hilo High School Teacher</b><br><i>-11<sup>th</sup>-12<sup>th</sup> Grade English (American, British Lit.)</i>   |
| <b>Contractual/Grant Experience</b> | 2014-present              | <b>Office of Hawaiian Affairs Sponsorship - Makaku: The Dancer and Divinity</b> , Authoring a book on the choreographic theories and practices of kumu hula Nalani Kanakaole  |
|                                     | 2013-present              | <b>Ke Ala Hui o Waihanau</b> , Researcher and Principle Writer  |
|                                     | 2013-present              | <b>Ke Ola Magazine</b> , Maui County Edition Contributing Writer  |
| <b>Boards &amp; Committees</b>      | 2009-2012                 | <b>Kamehameha Schools Summer Enrichment Program</b> Curric. Coord.<br><b>Kulia i ka Pono</b> , Hana Teacher   |
|                                     | 2008-2010                 | <b>Native Hawaiian Scholars Program</b> , Hana Counselor  |
|                                     | 2007-present<br>2003-2011 | <b>Ma Ka Hana Ka Ike</b> Board Member/Vice Pres.<br><b>Hana Advisory to the Maui Planning Commission</b> Advisory Chair/Member  |
| <b>Conferences &amp; Workshops</b>  | 2014                      | <b>Hana Limu Festival:</b> Hana, Maui<br>-shared Ke Ala Hui i Waihanau project findings   |
|                                     | 2014                      | <b>E Ala Pu:</b> Kipahulu, Maui<br>-shared Ke Ala Hui i Waihanau project findings   |
|                                     | 2008-2011                 | <b>Hula Kahiko Workshop for Hana Festivals of Aloha Kumu</b>  |



COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHNEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKAA, WAIOHUE,  
PAAKEA, WAIKAHA, KAPAULA,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF LEONORA  
BARCLAY

I, Leonora Barclay, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni O Ko'olau Hui.
4. My family has an interest in property near Wailua Stream. I farmed until I was about 27 years old. I stopped because I went to work, and my father did most of it. My brother and other family friends continued to farm our land until about 1990. My family and I reopened the patches in 1996 and stopped around 2004-2005.
5. I farmed this land based on my upbringing and my parents owned the land and transferred to me the ownership.
6. I learned how to farm taro from my father, Edward Smith, Sr., mother Anna Kaauamo Smith and Tūtū Wahine, Ellen Kapeka Kaauamo.
7. We currently have about  $\frac{3}{4}$  acre to 1 acre in kalo, which is farmed by Carl Wendt.

8. Traditionally, my 'ohana gathered 'ōpae, 'o'opu, hihiwai, guava, lilikoi, pohole, and prawns in Waikamoi, Wahinepee, Honomanu, Nuaailua, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, and Hanawi.
9. Traditionally, my 'ohana fished for aholehole, poopaa, 'o'opu, nohu, and hinalea in or near the mouths of Honomanu, Nuaailua, Piinau, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, and Hanawi.
10. My family also engaged in mālama 'āina and mālama kahawai by constantly keeping 'auwai clear of 'ōpala and growth in and around Honomanu, Nuaailua, Piinau, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, and Hanawi. We would clean the ditch so the water would stay in it. We didn't want it to overflow and soften people's land, ruining their patches.
11. Currently, my 'ohana and I gather pohole around Wailua, Waikani (Wailuanui), West Wailuaiki, and East Wailuaiki.
12. I gather to eat and feed my 'ohana.
13. I enjoy nature such as pohole fields, taking pictures of the taro fields and fruit trees in and around Wailua.
14. The lack of stream flow has been a problem for me because less water causes harder farming for my 'ohana as well as the farmers below my patches. This is in stark contrast to the 1970s, when we still had plenty of water. It was always flowing. We had to upkeep our lo'i to make sure that the people below got water.
15. In the 1980s, we would go through periods of water then no water. If there was a big rain, we would see water for two or three days.
16. The lack of water caused my family to stop cultivating the land and to instead offer the land to other farmers to farm if they could.
17. If there was enough water in the streams, I would continue to gather pohole and also gather 'ōpae, hihiwai, and oopu in Wailua, Waikani (Wailuanui), West Wailuaiki and East Wailuaiki.
18. If there were more water in the streams, I would fish for aholehole in or near the mouths of Wailua, Waikani (Wailuanui), West Wailuaiki and East Wailuaiki.



19. If water were put back in the streams, I would mālama the streams by keeping the 'auwai clear of 'ōpala and growth. I would clear the ditch for the same reason as in traditional times – to stop the overflow of water and potential destruction. Under current conditions, people have to clean the ditches just to get water.
20. If there was more water in the streams, I would go to the streams and catch goldfish like I did as a child. You don't see them anymore. You know when the water is flowing because of the goldfish. They don't survive unless there is a steady flow.
21. If lack of water was not a problem, I would appreciate nature, including pohole fields. I would continue to take photos of the taro fields and fruit trees.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Waiehu, Maui, Hawai'i, September 20, 2014.

  
LEONORA BARCLAY

COMMISSION ON WATER RESOURCE MANAGEMENT  
STATE OF HAWAII

|  |   |
|--|---|
| PETITION TO AMEND INTERIM<br>INSTREAM FLOW STANDARDS FOR<br>HONOPOU, HUELO (PUOLUA),<br>HAANEHOI, WAIKAMOI, ALO,<br>WAHINEPEE, PUOHOKAMOA,<br>HAIPUAENA, PUNALAU/KOLEA,<br>HONOMANU, NUAAILUA, PIINAAU,<br>PALAUHULU, 'ŌHI'A (WAIANU),<br>WAIOKAMILO, KUALANI, WAILUANUI,<br>WEST WAILUAIKI, EAST WAILUAIKI,<br>KOPILIULA, PUAKAA, WAIOHUE,<br>PAAKEA, WAIAAKA, KAPAULA,<br>HANAWI and MAKAPII STREAMS | CASE NO. CCH-MA13-01<br>DECLARATION OF LEZLEY<br>JACINTHO |
|--|---|

DECLARATION OF LEZLEY JACINTHO

I, Lezley Jacintho, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a taro farmer. I have been growing kalo in Honopou for about six years now on approximately two acres of land.
4. I am farming this land based on my family history and talking with kupuna about practices their parents had done to farm lo'i long before we did.
5. I learned how to farm taro from Beatrice Kepani Kekahuna and Lurlyn Scott.
6. My 'ohana has lived in Honopou for many generations.

7. Traditionally, my 'ohana gathered 'ulu, kalo, uala, moi, aholehole, banana, 'o'opu, pūpū, kala, hau, native crayfish, hihiwai, 'opihi, limu, pohole, mango, 'awapuhi, if leaf, lū'au, guava, watercress, oranges, and medicinal plants in and around Honopou.
8. Traditionally, my 'ohana fished for aholehole, honu, moi, mullet, poopaa, puhi, ulua, lobster, pāpio, 'ō'io, lae, ulu, menpachi, kole, black crab, haukiuki, kupipi, and opihī in or near the mouth of Honopou, Punalau/Kolea, Honomanu, Hanawi, and Makapipi. They also gathered limu in those areas.
9. My 'ohana also engaged in mālama 'āina and mālama kahawai. They were aware of spawning times, they cleaned the 'auwai, gathered only what was needed, gathered and fished with the moon cycle, rebuilt walls, and cleaned Honopou.
10. Currently, my 'ohana and I gather pohole, banana, avocados, 'ulu, mango, orange, puakenikeni, and lū'au in and around Honopou and Honomanu. We also pull kalo if it is not rotten.
11. My family and I fish for pāpio, enenue, moi, prawns, lobster, haukiuki, 'opihi, and kupipi in or near the mouth of Honopou and Honomanu.
12. I gather and fish to feed my family, teach my kids to feed themselves, and live as our grandparents did.
13. My family engages in mālama 'āina and mālama kahawai by cleaning Honopou and nearby ponds, planting kalo, cleaning, and working together to grow food.
14. We also swim in the ponds, teach our kids how to swim, catch prawns, fish, and play games in and around Honopou.
15. I appreciate the natural beauty of Honopou, including the birds and dragon flies. I love the smells of 'awapuhi and other flowers. I enjoy looking around, taking in the beauty and the greenery, and hearing rushing water while sitting on Lynn's deck next to the pond.
16. Water is used to irrigate my lo'i as well as other lo'i. The level of water barely can feed those lo'i. More water is needed as we continue to open more lo'i. Around these lo'i the water also feeds homes that have been established from generations.
17. The lack of stream flow affects our taro. We have lost taro due to root rot and other diseases.
18. Because the streamflow connects to the ocean, improper flow restricts spawning of different species of fish. Thus, the lack of stream flow affects our gathering rights as

- Hawaiians to feed our 'ohana as was once possible. Native species like 'o'opu cannot travel back up stream due to lack of water, which compromises their reproduction. Our families who live in this area cannot gather enough resources from the ocean and streams because there is not enough fish, hihiwai, 'opae, and 'o'opu. The low stream flow has also caused people to move away to provide better for their family.
19. Additionally, swimming in the ponds is what we all enjoy and should continue to be enjoyed, not compromised by improper flow which can cause stagnate water, bringing leptospirosis and other bacteria.
20. If there was enough water in the streams, I go back to traditional gathering practices, being more self-sustainable as a valley. Everything in Honopou would be in abundance.
21. If there were more water in the streams, I would fish for what was traditionally fished for in Honopou. Aholehole would come back as well as other species like moi, nohu, and menpachi.
22. If water were put back in the streams, I would mālama the streams the same way as my kupuna did. We would open more lo'i and continue to monitor fishing practices in and around Honopou.
23. If there was more water in the streams, I would make even more use of the ponds, teach our kids to fish and gather to make traditional tools and implements. I would also appreciate the beauty of the strong flow of water, the additional greenery at Honopou because everything would flourish.
24. Spiritually, we are connected to the water. Water is life. Without water we will not be.

I declare under penalty of perjury that the foregoing is true and correct.  
DATED: Honopou, Maui, Hawai'i, December 13, 2014.

  
LEZLEY JACINTHO

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PINAAU,  
PALAUHULU, OHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILULA, PUAKAA, WAIOHUE,  
PAAKEA, WAIKAKA, KAPULA,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF LURLYN SCOTT

DECLARATION OF LURLYN SCOTT



### Declaration of Lurlyn Scott

I, Lurlyn Scott, hereby declare that:

1. I am Hawaiian by birth.
2. I am the daughter of the late Marjorie Walleit, and the niece of the late Beatrice Kekahuna, both of whom were original petitioners to amend the interim instream flow standard (IIFS) for Honopou Stream before this Commission in May 2001.
3. I was born on July 2, 1959 in California after my mother left the U.S. Air Force to begin a family.
4. My mother, Marjorie Walleit, was the daughter of Maria Kaehukai Kepani and John Kalia Kaleialoha.
5. The name listed on the current tax map of this area of Honopou, tax map zone 2, section 9, plat 1 is "Elizabeth Kepani."
6. Elizabeth Kepani's husband, Jerry Kepani, is my mother's first cousin..
7. My extended 'ohana has lived in Honopou for many generations and after returning to Maui from California as a young girl, I grew up along Honopou Stream.
8. As a young girl growing up, I both played in Honopou Stream and enjoyed the scenic beauty of the stretches of stream where I swam and played.
9. During my lifetime, my 'ohana gathered 'ōpae, 'ōpū, hihiwai, watercress, medicinal plants, and crayfish from Honopou Stream to supplement our diet.
10. My 'ohana also traditionally gathered rocks for the imu in and around Honopou Stream.
11. Traditionally, my 'ohana fished for āholehole, enenue, pō'opā'a, moi, weke, moana, kole, 'opihī, uhu, and honu in or near the stream mouths of Honopou, Punalau/Kolea, Honomanu, Hanawi, and Makapipi.
12. They also gathered limu in and along those coastal areas.
13. My 'ohana would mālama Honopou by cleaning out the hau, only taking what they needed, cleaning limu off rocks, and being aware of the spawning cycle of fish and other creatures.
14. My family also used the stream to wash clothes and soak hau to make rope.

15. I also helped my 'ohana raise kalo in lo'i tended to by my mother and other members of my family and located on the properties designated as TMK 2-9-1-14, being portions of Grant 1082 and 3101:2. LCA 5595E-1, and Grant 1918:1.
16. My mother passed away on April 3, 2010.
17. After her passing, I continued to farm kalo in the Honopou lo'i.
18. My cousins Sanford Kekahuna, Richie and Leilani English, Maudrey English, and various youth groups like Kukulu Kumuahana, Mormon Young Women's Group and the Royal Hawaiian Guard help me work the Honopou lo'i. My cousins Kainani Kaleialoha, Lezley Jacintho and Jonah Jacintho have their own lo'i in the system and have their friends come to work with them..
19. My daughter, Wyonette and her children, and Kainani Kaleialoha and her ohana all reside in homes location on these parcels.
20. My family and I currently gather 'ōpū, crayfish, hihiwai, rocks for the imu, pohole, and ferns for lei making in and around Honopou, Honomanu, Hanawi, and Makapipi Streams.
21. We fish for lobster, enenue, pō'opā'a, āholehole, uhu, mullet, and ulua in or near the mouths of Honopou, Honomanu, Hanawi, and Makapipi streams.
22. I gather and fish to perpetuate my cultural food and traditions so my grandchildren will be able to live off the land like our kūpuna did.
23. My family would mālama Honopou by cutting back the hau, trying to regulate shoreline fishing, and breaking apart dams built by other people.
24. We also swim, cliff dive, and enjoy the tranquility at Honopou, Honomanu, Hanawi, and Makapipi after a hard day at work.
25. Our children and grandchildren learned to swim at Honopou.
26. I like hearing and seeing the natural flowing streams at Honopou, Honomanu, Nuailua, Pī'ina'au, Palauhulu, Waiokamilo, Hanawi, and Makapipi.
27. Attached as Exhibit "A-149" is a schematic drawing of the various kalo lo'i that my 'ohana has collectively tended over the decades I have witnessed kalo farming on these properties (hereafter, "Honopou lo'i").
28. Included on Exhibit "A-149" are arrows which depict the direction of water flow passing through the various designated lo'i.

29. I certify that the layout of the Honopou lo'i, albeit not to scale, and direction of water flow is truly and accurately depicted in Exhibit "A-149".
30. I estimate that the land area covered by the Honopou lo'i is about one acre.
31. On September 25, 2008, the Commission on Water Resources Management voted to amend the IIFS for Honopou by establishing a flow of 2.0 cubic feet per second (cfs) at Station A.
32. Station A is located about a half mile below the lowest EMI dam on Honopou Stream, known as "Haiku Dam."
33. Attached as Exhibit "A-151" is an aerial photograph of the Honopou drainage basin, which truly and accurately reflects the location of Station A, which is where the amended IIFS for Honopou stream is measured, and the USGS metering locations that once measured flow and temperature readings of water flow into and out of the Honopou lo'i.
34. When the CWRM amended the IIFS for Honopou Stream to 2.0 cfs at Station A in Exhibit "A-151" in September 2008, I elected not to appeal the decision, although I had reservations about whether this amount of flow would be sufficient to support the kalo cultivation on the Honopou lo'i, the gathering of o'opu, ʻōpae, and hihiwai, and fishing along the mouth of the stream at the coastline.
35. After consulting with attorneys for my mother and aunt, we decided not to appeal the September 2008 CWRM decision because it specifically incorporated an Adaptive Management Strategy (AMS).
36. As a result of the amended IIFS, I looked forward to monitoring the work of EMI workers who installed modifications to the Haiku Dam to supposedly allow more water to pass over that dam to meet the amended IIFS.
37. With great optimism, in 2009-12, I witnessed CWRM and USGS staff periodically install, and download raw data from, instruments at Stations A and B on Honopou Stream in what appeared to be a sustained effort to monitor and enforce stream flow compliance with the amended IIFS established in 2008.

38. I also witnessed USGS staff from Maui separately installed metering in and around the Honopou lo'i at strategic spots to monitor the temperature and flow of the water we diverted from, and later returned to, Honopou Stream.
39. The metering of water temperature and flow *in real time*, apparently through a satellite upload to the USGS website, was especially useful.
40. Access to this metering data, especially the real time information, provided valuable objective information on whether my 'ohana was getting adequate water to irrigate our kalo.
41. In March 2009, I witnessed EMI workers cooperating with CWRM staff to install modifications to the Haiku Dam at Honopou Stream to allow more water to bypass the diversions at that dam.
42. One of the major modifications included a metal bypass flume installed on top of the cement grate feature of the Ha'iku Dam to allow a limited amount of additional stream water to pass over this diversion structure.
43. Attached as Exhibit "A-146" is a photograph taken on March 23, 2009, which I took the day EMI workers installed that metal flume over the Haiku Dam.
44. Despite the collection of stream flow data since the IIFS for Honopou was amended in 2008, I have been supplied with flow measurements for Honopou only sporadically when my attorneys asked CWRM staff for them.
45. The CWRM has not provided me regular or reliable access to flow measurements, either online or by other means of communication.
46. I learned of flow measurements only through my attorneys at NHLC.
47. I have only recently been made aware that the CWRM staff presented its flow data to the CWRM.
48. Attached as Exhibit "A-145" is a true and correct copy of September 24, 2009 update, which I downloaded from the CWRM website.
49. As shown in Exhibit "A-145", the AMS adopted by the CWRM appeared to protect my interests in restoring flow to Honopou Stream, and I looked forward to "[c]ollaborat[ing]" with agency staff and registered diversion owners to determine appropriate actions," as stated on page 12 of Exhibit "A-145."



50. In addition, as the graphic on page 11 of Exhibit "A-145" indicates, the AMS process allowed for continuous adjustments based on the CWRM staff's ongoing monitoring and evaluation, enabling the CWRM to revise the IIFS to address the needs of kalo farmers, cultural gatherers and people who fish.
51. I sincerely believed and relied on CWRM's pledge that the AMS was the key to restoring stream flow where conditions and needs required it and that the CWRM would finally and timely meet the needs of kalo farmers, cultural gatherers, and fishermen.
52. As indicated on page 16 of Exhibit "A-145," EMI diverts water from Honopou Stream at 4 elevation levels with the Wailoa, New Hamakua, Lowrie and Haiku ditches.
53. As shown on page 20 of Exhibit "A-145," EMI failed to abide by the amended IIFS (2.0 cfs @ Station A) for all of the field measurements recorded between October 2008 and July 2009 during the initial implementation phase.
54. Despite the stream channel modifications installed after the 2008 IIFS amendment, I experienced low flows to the Honopou lo'i cultivated by my 'ohana.
55. Since the 2008 IIFS amendments for Honopou Stream, I have not been able to cultivate all 30 lo'i shown in Exhibit "A-149", because there is inadequate stream flow in Honopou to support all the kalo I and my 'ohana could otherwise plant and grow successfully without experiencing harm to our kalo crop from the lack of stream flow.
56. Without adequate stream flow we could otherwise tap to irrigate more kalo, we were forced to reduce the amount of kalo planted in the Honopou lo'i and the dry cracked lo'i that I saw in the summer of 2009, as depicted in Exhibit "A-147".
57. Unfortunately, apparent funding shortages began to affect my ability to access the real time metering by the USGS in and around the Honopou lo'i after I have begun downloading important objective evidence of the shortage of irrigation water negatively affecting by kalo.
58. Ultimately, when the USGS staff removed gauging stations that it had previously installed at strategic points on or near the Honopou lo'i due to lack of funding, I lost access to important flow and temperature data being recording in real time at the intake to the Honopou lo'i and the outflow from that lo'i system.

59. Before the removal of these meters, working with my attorneys, I was able to download various graphs depicting the water flow and temperature into, and the outflow from, the Honopou lo'i at various times between November 2008 and 2010, all of which is attached as Exhibit "A-150".
60. Attached as Exhibit "A-148" is a video which truly and accurately depicts the amount of water that flows past the Haiku Dam, as a result of the modifications undertaken in 2010 to meet the 2008 IIFS amendments for Honopou Stream, and the amount of water that continues to fall into the diversion ditch at that point.
61. The Haiku Ditch transports those diverted water to points northwest to irrigate Hawaiian Commercial and Sugar fields in Central Maui.
62. As shown in Exhibit "A-148," I estimate that, in 2014, despite the Haiku Dam modifications, EMI still diverts over 80% of the Honopou stream flow at Haiku dam.
63. The restoration of natural flow to Honopou Stream would enhance kalo cultivation in the Honopou lo'i, the gathering of o'opu, ʻōpae, and hihiwai in Honopou Stream, and fishing along the mouth of the stream at the coastline.
64. Also, during summer months, we have stagnant, smelly water that is not useable for domestic use.
65. In addition, from 2009 through 2014, although I repeatedly reported to the CWRM staff members that I was not receiving sufficient flow to irrigate the Honopou lo'i, I did not see the staff attempt to increase stream flow as a remedy to my problems.
66. If there was enough water in the streams, I would grow more kalo, raise watercress, gather o'opu, crayfish, hihiwai, rocks for the imu, pohole, and ferns for lei making in Honopou, and fish for lobster, enenue, po'opa'a, aholehole, uhu, mullet, and ulua in or near the mouths of Honopou, Honomanu, and Makapipi.
67. If water were put back in the streams, I would mālama the streams the same way I do now.
68. I would also clean the muliwai, move rocks for better flow, and observe ancient fishing practices at Honopou.
69. If there was more water in the streams, I could swim and enjoy Honopou recreationally all year round.

70. I would also get to enjoy watching the ulua go upstream, smelling the clean breeze, hearing the water flowing, and watching for 'o'opu.

71. If there was more natural flow restored to Honopou Stream, I would be better able to teach the opio of my 'ohana and others in my community how to mālama the kahawai, perpetuate the traditions and customs of my ancestors and enhance our food security for future generations.

DATED: Honopou, Maui, HI, December 10, 2014.

  
Lurlyn Scott

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILULUA, PUAKAA, WAIHUE,  
PAAKEA, WAIATAKA, KAPAUOLA,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF NORMAN "BUSH"  
MARTIN

DECLARATION OF NORMAN "BUSH" MARTIN

I, Norman "Bush" Martin, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni O Ko'olau Hui.
4. My family has an interest in property in proximity to Wailua Stream.
5. I am a taro farmer. My family grows kalo on about three to four acres of property irrigated by Piinau, Palauhulu, Waiokamilo, Kualani, and Wailua streams.
6. I am farming this land based on my cultural and traditional inheritance of land and knowledge passed on to each generation.
7. I learned how to farm taro from my great grandparents and grandparents.



8. Traditionally, my family gathered 'ōpae, 'o'opu, and hihikai from Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapii, and Waiohue. My 'ohana would also gather pohole, water cress, banana, bamboo shoot, pepeiao, and mountain haha alongside those streams.
9. My family also traditionally fished for shoreline reef fish, including uhu, puihi nikiniki, uha, honu, moi, mullet, uoauoa, aholehole, poopaa, ulua, akule, 'ō'io, and aweoweo in or near the mouth of Honopou, Hanehoi/Puolua, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapii, and Waiohue. My 'ohana would also gather limu near the mouth of those streams.
10. Traditionally, my family engaged in mālama 'āina and mālama kahawai by being good stewards. My 'ohana would protect the resources and take only what was needed from Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapii, and Waiohue. It was my family's kuleana to maintain the entire noku.
11. In addition to farming, I currently gather 'ōpae from above the diversions in Honomanu, Piinau, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, and Hanawi. It takes about four hours to walk to the place where I gather because you cannot find the 'ōpae below the diversions. Even so, sometimes I only see one 'ōpae in eight hours. I usually do not gather 'o'opu and hihikai because there isn't enough. I leave them behind so they can propagate.
12. I fish for uhu, puihi nikiniki, uha, moi, mullet, uoauoa, aholehole, poopaa, ulua, akule, 'ō'io, and aweoweo in or near the mouth of Honomanu, Wailua, Waikani (Wailuanui), West Wailuaiki, and East Wailuaiki. I don't catch very much fish. Sometimes I don't catch anything. Families in our community will often take turns fishing and share with each other to be sure there is enough to go around.

13. I engage in mālama 'āina and mālama kahawai by cleaning the streams. I also will not gather any resources if there is not enough so that they can propagate. This is automatic. It goes hand in hand with gathering practices.
14. For me, gathering and fishing from the streams is to feed my family, put a roof over our head, and teach the next generation – at least those who still reside here.
15. Gathering, fishing, and farming are also recreational for me because I enjoy practicing my traditions. I appreciate the views, the sounds, and the smells of nature that I experience while gathering. Seeing water in the stream is beauty to me.
16. The lack of stream flow has caused many families to leave Wailuanui because the resources aren't there. There are very few people we can pass down these traditions to. We call that generation "the lost generation."
17. Other specific negative effects of the lack of stream flow is that people are not opening their lo'i. And if someone above you doesn't maintain their lo'i, water flow to your lo'i is affected. That has been a real problem. There are also so many invasive species below the diversion due to the lack of stream flow, that I have to walk for four hours to be able to gather above the diversion. That takes time away from other work. Even after the four hour hike to the stream, sometimes I will see some fish and 'ōpae, but I cannot take them because there isn't enough.
18. The lack of stream flow also affects the fish near the shoreline. Fish are dependent on brackish water to spawn. With twenty-seven streams, there are twenty-seven fish nurseries. With only eight streams, there are only eight nurseries. Without all of the streams being restored, it blocks everything out. When the limu came back after the Waikani diversion was opened, there was a noticeable difference after only two weeks. The smell changed with the brackish water. The fish returned to that area.
19. The lack of stream flow has also caused me to lose approximately \$13,000-\$15,000 a year in revenue. I have not been able to pull taro in four years.
20. Ultimately, the low stream flow has displaced my community and changed our way of life.
21. If there was enough water in the streams, I would gather and fish as my family before me did. I would gather 'ōpae, 'o'opu, and hihikai from Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu,

Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapii, and Waiohue. I would also gather pohole, water cress, banana, bamboo shoot, pepeiao, and mountain haha alongside those streams. I would also fish for uhu, puihi, ninihi, uha, moi, mullet, uoua, aholehole, poopaa, ulua, akule, 'ō'io, and aweoweo in or near the mouth of Honopou, Hanehoi, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Pinaau, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapii, and Waiohue. I would expect to be able to catch fish in greater numbers. I would also continue to mālama the streams and the areas around them.

22. If there was more water in the streams, I would appreciate the natural scenery even more. There is beauty in putting life back into the streams and seeing them as they are supposed to be.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Wailua, Maui, Hawai'i, September \_\_, 2014.

*Norman Bush Martin*  
NORMAN "BUSH" MARTIN

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOĀ,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PINAAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKAA, WAIOHUE,  
PAAKEA, WAIĀKA, KAPĀULA,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF PAUL REPPUN

DECLARATION OF PAUL REPPUN

Petitioners' Direct Testimony of Paul Reppun

1. I am submitting this expert testimony in support of the petitions filed by Na Moku Aupuni O Ko'olau Hui to amend interim instream flow standards for various East Maui streams located on the Ko'olau, Maui coastline.
2. Attached as Exhibit "A" is a true and correct copy of PETITIONERS' DIRECT EXPERT TESTIMONY OF PAUL REPPUN, filed in the contested case hearing docket DLNR File No. 01-05-MA.
3. This is the testimony I prepared for and presented to the Board of Land and Natural Resources in 2005 in the contested case proceeding involving Na Moku Aupuni O Ko'olau Hui's challenge to the request of Alexander and Baldwin/Hawaiian Commercial and Sugar/East Maui Irrigation Company for a 30-year lease of the four East Maui water license areas.
4. Attached as Exhibit "B" is a true and correct copy of my most current resume.
5. I recognize that in 2008 the CWRM voted to partially restore 5 of 8 streams then under consideration by amending the IIFS for Wailuanui, Waioakamilo, Pi'ina'au, Hanehoi, and Honopou Streams, in order to respond to the claims of active taro farmers depending on those streams for the irrigation of taro crops in Wailuanui, Ke'anae, Hanehoi, and Honopou valleys.
6. However, I further understand that EMI's compliance with those amended IIFS continues to be an outstanding issue before the CWRM in this contested case hearing.
7. Accordingly, I affirm that the substance of the testimony I presented to the BLNR in 2005 is still applicable and material to the current IIFS contested case hearing before the CWRM and I now offer it for consideration in this proceeding.

DATED: Waiahole, O'ahu, HI, December \_\_, 2014.



Paul Reppun

EXHIBIT A



NATIVE HAWAIIAN LEGAL CORPORATION  
1164 Bishop Street, Suite 1205  
Honolulu, Hawaii 96813  
Telephone: 521-2302

ALAN T. MURAKAMI 2285  
MOSES K. N. HAIA III 6277

Attorneys for Petitioners  
Na Moku Aupuni O Ko'olau Hui,  
Beatrice Kekahuna and Marjorie Walleit

RECEIVED  
OFFICE OF CONSERVATION  
AND COASTAL LANDS

2005 AUG -1 P 3:59

DEPT. OF LAND &  
NATURAL RESOURCES  
STATE OF HAWAII

BOARD OF LAND AND NATURAL RESOURCES  
STATE OF HAWAII

In the Matter of the Contested Case Hearing ) DLNR FILE NO. 01-05-MA  
Regarding Water Licenses at Honomanu, )  
Keanae, Nahiku, and Huelo, Maui ) PETITIONERS' DIRECT EXPERT  
TESTIMONY OF PAUL REPPUN;  
CERTIFICATE OF SERVICE )

Hearing )  
Date: ) October 10, 2005  
Time: ) 9:00 a.m.  
Officer: ) Hon. E. John McConnell, Esq.

PETITIONERS' DIRECT EXPERT TESTIMONY OF  
PAUL REPPUN

Q. Please state your name and address for the record.

A. Paul Reppun. I live in Waiahole, O'ahu. My mailing address is [REDACTED]

Q. What is your occupation?

A. I am a taro farmer.

Q. What is your history as a taro farmer?

A. I have been farming for 31 years. In 1974, I began farming taro in Ka'alaea Valley (O'ahu). Several years later, I began growing taro in Waie'e Valley and Waiahole as well. I continue to farm taro in Waie'e and Waiahole.

Q. What is your educational background?

A. I have a bachelor's degree in biology. After receiving my degree I spent a year in Argentina gathering data for a botanist, as part of a large project comparing desert ecosystems in Argentina and Arizona.

Q. During your 31 years of farming taro, have you learned anything about the impact of water volume and temperature on taro farming?

A. In the late 1970s, when I began taro farming in Waie'e, I was a party to Reppun v. Board of Water Supply in which we sought to retain enough stream flow to grow our taro. During this case, I observed the methods and models used to take water volume and temperature measurements of my lo'i. Since that time I have, on occasions too numerous to mention, observed, conducted and assisted with taro lo'i water quantity and temperature measurements. I have reviewed and discussed a number of reports on water use in taro cultivation -- stream flows, 'auwai flows, water consumption rates, and amount and temperature of water going in and coming out of the lo'i. These practical experiences have provided me with a pretty good "eye" and feel for water quantity and quality in terms of temperature necessary for the proper and efficient growing of taro.

Q. Based on your 31 years of experience as a taro farmer, can you describe how water is used in the various stages of taro cultivation?

A. When you prepare the field, you flood it, but you don't need very much water, you just need enough to cover the surface. Using the water as your level, you level all the high spots into the deep spots until you've got your patch level.

When you plant your taro, you don't need very much water at that time; you just need enough to cover the surface to keep the weeds from growing. From that point on, as the taro starts to grow, you start to increase the water a little bit at a time. Taro can handle more depth of water as it grows.

During the period of fertilization, which usually occurs approximately every two months, water in the patch is at a fairly low level, say an inch deep. When a sufficient level of water is reached, the flow into and out of the patch is stopped. Once inflow and

outflow are stopped, the banks of the patch are checked to make sure there is no leakage of water. This minimizes the loss of fertilizer. When there is no water leaking out, the fertilizer is applied and dissolves. The water subsides into the soil and carries the fertilizer with it. Approximately a week after applying the fertilizer after the patch has gone dry, waterflow is returned to the patch. For that period of a week, which occurs approximately every two months, the taro doesn't need any water.

My own observations tell me that little fertilizer is lost in taro cultivation. There is little greening of plants along the ditches that carry water away from lo'i, indicating little loss of nitrogen. The taro responds to this single application of fertilizer for approximately two months, indicating long term retention of nutrients in the soil. When weeding or harvesting are expected to severely stir up the mud and cause muddy water to run out of the patch, farmers usually stop the water in and out to minimize soil loss.

After about eight or ten months, depending on the variety of taro, farmers no longer use any fertilizer. The taro will grow for another four to six months before harvesting, and during that time there is no fertilizing. Except when fertilizing, the water is flowing constantly, especially when the corn starts to form.

As the taro gets taller it shades out the soil, it provides more leaf cover, and water temperatures are cooler. As this occurs, the taro becomes more sensitive to temperature because this is when the corn starts to form. At about eight months or so, as the taro begins to shrink down each new leaf that comes out is smaller. Every ten days a new leaf comes out. The corn really starts to fill out in the last half of the crop cycle.

As the next leaf comes out, it's a little bit smaller, your leaf cover, the canopy over the taro patch, starts to decrease, and sunlight starts to penetrate. At that point your flow of water is especially critical because the corn is starting to fill out, and that's what you want to protect the taro from rot.

It's important to keep a good flow of water at this point. Usually, at this point, as the corn starts to rise up out of the ground, the depth of water increases as well.

Q. Based upon your 31 years of taro farming experience, how do you know if you are using too much or too little water?

A. I think the best way to know is by experience. If you want to find out what the lower limit is, then you have to experience taro crops that fail. Over the years,

I've learned that taro crops could fail for a number of reasons, but the primary reason is lack of water.

When I first grew taro, in Ka'alaea, we constructed an 'auwai out of aluminum gutter pieced together to bring the water several hundred feet from the stream. We used to bathe in the outflow from the patch, which was comfortably warm. The crop was pretty much of a disaster and was lost to hard rot (also known as guava seed). It taught me the effects of too warm water, which include guava seed and pythium rot.

When I began farming in Waihe'e, it was a time when the Board of Water Supply ("BWS") had drilled new wells and seriously depleted Waihe'e Stream and dried up the waterfall. Farmers began experiencing severe disease problems with two major root diseases: hard rot, commonly known as guava seed; and soft rot, which is caused by pythium, a mutating fungus. The farmer closest to the water source, who had the most water per acre, had the least problems. As a farmer in Waihe'e, I experienced many partial crop failures.

I have visited many taro farms on all the islands, observed how other farmers use water, and talked with them about problems with water flow and disease. My experience of chronic water shortage is not unique.

Q. Based upon your 31 years of taro farming experience, what variables affect the amount of water used in growing taro?

A. There are many. The most obvious is cultivation practices resulting in no water use, such as when the field is dried after leveling and puddling to let the mud settle before planting or when fertilizer is applied. The usual way to fertilize is to have the field flooded, but stop the water flowing in and out, throw the soluble fertilizer in the water, and let it slowly seep into the soil. Depending on percolation rates, it can take a day or a week for the field to dry. Often a patch of taro is dried for a month or two prior to pulling, to hasten its maturity and make it easier to pull.

The stage of the crop is another factor. Initially, when the taro is just planted, less water is needed, and the flow is increased as the taro starts to grow. When the taro is maturing, it shrinks down vegetatively, reducing leaf cover, which exposes the water surface to the sun. It is especially important at this time to have good flow-through, to



keep the water temperature down. If the farmer needs to hold the crop, to delay harvest, it needs to be kept cool with plenty of water.

The weather and the season also affect water use. Hot, sunny days, of course, cause the water to heat up more. Summer is a critical time because the sun is more directly overhead, and the days are longer.

Often on a rainy, cloudy day I won't bother to check the inlets to my lo'i, but on a sunny day it is the first thing I do in the morning because on sunny days the water heats up and can cause rot.

The initial temperature of the water in the stream also affects water use. More water in the stream means lower temperatures, which in turn means that the capacity of the water to absorb heat is higher, so the quantity needed is less. A farmer who uses water downstream of where an upstream user returns water to the stream must use more water because he starts with warmer water.

Some studies mention the possibility that larger acreages of taro might need less water per acre than small acreages. I don't agree. In my opinion there is a linear relationship between the amount of water needed and the area in taro cultivation. Here's why: the minimum amount of water needed is the amount that flows through the lo'i and exits at 77 degrees. This is the temperature that everyone seems to agree is the critical temperature needed in growing taro. Above this temperature pythium rot begins to accelerate unacceptably. Water that has absorbed enough heat to rise to this temperature can be said to be "used up." It has no capacity left to keep temperatures below the critical level. If a downstream farmer, irrigating the same acreage as that which has already been irrigated, were to reuse this water, it would need to be mixed with an equal amount of unused water. His water use would therefore be double that of the upstream user, but the amount of new water would be the same. The rate of water use would now be twice that of the upstream farmer, but the capacity of the total amount of water to absorb heat would be the same.

Q. Based upon your 31 years of experience as a taro farmer, what is the amount of "new" water needed per acre?

A. I believe taro needs 100,000 to 300,000 gallons of water per acre per day ("gad"). There is no precise figure because of the many variables, such as those I have

described. In an area of taro containing many lo'i, one can assume that there will be all stages of the crop cycle and that different lo'i will have different rates of use at any given time. Any figures named can be assumed to be an average of all these various use rates. The range of figures results from the other parameters discussed -- percolation rates, weather, season, location on the stream relative to other diversions, initial water temperature, and rate of dilution of used water.

What's important is that there are times when the taro farmer must use the maximum amount and that needs to be taken into account when determining how much water is required.

Q. Dramatically different figures from yours are cited in some of the reports done in the past on taro water usage. Can you discuss what you know about these studies and explain why the figures might be different from yours?

A. Studies on the water requirements of taro in Hanalei Valley on Kaua'i done by Kirk Miles for McBryde Sugar Company, in 1930-1931, and H.A.R. Austin & Associates for Gay & Robinson, in 1959, were used in connection with the McBryde v. Robinson case. The conclusion of those studies was that taro needs about 70,000 gad. Although this amount is called the total water use, it is a very misleading figure because it is a measurement of the water consumed in the taro patch and fails to consider the actual water need for taro, particularly "flow through" water.

Q. In your expert opinion, how was this figure arrived at in the studies?

A. The amount of water flowing into the lo'i was measured. The amount flowing out the other side was also measured. The amount flowing out was less than the amount flowing in because some water was lost through percolation, evaporation and transpiration. The amount of water lost in the lo'i was considered to be the total water use. The water that flowed through and was not lost was not included in the total water use figure.

Q. Does the water that flows through serve any function?

A. This "flow through" water is critical because it carries away heat and keeps the taro cool so that it doesn't develop pythium rot.

Q. Were the authors of the studies aware that their figures for total water use of taro did not include flow-through?

A. Yes. As Joel Cox said in the introduction to the study done for the McBryde Sugar Company, "a considerably greater amount would have to be diverted in order to successfully grow taro with proper circulation of water." The studies also noted the relationship between decreased flow and increased rot.

Q. Did the researchers take into account variations in water use based on some of the parameters you mentioned?

A. Yes. The actual measurements of what farmers in Hanalei were using ranged from 200,000 gad to over 1,000,000 gad. These were not quantities manipulated for experimental purposes, but were actual existing uses where the farmers were farming downstream of large diversions of water by the two contending sugar plantations. It is highly unlikely that there was a surplus of water.

Q. Why do you think these studies did not include flow-through as part of the total water use of taro?

A. These studies were done for and by the major sugar companies who were fighting for the water. The more water taro needed, the less they might get, so there was an incentive to minimize the amount of water needed for taro.

Q. Before moving on to the next report, can you discuss the effect of return flow from taro on water temperature?

A. There is no question that the return flow from taro fields can increase stream temperatures. The function of water flowing through lo'i is to cool the taro by carrying away heat. If we assume that the minimum amount of water is being used for this purpose, then the maximum allowable temperature of the water leaving the field is 77 degrees, the temperature above which pythium rot develops. Ideally, water leaving the field is well below this temperature, reducing further the likelihood of pythium rot.

The extent of any rise in stream temperature will depend on the amount of dilution that occurs when used water rejoins the stream. In the worst case scenario, all the water in the stream would be used for taro cooling, and the lower reaches of the stream would reach a temperature of 77 degrees. To my knowledge, it is not known how this might affect native stream life.

This worst case scenario is unlikely to occur. Water flowing through lo'i at night and early and late in the day has much less of a burden on its cooling function. The

highest temperatures would only be reached in the middle of the hotter days, and probably not in all the lo'i of an extended pondfield system at the same time.

Q. What effect, if any, would the increased temperatures have on native stream life?

A. While there has been speculation on the potential harm to 'o'opu of increased temperatures, to my knowledge, the levels at which 'o'opu could be affected are not known. This speculation indicates that there may need to be a component of stream flow above and beyond the projected needs of taro, to serve the function of dilution and thus preserve the health of the stream. We know that colder water has the capacity to contain more dissolved oxygen than warmer water.

Q. Chronologically, what would be the next report you are aware of?

A. Leslie J. Watson did a report on the water requirements of taro in Waialeale and Waiahole valleys on O'ahu. That report was done for the Board of Water Supply in 1962 to 1964.

Q. What was Watson's methodology and what were his results?

A. As in the Hanalei studies, he measured existing uses by farmers. The actual flows of water into lo'i ranged up to 200,000 gad. However, he used the same method of finding the difference between in-flow and out-flow to determine that the total water usage averaged 30,000 gad. At the beginning of his report, Mr. Watson cites numerous reports done in connection with court cases, mostly agreeing with his figures. Although no details are given as to the methodology used in these other cases, their close agreement and his use of them as precedent indicates to me that the methods were the same.

Q. Was Watson aware of the variable nature of taro's water requirements?

A. Yes. He wrote a paper for a symposium on root crops in 1970. It was called "The Legal Importance of the Water Requirements of Taro in Hawaii." In that paper he reaffirms the figure of from 15,000 to 60,000 gad, and he lists some of the reasons for variations in requirements. He mentions a dependency on: (1) the available supply of water and the necessity to conserve; (2) the degree of puddling of the lo'i; (3) the stage of the crop; (4) rainfall, elevation, hours of sunshine and wind conditions; (5) soil characteristics; and (6) whether or not there is a profit motive.



Q. Do you find any significance in the BWS having been the sponsor of the study?

A. The BWS wanted to take water. Minimizing water use of taro made more water available for BWS to take.

Q. Are there any more recent studies, other than measurements of your own 'auwai, that you are aware of?

A. There is the Sumida report, done in 1976, that measured existing uses in Waihe'e, O'ahu. There is nothing worth discussing in that report, however, because it was done in the winter, under conditions of water shortage, with no consultation with farmers, and uses the same methodology as Watson. Ramon de la Peña and F.M. Melchor did some controlled experiments, published in 1983, on amounts and depth of water and effects on yields of taro.

Q. What did de la Peña and Melchor conclude?

A. They found that varying the flow between 30,000 and 105,000 gad caused no significant difference in yield. They quote Watson's 1970 paper as mentioning water use being from 15,000 to 40,000 gad. De la Peña's and Melchor's estimate would not be adequate to grow taro. Although I cannot offer "scientific" proof that the quantity of water recommended by Mr. de la Peña is too little, based on my visits to all the major taro growing areas in Hawaii and to many minor ones, I can say that I have never seen lo'i with inflows approaching this small quantity of water by choice of the farmer.

Q. What methodology did de la Peña and Melchor use?

A. They planted a series of 6 x 9 meter plots, used the same variety of taro and the same fertilizer treatments, harvested at 15 months, and compared yields at harvest.

Q. How do you account for the results?

A. The report is not very detailed. In the study of water depth, the experimental plots were cement lined. If this was also true for the flow rate studies, the concrete lining could have acted as a heat sink, absorbing heat from the water during the day and releasing it to the water at night. There is no discussion of water temperature. Especially important would be the initial starting temperature of the incoming water. There appears to have been no variation in the flow rate according to the stage of the

crop, and there is no mention of the presence or absence of disease in the harvested taro. Where did the soil in the plots come from? Had it been sterilized? Only one crop cycle was studied, so perhaps disease organisms were not present or as numerous as they might be in soils successively planted in taro.

It was noted that vegetative growth was highest with the highest flow rate. Plants were tallest at time of harvest with the high flow rate. This suggests that the taro might not have been fully mature, and yields could have been higher.

Q. What were the results of de la Peña's and Melchor's depth of flooding experiments?

A. They found that yields were highest at a depth of 0 cm. The same kinds of questions come up. What was the effect of using cement tanks? What were water temperatures? If water depth was not varied over the life of the crop, according to the stage of growth, what effect could this have had?

The tests in these experiments were done in what is called "Kapa'a" soil. In experiments using "Hanalei" soil, it appears that contradictory results were obtained, but again, the conditions of the tests are not discussed.

Q. The results of these experiments seem to agree with those of the previous studies discussed. How do you relate the figures in these studies?

A. The water use rates for taro from the Miles and Watson studies clearly show how much water is consumed in the lo'i. If those amounts of water are flowed into the patch, then none will flow out. There will be no flow-through. Since de la Peña and Melchor use figures that are about the same, then in actual practice by farmers, using that quantity of water would result in no flow-through. Taro grown using the water quantities discussed in these studies would be dryland taro, which is not suitable for poi.

Q. Are there any other reports that you are familiar with?

A. There is a 1980 report by Farrington and Bellwood on the "Prehistoric Irrigation Hydrology of Pondfield Taro." This report uses a different method to determine possible uses of water in prehistoric times. The researchers analyze two 'auwai systems, one in the South Pacific and the other in Halawa Valley, Moloka'i. Based on the size and slope of the 'auwai, they determined the amount of water it could safely carry.



Once again, Watson is cited as the authority on taro water use, and his figure of 30,000 gad is referred to as the "Hawaiian Legal Requirement", or "HLR." This is referred to as the minimum needed, and is the amount they say should be used to settle disputes.

What is interesting in this report, however, is that by correlating the acreage of taro land with the capacity of the 'auwai, the researchers estimated that 85% to 90% of the 'auwai flow was used for flow-through. They say that Watson's figure would have applied only in times of extreme scarcity of water.

Q. You stated earlier that you believed 100,000 to 300,000 gad to be the amount of water needed to grow wetland taro. In some of the reports you discussed, the actual amounts of water flowing into taro patches were in the millions of gallons per acre per day range. Can you account for this great range of figures and summarize your conclusions about taro's water needs?

A. In using the 100,000 to 300,000 gad figure, I am referring to "new" water, that is, water that has not been warmed up by previous use. I think the lower figure would be sufficient in the winter or during rainy periods, when water temperatures and isolation are low. The higher figures would be necessary during periods of peak isolation. I suspect that the extremely high figures, such as are found in the Hanapepe studies, came from lower in the valley, where most of the water used by farmers would already have been used higher up in the valley.

# CERTIFICATE OF SERVICE

I hereby certify that two (2) copies of the foregoing document were duly served on Linda L. Chow, Deputy Attorney General, for Hearings Officer, The Honorable E. John McConnell on August 1, 2005, by hand delivery. I further certify that one (1) copy was served on the remaining parties as indicated, on August 1, 2005.

|  |  |
|--|--|
| Linda L. Chow, Esq.<br>Deputy Attorney General<br>For Hearings Officer<br>The Honorable E. John McConnell (Ret.)<br>465 S. King Street, Room 300<br>Honolulu, Hawaii 96813 | <input type="checkbox"/> U. S. MAIL<br><input checked="" type="checkbox"/> HAND DELIVERY |
|--|--|

|  |  |
|--|--|
| Randall K. Ishikawa, Esq.<br>Ishikawa Morihara Lau & Fong, LLP<br>841 Bishop Street, Suite 400<br>Honolulu, Hawaii 96813 | <input checked="" type="checkbox"/> U. S. MAIL<br><input type="checkbox"/> HAND DELIVERY |
|--|--|

|   |  |
|---|--|
| Elijah Yip, Esq.<br>David Schulmeister, Esq.<br>Cades Schutte<br>1000 Bishop Street, 10 <sup>th</sup> Floor<br>Honolulu, Hawaii 96813 | <input checked="" type="checkbox"/> U. S. MAIL<br><input type="checkbox"/> HAND DELIVERY |
|---|--|

|  |  |
|--|--|
| Isaac Hall, Esq.<br>2087 Wells Street<br>Wailuku, Maui, Hawaii 96793 | <input checked="" type="checkbox"/> U. S. MAIL<br><input type="checkbox"/> HAND DELIVERY |
|--|--|

|  |  |
|--|--|
| Robert H. Thomas, Esq.<br>1001 Bishop Street<br>Pauahi Tower, Suite 1600<br>Honolulu, Hawaii 96813 | <input checked="" type="checkbox"/> U. S. MAIL<br><input type="checkbox"/> HAND DELIVERY |
|--|--|

|   |  |
|---|--|
| Brian T. Moto, Esq.<br>Jane Lovell, Esq.<br>Deputy Corporation Counsel<br>County of Maui<br>200 S. High Street<br>Wailuku, Hawaii 96793 | <input checked="" type="checkbox"/> U. S. MAIL<br><input type="checkbox"/> HAND DELIVERY |
|---|--|

|  |  |
|--|--|
| Richard Kiefer, Esq.<br>David Merchant, Esq.<br>444 Hana Hwy, Suite 204<br>Kahului, Hawaii 96732 | <input checked="" type="checkbox"/> U. S. MAIL<br><input type="checkbox"/> HAND DELIVERY |
|--|--|

DATED: Honolulu, Hawai'i, August 1, 2005.



ALAN T. MURAKAMI

MOSES K. N. HALA III

Attorneys for Petitioners

Na Moku Aupuni o Ko'olau Hui, et al.

## EXHIBIT B

PAUL REPPUN

Education

PUNAHOU SCHOOL, Honolulu, Hawaii  
1968

HARVARD UNIVERSITY  
1974, Biology, PhD.

Experience

Farmer  
1975,  
Kalihoa, Oahu, Hawai'i

Farmer  
1975 – present  
Waihe'e, Oahu, Hawai'i

Farmer  
1975 – present  
Wai'ohole, Oahu, Hawai'i

Testimony

Reppun v. Board of Water Supply, 65 Haw. 331, 656 P.2d 57 (1982).

In the Matter of the Water Use Permit Applications, Petitions for Interim Instream Flow Standard Amendments, and Petitions for Water Reservations for the Waihole Ditch Combined Contested Case Hearing, CCH-OA95-1.

In The Matter of the Contested Case Hearing Regarding Water Licenses at Honomanu, Ke'anoe, Nāhiku, and Huelo, Maui

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAAU,  
PALAUHULU, \*OHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILILUA, PUAKAA, WAIOHUE,  
PAAKEA, WAI'AAKA, KAP'AILUA,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF PUALANI  
KIMOKEO

DECLARATION OF PUALANI KIMOKEO

I, Pualani Kimokeo, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni O Kō'olau Hui.
4. My father Henry Ben Kaauamo was from Wahinepee. My mother Sarah Ahkuna Hueu was from Ke'anae.

5. I grew up in Wailua/Ke'anae.

6. When I was growing up, my mother had different leases from the state. She had about fifty patches. My mother worked the patches until I was in high school. She continued farming most of them until the 90s and stopped when she was 70 years old. My father worked as a taro farmer until he was 80-something. He refused to give up. My dad was also a garbage collector for the County. He also did a lot of hunting for pigs in these mountains as well.

7. I too am a taro farmer. I grow kalo on about one acre of property in Keanae that is irrigated by Palauhulu and another water source that may be connected to Piinau.
8. I have an interest in the land I farm based on my connection to Kallimoku, on my mother's side.
9. Before times, the fathers worked the taro patches. Mothers fought to get stream flow and worked on the traditional gathering.
10. I learned traditional and customary gathering practices from my grandmother Ellen. She and my mother taught us about what to look for, how to know when big water is coming, how to respect the seasons. We would pull kalo, pick 'opihi, and gather 'opae all in the same day.
11. Traditionally, my 'ohana gathered 'opae, watercress, lū'au, haba, pepeiao, hihiwai, pupulo'i and guava in Wahinepee, Puohokamoa, Haipuena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.
12. Traditionally, my 'ohana fished for 'o'opu, aholehole, uau, and pāpio in or near the mouths of Wahinepee, Puohokamoa, Haipuena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.
13. My 'ohana also engaged in mālama 'āina and mālama kahawai at Wahinepee, Puohokamoa, Haipuena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue by respecting the seasons. They didn't have problems that required the same kind of cleaning because there was more flow.
14. Currently, my 'ohana and I gather 'opae, and limu in or near the mouths of Wahinepee, Puohokamoa, Haipuena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. I also gather 'opihi in those same areas.

15. I farm, gather, and fish to feed my family.
16. I taught my kids what I know about farming, gathering, and fishing. My kids also started hunting when they were three. They learned from Doug Chong. They are now teaching their own children our practices.
17. I engage in mālama 'āina and mālama kahawai by cleaning the ditches with a sickle. That allows better flow to my lo'i, which are the last lo'i to get fed by the streams.
18. We also enjoy Wahinepee, Puohokamoa, Haipuena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue recreationally.
19. I thank Ke Akua for everything before our eyes, everything he gives us. My mom was a strong woman. I learned a lot from her. I love that she tried to teach us. I try to instill all of that into our children. To me, Ke'anae will always be what I envision from when my mom instilled these lessons in me. To me, that's the biggest gift from Ke Akua.
20. The lack of stream flow is a problem for my family because we cannot grow kalo how we would like to. The taro gets diseased and damage. We get pocket rot and what we call "guava seed," or growths on the taro that affects the quality. We have apple snails, which like the warm water. Also, farmers in Ke'anae have to compete for water. It's not like before – we used to share and it wasn't a problem.
21. If there was more water in the stream, I would worry less about my kalo. I would expect more cool water to reach my lo'i.
22. If there were more water in the streams, my 'ohana would gather 'opae, limu, and 'opihi in or near the mouths of Wahinepee, Puohokamoa, Haipuena, Punalau/Kolea, Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. I also gather 'opihi in those same areas.
23. If water were put back in the streams, I would continue to mālama the streams and cleaning the ditches.
24. If there was more water in the streams, I would appreciate the natural scenery. It would be nice to see the streams of Ke'anae the way I knew them when I learned how to farm and gather from my mother.



I declare under penalty of perjury that the foregoing is true and correct.  
DATED: Keanae, Maui, Hawai'i, 11/01/2014, 2014.

  
PU'ALANANI KIMO'KEO

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMO'A,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINA'AU,  
PALAUHULU, 'OHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUA'IKI, EAST WAILUA'IKI,  
KOPILIULA, PUAKAA, WAI'OHUE,  
PAAKEA, WAI'AAKA, KAPAULA,  
HANAWI and MAKAPI'I STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF SANFORD  
KEKAHUNA

DECLARATION OF SANFORD KEKAHUNA

I, Sanford Kekahuna, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am the son of Beatrice Kekahuna and nephew of Marjorie Wallet, who were some of the first farmers who tried to get more water.
4. My family grows kalo on about two acres by Honopou stream.
5. Traditionally, my 'ohana gathered pohole, watercress, 'ōpae, hihiwai, 'o'opu, and prawns in and around Honopou, Kualani, Wailua, and Makapi'i.
6. My family fished for ulua, aholehole, enenue, kupipihi?, 'ō'io, weke, lae, poopaa, uhu, hinalea, kole, and he'e in or near the mouth of Honopou, Wailua, Waikani (Wailuanui), West Wailuaiki, and East Wailuaiki.
7. My 'ohana mālama-ed Honopou, Kualani, and Wailua by cleaning them, cutting wildlife back, and putting rocks back to the stream.



8. When I was small, we used to fish by the streams. We would take bamboo and a small lead line and worms. We would leave it by the stream, go do what we would do, then come back and there would be something on the line.
9. Now, I gather 'o'opu, prawns, and small baby fish at the edge of the shoreline at Honopou.
10. I fish for ulua, wholehole, enenue, kupipihī, 'ō'io, weke, lae, poopaa, uhu, hinala, kole, and he'e from Honopou out past Ke'anae, Hana, and Kaupō.
11. I gather and fish to feed my family and friends.
12. I still mālama the streams by cleaning them and cutting back wildlife. I mostly do this at Honopou because I live here but sometimes I go and help at Kualani and Wailua.
13. My family and I swim and fish for fun at Honopou. You work first, then you do what you like to.
14. At Honopou, I appreciate the rainfall, the sound of the stream by my house, the wind, the smell of flowers, and the sound of birds – they talk.
15. Because there isn't as much water, there isn't as much fish as there were before. I see the fish are slowly starting to come back. I count them to see how much. At the diversion, some 'ōpae are coming back. If they let water down, it would be more. If more water, life would come back.
16. I make more money where I work than farming. If I could, I would rather farm.
17. If there was more water, I would gather watercress, 'ōpae, and prawns. I would also gather hihīwai, which would probably come back with more water, because they eat the algae on the rocks.
18. If they gave us more water, I would fish for the same fish I do now but I would try to get more here in Honopou. If not, I would have to go somewhere else. Why go there, when I can go here? I'd rather go here.
19. If there was more water, I would mālama Honopou the same way I do now. I would also fish up stone walls and put the river back where it was.
20. If they put more water in Honopou, I would appreciate the natural beauty the same way I do now. Maybe more. That's life right there, so I would appreciate it.

21. H2O for Honopou!

I declare under penalty of perjury that the foregoing is true and correct.

SANFORD KEKAHUNA

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PINAAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKAA, WAIHUE,  
PAAKEA, WAI/AAKA, KAPAULA,  
HANAWI and MAKAPIPI STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF SOLOMON  
KAAU/AMO

DECLARATION OF SOLOMON KAAU/AMO

I, Solomon Kaaumo, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni O Ko'olau Hui.
4. My family has an interest in property in proximity to Waiokamilo Stream.
5. I am a taro farmer. My family grows kalo on property irrigated by Waiokamilo Stream. I have about four to five acres, but not all my lo'i are open because there is not enough water.
6. I am farming this land based on my love for this 'āina and to preserve our culture and traditions which in turn will preserve Hawaii.
7. I learned how to farm taro from my parents, grandparents, uncles, and aunts. I grew up on this property.

8. Traditionally, my family gathered 'ōpae, 'o'opu, and hihiwai from Honomanu, Nuaailua, Pinaau, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Paakea, Waiaka, Kapaula, Hanawi, Makapii, and Waiohue. My 'ohana also gathered plants off stream, including watercress, haha, and hapuu.
9. My family also traditionally fished for 'opihi, enenue, anae, 'ō'io moi, popaa, and other fish in or near the mouth of Honomanu and all along the coastline up to Nahiku. My 'ohana would also gather hihiwai in those streams near the shoreline.
10. Traditionally, my family engaged in mālama 'āina and mālama kahaui in and around Honomanu, Nuaailua, Pinaau, Palauhulu, 'Ōhi'a/Waianu Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Paakea, Waiaka, Kapaula, Hanawi, Makapii, and Waiohue by clearing away the 'ōpala when they gathered. They also made sure to leave enough resources behind so they could propagate.
11. Currently, my 'ohana gathers 'ōpae above the diversions in Wailua, West Wailuaiki, East Wailuaiki, Hanawi, Makapii, and Waiohue. We have to go above because there is no 'ōpae below. We gather hihiwai in Hanawi, Makapii, and Waiohue. There is no 'ō'opu for us to gather.
12. Currently, my 'ohana fishes for 'opihi, enenue, anae, 'ō'io moi, popaa, and other fish in or near the mouth of Honomanu and all along the coastline up to Nahiku. However, the fish are now scarce so we don't catch very many.
13. My family also practices mālama 'āina and mālama kahaui in and around the areas that stretch from Honomanu to Nahiku by doing what our kupuna taught us – taking out all of our 'ōpala when we leave the stream area and leaving resources behind so they can propagate.
14. I gather and fish in order to supplement my family's food resources. Living off of this food is much better than McDonalds or whatever. I also gather and fish to help pass on the tradition to my kids and grandkids.
15. My family also enjoys swimming in Wailua and Waikani.
16. I gather maybe two or three times a year in order to supply food for 'ohana gatherings on special occasions.

17. The lack of stream flow is a problem for me mostly because of the taro. Kalo is our supplemental income. I brought up my kids working the taro patch and gathering. When we had a lot of water, the taro was growing. Then came apple snails, which set us back. Then the lack of water set us back. The quality of the taro was no longer there, so the poi factory wouldn't take the taro. It is a hard life. My kids want to come home and continue this life, but it's hard to do under current conditions.

18. The lack of water has caused financial setbacks, and it has reduced the quality and quantity of taro. Additionally, not all of the lo'i on my property are opened up. Abandoned lo'i above our patches requires more work and maintenance to get water to our lo'i.

19. If there was enough water in the streams, my 'ohana would gather as my kupuna did. We would gather ōpae, 'o'opu, hihiwai, watercress, haha, and hapuu in and around Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu Wāokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Paakea, Waiaka, Kapaula, Hanawi, Makapii, and Waiohūe. We would have more choices, which would mean more resources. If you rotate from stream to stream, you can give the streams a break.

20. If there was more water in the streams, my family and I would fish for opihi, enenue, anae, 'ō'io moi, popaa, and other fish in or near the mouth of Honomanu and all along the coastline up to Nahiku.

21. If lack of stream flow was not a problem, I would continue to mālama 'āina and mālama kahawai in and around Honomanu up through Nahiku, ensuring I didn't leave any 'ōpala behind or take too much of any resource.

22. My 'ohana would continue to enjoy swimming in Wailua and Waikani (Wailuanui) and maybe other streams if there was enough stream flow.

23. I continue to work the land in my old age so that I will leave something worthwhile for my kids. It has been a hard life, but I want to make sure that my 'ohana will be ok.

I declare under penalty of perjury that the foregoing is true and correct.  
DATED: Haiku, Maui, Hawaii, December 15, 2014.

  
SOLOMON KA'AUAMO



COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMO, A,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAU,  
PALAUHULU, 'OHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAKEI, EAST WAILUAKEI,  
KOPILIULA, PUAKEA, WAIHUE,  
PAAKEA, WAIATAKA, KAPULA,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF STEVEN  
HO'OKANO

DECLARATION OF STEVEN HO'OKANO

I, Steven Ho'okano, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni O Kō'olau Hui.
4. I was born September 19, 1973 to Clarence Joseph Nishioka Hookano and Stephanie Hookano.
5. My father's father was Genzo Nishioka and his mother was Kanekoa.
6. My father was a good fisherman. He always gave away, that was the tradition. He learned how to fish from his family and by watching Kalalani, who was a master fisherman in our community.

7. I am a taro farmer. My family grows kalo on property irrigated by Waiokamilo. I'm farming this land because I got permission from my Uncle Jojo Young. I don't farm my own family's property because there's not enough water.
8. Traditionally, my family fished and gathered for what they like eat.
9. My 'ohana gathered 'ōpae, 'o'opu, prawns, and frogs in Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, and Puakaa. Lakini (off Waiokamilo) and Puakaa were good places for 'ōpae.
10. Traditionally, my 'ohana fished for akule, enenue, uu, menpachi, anae, manini, moi, 'ahi, abolehole, pāpio, 'ō'io, and opihī in or near the mouths of Honomanu, Nuaailua, Piinau, Palauhulu, 'Ōhi'a/Waianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, and Waiohue. They would live bait and throw net. They even used to throw net in the spring at Nuaailua. My
11. My 'ohana also engaged in mālama 'āina and mālama kahawai in the streams they used for farming, fishing and gathering by not overfishing or overgathering. They were self-monitoring.
12. When I was a kid, I used to be able to gather 'ōpae right from the 'auwai. Once the water flow changed, the 'ōpae never came back into the 'auwai so I don't really gather anymore. Too far.
13. I currently dive and lay net for the same kind of fish my family would get from Honomanu to East Wailuaiki. I don't see as much fish as before.
14. I fish because it is part of my diet. I fished like my father did to help raise our family. It is also important now to do it to help feed the older generations in our community.
15. I practice mālama 'āina and mālama kahawai by not overfishing. I self-regulate. This applies to all the streams that feed the ocean where I fish. I also clean the ditches off Waiokamilo.
16. The lack of stream flow has been a problem. I cannot farm on two acres of my family's land because there is not enough water. The property sits at the end of the flow and the water is too warm. That can cause pocket rot. Instead, I farm on my Uncle's property (Jojo Young). The taro quality isn't as good.
17. My brother, who owns a catering business, has been affected by the junk taro that we have been producing the last few years so he has to get taro from other valleys.

18. Also, there has been fighting amongst community members over water needs. This shouldn't be happening.
19. If there was more water, I would definitely open up a few more acres of kalo in Wailua.
20. If stream flow were restored, I would probably gather 'ōpae in the 'auwai again off Waiokamilo.
21. If water was put back in the streams, I would definitely continue fishing in the ocean fed by Honomanu, Nuaailua, Pīnaau, Palauhulu, 'Ōhi'a/Wāianu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki for the same kind of fish we got traditionally and that I fish for now. Hopefully there would be more.
22. If water was restored, I would keep self-regulating my fishing practices and cleaning the ditches to allow for stream flow to reach the lo'i fed by Waiokamilo.
23. Honestly, when I came home and never had the waterfall, I was pissed off. Growing taro is what I love to do, so when no more water, I get pissed off.
24. Even though EMI put water back, I keep wondering if this is a blessing or a curse. I don't see the water!
25. After those releases, EMI was making record profit. What's up with that?
26. I have friends and family who work for EMI. They say they are concerned about their jobs, but I always think, you can get another job, but you can't get another culture!

I declare under penalty of perjury that the foregoing is true and correct.

STEVEN HOOKANO

NATIVE HAWAIIAN LEGAL CORPORATION  
1164 Bishop Street, Suite 1205  
Honolulu, Hawai'i 96813  
Telephone: 521-2302

ALAN T. MURAKAMI 2285  
CAMILLE KAIMĀLIE KALAMA 8420  
ASHLEY K. OBREY 9199  
SUMMER L. H. SYLVA 9649

Attorneys for Petitioners  
Nā Moku Aupuni O Kō'olau Hui,  
Lurlyn Scott and Sanford Kekahuna

# COMMISSION ON WATER RESOURCE MANAGEMENT

## STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILUILA, PUAKAA, WAIOHUE,  
PAAKEA, WAIJAKA, KAPAULA,  
HANAWI and MAKAPII STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF TERESA M. "TERI"  
GOMES; EXHIBITS "A-2"-"A-136"

## DECLARATION OF TERESA M. "TERI" GOMES

I, TERESA M. "TERI" GOMES, hereby declare based upon personal knowledge of the facts stated herein.

1. I am presently employed as a title and genealogy researcher at the Native Hawaiian Legal Corporation (hereafter, "NHLCC") and have been involved in researching Hawaiian land titles and family genealogies for over 35 years.



2. My duties as a title and genealogy researcher regularly require me to trace evidence of title in various public and private repositories of documents and information related to the title to fee simple lands, including but not limited to the Bureau of Conveyances, Department of Land and Natural Resources (hereafter, "Bureau"), Land Management Office, Department of Land and Natural Resources (hereafter, "LMO"), and the Hawai'i State Archives, Department of Accounting and General Services (hereafter, "Archives"), back to the Mahele of 1848.
3. Where a holder of title may have died without signing a deed, will or other conveyance of one's property interest during his or her lifetime, I conduct research on the genealogy of the relevant title holder in order to determine how title may have passed down to succeeding generations through intestate succession.
4. To the extent permitted by law, I also research the records of other repositories, including but not limited to: (a) the Circuit Courts of the State of Hawai'i; (b) the Hawai'i Supreme Court; (c) Hawai'i State Public Libraries; (d) the Hawai'i State Department of Health, Bureau of Health Statistics; and (e) County Real Property Tax Assessment Offices.
5. The exhibits, findings and conclusions described below are based upon my examination of records, including but not limited to: (a) the Archives; (b) the Bureau; (c) the Board of Commissioners to Quiet Land Titles; (d) the Survey Division, Department of Accounting and General Services; and (e) the County of Maui, Real Property Tax Assessment Office.
6. **Exhibit "A-2"** is County of Maui, Second Division, Tax Map Key (hereafter, "TMK (2)") 1-1-03-11, containing 2.27 acres, more or less, being (a) Land Commission Award (hereafter, "LCA") 4665-G (Volume 9 Page 361); (b) Native Testimony (hereafter, "NT")

- Volume 5 Page 402 (Hawaiian and English); (c) Foreign Testimony (hereafter, "FT") Volume 8 Pages 265-266 and Volume 16 Page 114; (d) Royal Patent (hereafter, "RP") 3341 (Volume 14 Pages 475-476); (e) Translation of Apana 2 LCA 4665-G; and (f) Derivation Instrument(s).
7. As adjudicated, LCA 4665-G is a kuleana award for lands claimed by a native tenant pursuant to the Act of August 6, 1850, commonly called the "Kuleana Act." *See L. 1850, p. 202.* As described by testimony thereto, Apana 2 contained 6 lo'i poalima (chief's irrigated terrace plantation).
8. **Exhibit "A-3"** is TMK (2) 1-1-03-15, containing 1.99 acres, more or less, being (a) LCA (hereafter, "LCA") 4848-F (Volume 9 Page 362); (b) NT (hereafter, "NT") Volume 5 Pages 436-437 (Hawaiian and English); (c) FT (hereafter, "FT") Volume 8 Page 296; (d) RP (hereafter, "RP") 3332 (Volume 14 Pages 457-458); (e) Translation of Apana 2 LCA 4848-F; and (f) Derivation Instrument(s).
9. As adjudicated, LCA 4848-F is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 was a lo'i (irrigated terrace) patch.
10. **Exhibit "A-4"** is TMK (2) 1-1-03-16, containing 0.87 acres, more or less, being (a) LCA 4853-L (Volume 3 Pages 827-828); (b) NT Volume 5 Page 434 (Hawaiian and English); (c) FT Volume 8 Page 294; (d) RP 3268 (Volume 14 Pages 329-330); (e) Translation of Apana 1 LCA 4853; and (f) Derivation Instrument(s).
11. As adjudicated, LCA 4853-L is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 was an ili (land area).
12. **Exhibit "A-5"** is TMK (2) 1-1-03-17, containing 0.07 acres, more or less, being

- (a) LCA 4848-E (Volume 3 Pages 824-825); (b) NT Volume 5 Page 436 (Hawaiian and English); (c) FT Volume 8 Pages 295-296 and Volume 16 Page 107; (d) RP 3232 (Volume 14 Pages 337-338); (e) Translation of Apana 2 LCA 4848-E; and (f) Derivation Instrument(s).
13. As adjudicated, LCA 4848-E is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 was a lo'i (irrigated terrace).
14. **Exhibit "A-6"** is TMK (2) 1-1-03-18, containing 0.469 acres, more or less, being (a) LCA 4848 (Volume 7 Page 447); (b) Native Register (hereafter, "NR") Volume 6 Page 208 (Hawaiian and English); (c) NT Volume 5 Pages 434-435 (Hawaiian and English); (d) FT Volume 8 Page 294; (e) RP 3655 (Volume 16 Pages 69-70); (f) Translation of Apana 2 LCA 4848; and (g) Derivation Instrument(s).
15. As adjudicated, LCA 4848 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 was a lo'i kalo (irrigated taro terrace).
16. **Exhibit "A-7"** is TMK (2) 1-1-03-22, containing 1.00 acre, more or less, being (a) LCA 4848-E (Volume 3 Pages 824-825); (b) NT Volume 5 Page 436 (Hawaiian and English); (c) FT Volume 8 Pages 295-296 and Volume 16 Page 107; (d) RP 3232 (Volume 14 Pages 337-338); (e) Translation of Apana 1 LCA 4848-E; and (f) Derivation Instrument(s).
17. As adjudicated, LCA 4848-E is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 was an ili (land area).
18. **Exhibit "A-8"** is TMK (2) 1-1-03-23, containing 0.71 acre, more or less, being (a) LCA 4848-G (Volume 3 Pages 826-827); (b) NT Volume 5 Pages 436-437 (Hawaiian and

English); (c) FT Volume 8 Page 296; (d) RP 3346 (Volume 14 Pages 485-486); (e) Translation of Apana 1 LCA 4848-G; and (f) Derivation Instrument(s).

19. As adjudicated, LCA 4848-G is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 was an ili (land area).

20. **Exhibit "A-9"** is TMK (2) 1-1-03-24, containing 0.75 acre, more or less, being (a) LCA 4847 (Volume 3 Pages 445-446); (b) NR Volume 6 Pages 207-208 (Hawaiian and English); (c) NT Volume 5 Pages 375-376 (Hawaiian and English); (d) FT Volume 8 Page 242; (e) RP 3266 (Volume 14 Pages 325-326); (f) Translation of Apana 3 LCA 4847; and (g) Derivation Instrument(s).

21. As adjudicated, LCA 4847 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 3 contained eight (8) lo'i (irrigated terraces).

22. **Exhibit "A-10"** is TMK (2) 1-1-03-25, containing 0.74 acre, more or less, being (a) LCA 4854 (Volume 3 Page 477); (b) NR Volume 6 Page 210 (Hawaiian and English); (c) NT Volume 5 Pages 378-379 (Hawaiian and English); (d) FT Volume 8 Page 245; (e) RP 3270 (Volume 14 Pages 333-334); (f) Translation of LCA 4854; and (g) Derivation Instrument(s).

23. As adjudicated, LCA 4854 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot was kalo (taro) land containing four (4) lo'i (irrigated terraces).

24. **Exhibit "A-11"** is TMK (2) 1-1-03-29, designated Lot 15-B, containing 0.25 acre, more or less, being (a) Land Patent Grant (hereafter, "LP Grant) S-13698 (Volume 98 Pages 477-478) and (b) Derivation Instrument(s).



25. As granted, LP Grant S-13698 is a fee simple conversion of Homestead Lease No. 92 for agricultural homestead purposes. As described therein, Lot 15-B is a taro lot.
26. **Exhibit "A-12"** is TMK (2) 1-1-03-31, designated Lot 17, containing 2.50 acres, more or less, being (a) LP Grant S-14514 (Volume 110 Pages 53-56) and (b) Derivation Instrument(s).
27. As granted, LP Grant S-14514 is a purchase of government land for agricultural homestead purposes. As shown on map therein, Lot 17 runs along Kukuipuka Gulch and two (2) kuleana awards.
28. **Exhibit "A-13"** is TMK (2) 1-1-03-34, containing 0.511 acre, more or less, being (a) LCA 4665-G (Volume 9 Page 361); (b) NT Volume 5 Page 402 (Hawaiian and English); (c) FT Volume 8 Pages 265-266 and Volume 16 Page 114; (d) RP 3341 (Volume 14 Pages 475-476); (e) Translation of Apana 1 LCA 4665-G; and (f) Derivation Instrument(s).
29. As adjudicated, LCA 4665-G is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 was an ili (land area).
30. **Exhibit "A-14"** is TMK (2) 1-1-03-36, designated Lot 17-A, containing 1.05 acre, more or less, being (a) LP Grant S-14514 (Volume 110 Pages 53-56) and (b) Derivation Instrument(s).
31. As granted, LP Grant S-14514 is a purchase of government land for agricultural homestead purposes. As shown on map therein, Lot 17-A is a "Wet Land" lot (currently zoned for agricultural use).
32. **Exhibit "A-15"** is TMK (2) 1-1-03-37, designated Lot 14-A of Homestead Lease No. 17, containing 0.53 acre, more or less, a portion of the Government (Crown) Land of

- Keanae, being (a) Tax History Sheet(s) showing usage, (b) Tax Assessment Sheet(s) showing current lessee(s), and Derivation Instrument(s).
33. As assessed, TMK (2) 1-1-03-37 is zoned for agricultural use and leased for homestead agricultural purposes.
34. **Exhibit "A-16"** is TMK (2) 1-1-03-38, designated Lot 15-A, containing 0.42 acre, more or less, being (a) LP Grant S-13698 (Volume 98 Pages 477-478) and (b) Derivation Instrument(s).
35. As granted, LP Grant S-13698 is a fee simple conversion of Homestead Lease No. 92 for agricultural homestead purposes. As described therein, Lot 15-A is a taro lot.
36. **Exhibit "A-17"** is TMK (2) 1-1-03-39, designated Lot 13-A, containing 0.52 acre, more or less, being (a) LP Grant S-14821 (Volume 110 Pages 78-81) and (b) Derivation Instrument(s).
37. As granted, LP Grant S-14821 is a purchase of government land for agricultural homestead purposes. As described therein, Lot 13-A is a taro lot.
38. **Exhibit "A-18"** is TMK (2) 1-1-03-40, containing 0.30 acre, more or less, being (a) LCA 4848-H (Volume 3 Page 829); (b) NT Volume 5 Page 438 (Hawaiian and English); (c) FT Volume 8 Pages 297-298; (d) RP 3271 (Volume 14 Pages 335-336); (e) Translation of Apana 1 LCA 4848-H; (f) Assessment Instrument(s); and (g) Business registration.
39. As adjudicated, LCA 4848-H is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 contained five (5) lo'i (irrigated terraces).
40. **Exhibit "A-19"** is TMK (2) 1-1-03-41, containing 6.12 acres, more or less, designated Lots 1 and 3 of Land Court Application 240 of Annie Amoy Ah Quai Chamberlain,

- being (a) Tax History Sheet(s) showing usage; (b) Tax Assessment Sheet(s) showing current ownership; and (c) Derivation Instrument(s).
41. As assessed, TMK (2) 1-1-03-41 is zoned for agricultural use.
42. **Exhibit "A-20"** is TMK (2) 1-1-03-42, containing 0.13 acre, more or less, being (a) LCA 4874 (Volume 7 Page 506); (b) NR Volume 6 Page 214 (Hawaiian and English); (c) RP 3656 (Volume 16 Pages 71-72); (d) Translation of Apana 2 LCA 4854; and (e) Derivation Instrument(s).
43. As adjudicated, LCA 4874 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 contained two (2) lo'i (irrigated terraces).
44. **Exhibit "A-21"** is TMK (2) 1-1-03-43, containing 0.146 acres, more or less, a portion of the Government (Crown) Land of Kanae, being (a) Tax History Sheet(s) showing usage and (b) Tax Assessment Sheet(s) showing current lessee(s).
45. As assessed, TMK (2) 1-1-03-43 is zoned for agricultural use and leased for agricultural purposes.
46. **Exhibit "A-22"** is TMK (2) 1-1-03-44, containing 0.201 acres, more or less, a portion of the Government (Crown) Land of Kanae, being (a) Tax History Sheet(s) showing usage and (b) Tax Assessment Sheet(s) showing current lessee(s).
47. As assessed, TMK (2) 1-1-03-44 is zoned for agricultural use and leased for agricultural purposes.
48. **Exhibit "A-23"** is TMK (2) 1-1-03-45, designated Lot 11-A, containing 0.80 acre, more or less, being (a) LP Grant S-14818 (Volume 110 Pages 67-70) and (b) Derivation Instrument(s).

49. As granted, LP Grant S-14821 is a purchase of government land for agricultural homestead purposes. As described therein, Lot 11-A is a taro lot.
50. **Exhibit "A-24"** is TMK (2) 1-1-03-48, designated Lot 10-B, containing 0.11 acre, more or less, being (a) LP Grant 13164 (Volume 93 Pages 333-339) and (b) Derivation Instrument(s).
51. As granted, LP Grant 13164 is a purchase of government land for agricultural homestead purposes. As described therein, Lot 10-B is a taro lot.
52. **Exhibit "A-25"** is TMK (2) 1-1-03-49, containing 0.27 acre, more or less, being (a) LCA 4856 (Volume 7 Pages 444-445); (b) NR Volume 6 Pages 210-211 (Hawaiian and English); (c) NT Volume 5 Page 375 (Hawaiian and English); (d) FT Volume 8 Page 241; (e) RP 3357 (Volume 14 Pages 507-508); (e) Translation of Apana 2 LCA 4856; and (f) Derivation Instrument(s).
53. As adjudicated, LCA 4856 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 contained two (2) lo'i (irrigated terraces).
54. **Exhibit "A-26"** is TMK (2) 1-1-03-50, designated Lot 10-C, containing 0.06 acre, more or less, being (a) LP Grant 13164 (Volume 93 Pages 333-339) and (b) Derivation Instrument(s).
55. As granted, LP Grant 13164 is a purchase of government land for agricultural homestead purposes. As described therein, Lot 10-C is a taro lot.
56. **Exhibit "A-27"** is TMK (2) 1-1-03-53, containing 2.40 acre, more or less, being (a) LCA 4665-F (Volume 3 Page 831); (b) NT Volume 5 Page 401 (Hawaiian and English); (c) FT Volume 8 Page 265; (d) RP 3274 (Volume 14 Pages 341-342); (e) Translation of Apana 1

LCA 4665-F; and (f) Derivation Instrument(s).

57. As adjudicated, LCA 4665-F is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 was an ili (land area).

58. **Exhibit "A-28"** is TMK (2) 1-1-03-57, designated Lot 9-A, containing 0.85 acres, more or less, being (a) LP Grant S-14783 (Volume 109 Pages 308-311) and (b) Derivation Instrument(s).

59. As granted, LP Grant S-14783 is a purchase of government land for agricultural homestead purposes. As described therein, Lot 9-A is a taro lot.

60. **Exhibit "A-29"** is TMK (2) 1-1-03-65, containing 0.18 acres, more or less, a portion of Lot 1 of Land Court Application 240 of Annie Amoy Ah Quai Chamberlain, being (a) Tax History Sheet(s) showing usage; (b) Tax Assessment Sheet(s) showing current ownership; and (c) Derivation Instrument(s).

61. As assessed, TMK (2) 1-1-03-65 is zoned conservation.

62. **Exhibit "A-30"** is TMK (2) 1-1-03-75, containing 0.128 acres, more or less, being (a) LCA 4856 (Volume 7 Pages 444-445); (b) NR Volume 6 Pages 210-211 (Hawaiian and English); (c) NT Volume 5 Page 375 (Hawaiian and English); (d) FT Volume 8 Page 241; (e) RP 3357 (Volume 14 Pages 507-508); (e) Translation of Apana 1 LCA 4856; and (f) Derivation Instrument(s).

63. As adjudicated, LCA 4856 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 contained four (4) lo'i (irrigated terraces).

64. **Exhibit "A-31"** is TMK (2) 1-1-03-76, containing 0.09 acre, more or less, being

(a) LCA 2441 (Volume 7 Page 444); (b) NR Volume 3 Page 501 (Hawaiian and English); (c) NT Volume 3 Pages 373-374 (Hawaiian and English); (d) FT Volume 8 Page 240; (e) RP 2946 (Volume 13 Pages 375-376); (e) Translation of Apana 2 LCA 2441; and (f) Derivation Instrument(s).

65. As adjudicated, LCA 2441 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 contained two (2) lo'i (irrigated terraces).

66. **Exhibit "A-32"** is TMK (2) 1-1-03-81, containing 0.66 acre, more or less, being (a) LCA 2442 (Volume 7 Pages 443-444); (b) NR Volume 3 Page 501 (Hawaiian and English); (c) NT Volume 3 Page 374 (Hawaiian and English); (d) FT Volume 8 Pages 240-241; (e) RP 2017 (Volume 8 Pages 353-354); (e) Translation of LCA 2442; and (f) Derivation Instrument(s).

67. As adjudicated, LCA 2442 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot contained six (6) lo'i (irrigated terraces).

68. **Exhibit "A-33"** is TMK (2) 1-1-03-82, containing 1.42 acres, more or less, being (a) LCA 4856 (Volume 7 Pages 444-445); (b) NR Volume 6 Pages 210-211 (Hawaiian and English); (c) NT Volume 3 Page 375 (Hawaiian and English); (d) FT Volume 8 Page 241; (e) RP 3357 (Volume 14 Pages 507-508); (e) Translation of Apana 1 LCA 4856; and (f) Derivation Instrument(s).

69. As adjudicated, LCA 4856 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 contained four (4) lo'i (irrigated terraces).

70. **Exhibit "A-34"** is TMK (2) 1-1-03-83, designated Lot 8-A, containing 0.70 acre,



more or less, being (a) LP Grant 13164 (Volume 93 Pages 333-339) and (b) Derivation Instrument(s).

71. As granted, LP Grant 13164 is a purchase of government land for agricultural homestead purposes. As described therein, Lot 8-A is a taro lot.

72. **Exhibit "A-35"** is TMK (2) 1-1-03-89, designated Lot 7-A-1, containing 0.48 acre, more or less, being (a) LP Grant 13208 (Volume 94 Pages 31-35) and (b) Derivation Instrument(s).

73. As granted, LP Grant 13208 is a purchase of government land for agricultural homestead purposes. As described therein, Lot 7-A-1 is a taro lot.

74. The total acreage for all parcels assessed under TMK (2) 1-1-03, situate in Ke'anae, Ko'olau, Hana, Maui, is 29.695 acres, more or less.

75. **Exhibit "A-36"** is TMK (2) 1-1-04-03, containing 0.46 acres, more or less, being (a) LCA 4853-G (Volume 3 Page 612); (b) NT Volume 5 Pages 432-433 (Hawaiian and English); (c) FT Volume 8 Page 292; (d) RP 3255 (Volume 14 Pages 303-304); (e) Translation of Apana 2 LCA 4853-G; and (f) Derivation Instrument(s).

76. As adjudicated, LCA 4853-G is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 contained two (2) lo'i (irrigated terraces).

77. **Exhibit "A-37"** is TMK (2) 1-1-04-05, containing 4.82 acres, more or less, a portion of the Government (Crown) Land of Keanae, being (a) Tax History Sheet and Tax Assessment Sheet(s) showing no lessee(s).

78. As assessed, TMK (2) 1-1-04-05 is zoned for agricultural use.

79. **Exhibit "A-38"** is TMK (2) 1-1-04-06, containing 1.53 acres, more or less, a

portion of the Government (Crown) Land of Keanae, being (a) Tax History Sheet showing usage and Tax Assessment Sheet(s) showing no lessee(s).

80. As assessed, TMK (2) 1-1-04-06 is zoned for agricultural use.

81. **Exhibit "A-39"** is TMK (2) 1-1-04-09, containing 0.62 acres, more or less, being (a) LCA 4779 (Volume 3 Page 488); (b) NR Volume 6 Page 542 (Hawaiian and English); (c) NT Volume 5 Page 367 (Hawaiian and English); (d) FT Volume 8 Page 233; (e) RP 3279 (Volume 14 Pages 351-352); (e) Translation of LCA 4779; and (f) Derivation Instrument(s).

82. As adjudicated, LCA 4779 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot contained eight (8) lo'i (irrigated terraces).

83. **Exhibit "A-40"** is TMK (2) 1-1-04-11, containing 0.360 acres, more or less, being (a) LCA 11043-B (Volume 3 Page 614); (b) NR Volume 6 Page 541 (Hawaiian and English); (c) NT Volume 5 Pages 429-430 (Hawaiian and English); (d) FT Volume 8 Page 289; (e) RP 2786 (Volume 13 Pages 33-34); (e) Translation of Apana 2 LCA 11043-B; and (f) Derivation Instrument(s).

84. As adjudicated, LCA 11043-B is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 was a mo'o (narrow strip of land).

85. **Exhibit "A-41"** is TMK (2) 1-1-04-12, containing 0.35 acres, more or less, being (a) LCA 5068 (Volume 3 Page 832); (b) NR Volume 6 Page 543 (Hawaiian and English); (c) NT Volume 5 Pages 371-372 (Hawaiian and English); (d) FT Volume 8 Page 238; (e) RP 7025 (Volume 26 Pages 469-470); (e) Translation of Apana 1 LCA 5068; and (f) Derivation Instrument(s).

86. As adjudicated, LCA 5068 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 contained twenty-four (24) lo'i (irrigated terraces).
87. **Exhibit "A-42"** is TMK (2) 1-1-04-13, containing 1.27 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet(s) showing usage and (b) Tax Assessment Sheet(s) showing current lessee(s).
88. As assessed, TMK (2) 1-1-04-13 is zoned for agricultural use and leased for agricultural purposes.
89. **Exhibit "A-43"** is TMK (2) 1-1-04-14, containing 0.19 acres, more or less, being (a) LCA 6769 (Volume 3 Page 615); (b) FT Volume 8 Pages 273-274; (c) RP 3260 (Volume 14 Pages 313-314); (d) Translation of LCA 6769; and (f) Derivation Instrument(s).
90. As adjudicated, LCA 6769 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot contained six (6) kalo lo'i (irrigated taro terraces).
91. **Exhibit "A-44"** is TMK (2) 1-1-04-15, containing 0.620 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax Assessment Sheet(s) showing no lessee(s).
92. As assessed, TMK (2) 1-1-04-15 is zoned for agricultural use.
93. **Exhibit "A-45"** is TMK (2) 1-1-04-16, containing 4.905 acres, more or less, being (a) LCA 4853-E (Volume 3 Page 844); (b) NT Volume 5 Page 432 (Hawaiian and English); (c) FT Volume 8 Page 292; (d) RP 3277 (Volume 14 Pages 347-348); (e) Translation of LCA 4853-E; and (f) Derivation Instrument(s).
94. As adjudicated, LCA 4853-E is a kuleana award for lands claimed by a native

- tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot is a mo'o (narrow strip of land).
95. **Exhibit "A-46"** is TMK (2) 1-1-04-17, a parcel of land dropped into TMK (2) 1-04-13 (**Exhibit "A-42"**) and no longer assessed as a separate parcel of land.
96. **Exhibit "A-47"** is TMK (2) 1-1-04-18, containing 0.65 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax Assessment Sheet(s) showing no lessee(s).
97. As assessed, TMK (2) 1-1-04-18 is zoned for agricultural use.
98. **Exhibit "A-48"** is TMK (2) 1-1-04-20, containing 1.006 acres, more or less, being (a) LCA 5056 (Volume 3 Page 486); (b) NR Volume 6 Pages 234 (Hawaiian and English); (c) NT Volume 5 Page 368 (Hawaiian and English); (d) FT Volume 8 Page 235; (e) RP 2804 (Volume 13 Pages 69-70); (e) Translation of LCA 5056; and (f) Derivation Instrument(s).
99. As adjudicated, LCA 5056 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot contained twenty-one (21) lo'i (irrigated terraces).
100. **Exhibit "A-49"** is TMK (2) 1-1-04-21, containing 0.75 acres, more or less, being (a) LCA 4853-G (Volume 3 Page 612); (b) NT Volume 5 Pages 432-433 (Hawaiian and English); (c) FT Volume 8 Page 292; (d) RP 3255 (Volume 14 Pages 303-304); (e) Translation of Apana 1 LCA 4853-G; and (f) Derivation Instrument(s).
101. As adjudicated, LCA 4853-G is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 is a mo'o (narrow strip of land).
102. **Exhibit "A-50"** is TMK (2) 1-1-04-22, containing 2.75 acres, more or less, being

- (a) LCA 5051 (Volume 3 Pages 613-614); (b) NR Volume 6 Page 233 (Hawaiian and English); (c) NT Volume 5 Pages 236 and 370 (Hawaiian and English); (d) FT Volume 8 Page 236; (e) RP 3788 (Volume 13 Pages 37-38); (e) Translation of Apana 1 LCA 5051; and (f) Derivation Instrument(s).
103. As adjudicated, LCA 5051 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 contained twenty-six (26) lo'i (irrigated terraces).
104. **Exhibit "A-51"** is TMK (2) 1-1-04-23, containing 1.41 acres, more or less, being (a) LCA 4867 (Volume 3 Pages 493-494); (b) NR Volume 6 Pages 211-212 (Hawaiian and English); (c) NT Volume 5 Pages 363-364 (Hawaiian and English); (d) FT Volume 8 Page 280; (e) RP 2787 (Volume 13 Pages 35-36); (e) Translation of LCA 4867; and (f) Derivation Instrument(s).
105. As adjudicated, LCA 4867 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot is a mo'o (narrow strip of land).
106. **Exhibit "A-52"** is TMK (2) 1-1-04-24, containing 0.614 acres, more or less, being (a) LCA 5030 (Volume 3 Pages 488-489); (b) NR Volume 6 Page 229 (Hawaiian and English); (c) NT Volume 6 Page 367 (Hawaiian and English); (d) FT Volume 8 Page 233; (e) RP 2811 (Volume 13 Pages 83-84); (e) Translation of Apana 1 LCA 5030; and (f) Derivation Instrument(s).
107. As adjudicated, LCA 5030 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 contained ten (10) lo'i (irrigated terraces).

108. **Exhibit "A-53"** is TMK (2) 1-1-04-25, containing 0.42 acres, more or less, being (a) LCA 5066-B (Volume 3 Pages 487-488); (b) NR Volume 6 Page 545 (Hawaiian and English); (c) NT Volume 5 Page 367 (No Hawaiian; only English); (d) FT Volume 8 Page 233; (e) RP 3254 (Volume 14 Pages 301-302); (e) Translation of Apana 1 LCA 5066-B; and (f) Derivation Instrument(s).
109. As adjudicated, LCA 5066-B is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 is an ili (land area).
110. **Exhibit "A-54"** is TMK (2) 1-1-04-26, containing 0.31 acres, more or less, being (a) LCA 4587 (Volume 3 Page 845); (b) NR Volume 6 Pages 186-187 (Hawaiian and English); (c) NT Volume 5 Pages 411 and 430 (Hawaiian and English); (d) FT Volume 8 Pages 274, 289, and 294; (e) RP 2806 (Volume 13 Pages 73-74); (e) Translation of LCA 4587; and (f) Derivation Instrument(s).
111. As adjudicated, LCA 4587 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot contained twelve (12) lo'i (irrigated terraces).
112. **Exhibit "A-55"** is TMK (2) 1-1-04-27, containing 1.60 acres, more or less, being (a) LCA 5062 (Volume 3 Pages 843-844); (b) NR Volume 6 Page 544 (Hawaiian and English); (c) NT Volume 5 Page 370 (Hawaiian and English); (d) FT Volume 8 Pages 236-237; (e) RP 3263 (Volume 14 Pages 319-320); (e) Translation of LCA 5062; and (f) Derivation Instrument(s).
113. As adjudicated, LCA 5062 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot contained twenty (20)



lo'i (irrigated terraces).

114. **Exhibit "A-56"** is TMK (2) 1-1-04-28, containing 1.25 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax Assessment Sheet(s) showing no lessee(s).

115. As assessed, TMK (2) 1-1-04-28 is zoned for agricultural use.

116. **Exhibit "A-57"** is TMK (2) 1-1-04-30, containing 1.72 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet(s) showing usage and (b) Tax Assessment Sheet(s) showing current lessee(s).

117. As assessed, TMK (2) 1-1-04-30 is zoned for agricultural use and leased for agricultural purposes.

118. **Exhibit "A-58"** is TMK (2) 1-1-04-38, containing 0.125 acres, more or less, being (a) LCA 3499 (Volume 3 Pages 844-845); (b) NR Volume 6 Pages 94-95 (Hawaiian and English); (c) NT Volume 5 Page 429 (Hawaiian and English); (d) FT Volume 8 Pages 288-289; (e) RP 3264 (Volume 14 Pages 321-322); (e) Translation of LCA 3499; and (f) Derivation Instrument(s).

119. As adjudicated, LCA 3499 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot contained seven (7) lo'i (irrigated terraces).

120. The total acreage for all parcels assessed under TMK (2) 1-1-04, situate in Wailua, Ko'olau, Hana, Maui, is 27.73 acres, more or less.

121. **Exhibit "A-59"** is TMK (2) 1-1-05-12, containing 0.338 acres, more or less, being (a) LCA 10828-B (Volume 3 Pages 377-378); (b) NT Volume 5 Pages 378-379 (Hawaiian and English); (c) FT Volume 8 Page 244; (d) RP 2802 (Volume 13 Pages 65-66); (e) Translation

of Apana 1 LCA 10828-B; and (f) Derivation Instrument(s).

122. As adjudicated, LCA 10828 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 was a loko (pond).

123. **Exhibit "A-60"** is TMK (2) 1-1-05-15, containing 1.684 acres, more or less, being (a) LCA 4865 (Volume 3 Pages 494-495); (b) NR Volume 6 Page 211 (Hawaiian and English); (c) NT Volume 5 Page 262 (Hawaiian and English); (d) FT Volume 8 Pages 229-230; (e) RP 6144 (Volume 23 Pages 455-456); (e) Translation of Apana 1 LCA 4865; and (f) Derivation Instrument(s).

124. As adjudicated, LCA 4865 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 was a mo'o (narrow strip of land).

125. **Exhibit "A-61"** is TMK (2) 1-1-05-16, designated Lots 45 and 45-A, containing 2.33 acres, more or less, being (a) LP Grant S-14662 (Volume 108 Pages 247-250) and (b) Derivation Instrument(s).

126. As granted, LP Grant S-14662 is a purchase of government land for agricultural homestead purposes. As described therein, Lots 45 and 45-A are two (2) Wailua Homestead lots.

127. **Exhibit "A-62"** is TMK (2) 1-1-05-17, containing 3.03 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet(s) showing usage and (b) Tax Assessment Sheet(s) showing current lessee(s).

128. As assessed, TMK (2) 1-1-05-17 is zoned for agricultural use and leased for agricultural purposes.

129. **Exhibit "A-63"** is TMK (2) 1-1-05-18, containing 4.92 acres, more or less, being

(a) LCA 5059 (Volume 3 Page 834); (b) NR Volume 6 Page 235 (Hawaiian and English); (c) NT Volume 5 Page 362 (Hawaiian and English); (d) FT Volume 8 Page 229; (e) RP 3258 (Volume 14 Pages 309-310); (e) Translation of LCA 5059; and (f) Derivation Instrument(s).

130. As adjudicated, LCA 5059 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot was a mo'ō (narrow strip of land).

131. **Exhibit "A-64"** is TMK (2) 1-1-05-19, designated Lot 6-A, containing 0.60 acres, more or less, being (a) LP Grant S-15305 (Volume 115 Pages 21-25) and (b) Derivation Instrument(s).

132. As granted, LP Grant S-15305 is a purchase of government land for agricultural homestead purposes. As described therein, Lot 6-A is a taro lot.

133. **Exhibit "A-65"** is TMK (2) 1-1-05-20, designated Lot 7-A, containing 0.57 acres, more or less, being (a) LP Grant 13129 (Volume 92 Pages 131-135) and (b) Derivation Instrument(s).

134. As granted, LP Grant 13129 is a fee simple conversion of Homestead Lease No. 40 for agricultural homestead purposes. As described therein, Lot 7-A is a taro lot.

135. **Exhibit "A-66"** is TMK (2) 1-1-05-21, designated Lot 8-A, containing 0.79 acres, more or less, being (a) LP Grant 13329 (Volume 95 Pages 123-127) and (b) Derivation Instrument(s).

136. As granted, LP Grant 13329 is a fee simple conversion of Homestead Lease No. 61 for agricultural homestead purposes. As described therein, Lot 8-A is a taro lot.

137. **Exhibit "A-67"** is TMK (2) 1-1-05-22, designated Lot 9-A, containing 0.77 acres, more or less, being (a) LP Grant S-15850 (LMO Copy), (b) Tax History Sheet(s), and (c)

Tax Assessment Sheet(s).

138. As granted, LP Grant S-15850 is a transfer of government land for agricultural homestead purposes. As assessed, Lot 9-A is zoned for agricultural use.

139. **Exhibit "A-68"** is TMK (2) 1-1-05-23, designated Lot 10-A, containing 0.67 acres, more or less, being (a) LP Grant 13127 (Volume 93 Pages 119-123) and (b) Derivation Instrument(s).

140. As granted, LP Grant 13127 is a fee simple conversion of Homestead Lease No. 74 for agricultural homestead purposes. As described therein, Lot 10-A is a taro lot.

141. **Exhibit "A-69"** is TMK (2) 1-1-05-24, designated Lot 11-A, containing 0.60 acres, more or less, being (a) LP Grant S-15078 (Volume 112 Pages 375-380) and (b) Derivation Instrument(s).

142. As granted, LP Grant S-15078 is a purchase of government land for agricultural homestead purposes. As described therein, Lot 11-A is a taro lot.

143. **Exhibit "A-70"** is TMK (2) 1-1-05-25, containing 1.31 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet(s) showing usage and (b) Tax Assessment Sheet(s) showing current lessee(s).

144. As assessed, TMK (2) 1-1-05-25 is zoned for agricultural use and leased for agricultural purposes.

145. **Exhibit "A-71"** is TMK (2) 1-1-05-28, containing 0.162 acres, more or less, being (a) LCA 4561 (Volume 7 Pages 441-442); (b) NR Volume 6 Page 181 (Hawaiian and English); (c) NT Volume 5 Page 361 (Hawaiian and English); (d) FT Volume 8 Pages 227-228; (e) RP 3281 (Volume 14 Pages 355-356); (e) Translation of Apana 4 LCA 4561; and (f) Derivation Instrument(s).



146. As adjudicated, LCA 4561 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 4 contained one (1) lo'i (irrigated terrace).
147. **Exhibit "A-72"** is TMK (2) 1-1-05-29, containing 0.86 acres, more or less, being (a) LCA 5058 (Volume 3 Pages 842-843); (b) NR Volume 6 Pages 235-236 (Hawaiian and English); (c) NT Volume 5 Page 369 (Hawaiian and English); (d) FT Volume 8 Pages 235-236; (e) RP 3256 (Volume 14 Pages 305-306); (e) Translation of Apanas 1 and 2 LCA 5058; and (f) Derivation Instrument(s).
148. As adjudicated, LCA 5058 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apanas 1 and 2 contained twenty-two (22) lo'i (irrigated terraces).
149. **Exhibit "A-73"** is TMK (2) 1-1-05-30, containing 2.67 acres, more or less, being (a) LCA 5060 (Volume 3 Page 485); (b) NR Volume 6 Page 542 (Hawaiian and English); (c) NT Volume 5 Page 369 (Hawaiian and English); (d) FT Volume 8 Page 235; (e) RP 3259 (Volume 14 Pages 311-312); (e) Translation of LCA 5060; and (f) Derivation Instrument(s).
150. As adjudicated, LCA 5060 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot contained ten (10) lo'i (irrigated terraces).
151. **Exhibit "A-74"** is TMK (2) 1-1-05-31, containing 1.545 acres, more or less, being (a) LCA 4561 (Volume 7 Pages 441-442); (b) NR Volume 6 Page 181 (Hawaiian and English); (c) NT Volume 5 Page 361 (Hawaiian and English); (d) FT Volume 8 Pages 227-228; (e) RP 3281 (Volume 14 Pages 355-356); (e) Translation of Apana 3 LCA 4561; and (f) Derivation Instrument(s).

152. As adjudicated, LCA 4561 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 contained one (1) lo'i (irrigated terrace).
153. **Exhibit "A-75"** is TMK (2) 1-1-05-32, containing 1.44 acres, more or less, being (a) LCA 5054 (Volume 7 Pages 440-441); (b) NR Volume 6 Page 234 (Hawaiian and English); (c) NT Volume 6 Page 366 (Hawaiian and English); (d) FT Volume 8 Page 232; (e) RP 3278 (Volume 14 Pages 349-350); (e) Translation of Apana 2 LCA 5054; and (f) Derivation Instrument(s).
154. As adjudicated, LCA 5054 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 was a mo'o (narrow strip of land).
155. **Exhibit "A-76"** is TMK (2) 1-1-05-33, designated Lot 25-A, containing 0.63 acres, more or less, being (a) LP Grant S-14236 (Volume 104 Pages 133-136) and (b) Derivation Instrument(s).
156. As granted, LP Grant S-14236 is a purchase of government land for agricultural homestead purposes. As described therein, the lot abuts government land.
157. **Exhibit "A-77"** is TMK (2) 1-1-05-34, containing 0.60 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet(s) showing usage and (b) Tax Assessment Sheet(s) showing current lessee(s).
158. As assessed, TMK (2) 1-1-05-34 is zoned for agricultural use and leased for agricultural purposes.
159. **Exhibit "A-78"** is TMK (2) 1-1-05-41, containing 0.97 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet(s) showing

usage and (b) Tax Assessment Sheet(s) showing no lessee(s).

160. As assessed, TMK (2) 1-1-05-41 is zoned for agricultural use.
161. **Exhibit "A-79"** is TMK (2) 1-1-05-42, containing 3.40 acres, more or less, being (a) LCA 5059 (Volume 3 Page 834); (b) NR Volume 6 Page 235 (Hawaiian and English); (c) NT Volume 5 Page 362 (Hawaiian and English); (d) FT Volume 8 Page 229; (e) RP 3258 (Volume 14 Pages 309-310); (e) Translation of LCA 5059; and (f) Derivation Instrument(s).
162. As adjudicated, LCA 5059 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot was a mo'ō (narrow strip of land).
163. **Exhibit "A-80"** is TMK (2) 1-1-05-44, containing 0.59 acres, more or less, being (a) LCA 5059 (Volume 3 Page 834); (b) NR Volume 6 Page 235 (Hawaiian and English); (c) NT Volume 5 Page 362 (Hawaiian and English); (d) FT Volume 8 Page 229; (e) RP 3258 (Volume 14 Pages 309-310); (e) Translation of LCA 5059; and (f) Derivation Instrument(s).
164. As adjudicated, LCA 5059 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot was a mo'ō (narrow strip of land).
165. **Exhibit "A-81"** is TMK (2) 1-1-05-45, containing 0.65 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet(s) showing usage and (b) Tax Assessment Sheet(s) showing current lessee(s).
166. As assessed, TMK (2) 1-1-05-45 is zoned for agricultural use and leased for agricultural purposes.
167. **Exhibit "A-82"** is TMK (2) 1-1-05-46, designated Lot 16-A, containing 0.75 acres, more or less, being (a) LP Grant S-14978 (Volume 111 Pages 327-332) and (b) Derivation

Instrument(s).

168. As granted, LP Grant S-14978 is a purchase of government land for agricultural homestead purposes. As described therein, Lot 16-A is a taro lot.
169. **Exhibit "A-83"** is TMK (2) 1-1-05-54, containing 0.94 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet(s) showing usage and (b) Tax Assessment Sheet(s) showing current lessee(s).
170. As assessed, TMK (2) 1-1-05-54 is zoned for agricultural use and leased for agricultural purposes.
171. **Exhibit "A-84"** is TMK (2) 1-1-05-58, containing 0.216 acres, more or less, being (a) LCA 4866 (Volume 3 Page 494); (b) NR Volume 6 Page 211 (Hawaiian and English); (c) NT Volume 5 Page 363 (Hawaiian and English); (d) FT Volume 8 Page 229; (e) Translation of Apana 1 LCA 4866; and (f) Derivation Instrument(s).
172. As adjudicated, LCA 4866 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 was a kula (plain) and house lot.
173. The total acreage for all parcels assessed under TMK (2) 1-1-05, situate in Wailua, Ko'olau, Hana, Maui, is 33.035 acres, more or less.
174. **Exhibit "A-85"** is TMK (2) 1-1-06-12, containing 6.00 acres, more or less, being (a) LCA 4853-D (Volume 3 Pages 832-833); (b) NT Volume 5 Pages 431-432 (Hawaiian and English); (c) FT Volume 8 Page 291; (d) RP 3276 (Volume 14 Pages 345-346); (e) Translation of Apana 1 LCA 4853-D; and (f) Derivation Instrument(s).
175. As adjudicated, LCA 4853-D is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 was an ili

(land area).

176. **Exhibit "A-86"** is TMK (2) 1-1-06-15, containing 0.55 acres, more or less, being (a) LCA 5055 (Volume 3 Pages 490-491); (b) NR Volume 6 Pages 234-235 (Hawaiian and English); (c) NT Volume 5 Page 365 (Hawaiian and English); (d) FT Volume 8 Page 231; (e) RP 2943 (Volume 13 Pages 369-370); (f) Translation of Apana 1 LCA 5055; and (g) Derivation Instrument(s).
177. As adjudicated, LCA 5055 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 contained eleven (11) lo'i (irrigated terraces).
178. **Exhibit "A-87"** is TMK (2) 1-1-06-16, containing 0.25 acres, more or less, being (a) LCA 5055 (Volume 3 Pages 490-491); (b) NR Volume 6 Pages 234-235 (Hawaiian and English); (c) NT Volume 5 Page 365 (Hawaiian and English); (d) FT Volume 8 Page 231; (e) RP 2943 (Volume 13 Pages 369-370); (f) Translation of Apana 1 LCA 5055; and (g) Derivation Instrument(s).
179. As adjudicated, LCA 5055 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 contained eleven (11) lo'i (irrigated terraces).
180. **Exhibit "A-88"** is TMK (2) 1-1-06-17, containing 0.79 acres, more or less, being (a) LCA 5052 (Volume 3 Pages 489-490); (b) NR Volume 6 Page 233 (Hawaiian and English); (c) NT Volume 5 Page 366 (Hawaiian and English); (d) FT Volume 8 Page 233; (e) RP 3275 (Volume 14 Pages 343-344); (f) Translation of LCA 5052; and (g) Derivation Instrument(s).
181. As adjudicated, LCA 5052 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot contained a house with

twenty-nine (29) lo'i (irrigated terraces).

182. **Exhibit "A-89"** is TMK (2) 1-1-06-18, containing 2.933 acres, more or less, being (a) LCA 10828-B (Volume 9 Pages 377-378); (b) NT Volume 5 Page 378 (Hawaiian and English); (c) FT Volume 8 Page 244; (d) RP 2802 (Volume 13 Pages 65-66); (e) Translation of Apana 3 LCA 10828-B; and (f) Derivation Instrument(s).
183. As adjudicated, LCA 10828-B is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 3 was a mo'o (narrow strip of land).
184. **Exhibit "A-90"** is TMK (2) 1-1-06-21, containing 0.87 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet(s) showing usage and (b) Tax Assessment Sheet(s) showing current lessee(s).
185. As assessed, TMK (2) 1-1-06-21 is zoned for agricultural use and occupied for homestead agricultural purposes.
186. **Exhibit "A-91"** is TMK (2) 1-1-06-22, containing 0.488 acres, more or less, being (a) LCA 4773 (Volume 3 Pages 491-492); (b) NR Volume 6 Page 199 (Hawaiian and English); (c) NT Volume 5 Pages 364-365 (Hawaiian and English); (d) FT Volume 8 Page 231; (e) RP 3261 (Volume 14 Pages 315-316); (f) Translation of Apana 1 LCA 4773; and (f) Derivation Instrument(s).
187. As adjudicated, LCA 4773 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 contained nine (9) lo'i (irrigated terraces).
188. **Exhibit "A-92"** is TMK (2) 1-1-06-23, containing 0.487 acres, more or less, being (a) LCA 10828-B (Volume 9 Pages 377-378); (b) NT Volume 5 Pages 378 (Hawaiian and



English); (c) FT Volume 8 Page 244; (d) RP 2802 (Volume 13 Pages 65-66); (e) Translation of Apana 2 LCA 10828-B; and (f) Derivation Instrument(s).

189. As adjudicated, LCA 10828-B is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 was a mo'o (narrow strip of land).

190. **Exhibit "A-93"** is TMK (2) 1-1-06-24, designated Lot 4-A, containing 0.80 acres, more or less, being (a) LP Grant 13173 (Volume 93 Pages 377-381) and (b) Derivation Instrument(s).

191. As granted, LP Grant 13173 is a fee simple conversion of Homestead Lease No. 62 for agricultural homestead purposes. As described therein, Lot 4-A is a taro lot.

192. **Exhibit "A-94"** is TMK (2) 1-1-06-25, containing 0.08 acres, more or less, being (a) LCA 4729 (Volume 3 Page 492); (b) NR Volume 6 Page 194 (Hawaiian and English); (c) NT Volume 5 Page 364 (Hawaiian and English); (d) FT Volume 8 Page 230; (e) RP 2801 (Volume 13 Pages 63-64); (f) Translation of Apana 1 LCA 4729; and (f) Derivation Instrument(s).

193. As adjudicated, LCA 4729 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 contained two (2) lo'i (irrigated terraces).

194. **Exhibit "A-95"** is TMK (2) 1-1-06-26, containing 0.72 acres, more or less, being (a) LCA 4726 (Volume 7 Page 462); (b) NR Volume 6 Page 193 (Hawaiian and English); (c) NT Volume 5 Pages 369 and 411 (Hawaiian and English); (d) FT Volume 3 Pages 236 and 274; (e) RP 3265 (Volume 14 Pages 323-324); (f) Translation of Apana 1 LCA 4726; and (f) Tax Assessment Sheet(s) showing current owner(s).

195. As adjudicated, LCA 4726 is a kuleana award for lands claimed by a native tenant

pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 contained 14 lo'i (irrigated terraces) and a kula within the mo'o (narrow strip of land).

196. **Exhibit "A-96"** is TMK (2) 1-1-06-27, containing 0.067 acres, more or less, being (a) LCA 4562 (Volume 7 Page 437); (b) NR Volume 6 Page 182-183 (Hawaiian and English); (c) NT Volume 5 Pages 366-367 (Hawaiian and English); (d) FT Volume 8 Page 232; (e) RP 2215 (Volume 9 Pages 521-522); (f) Translation of Apana 3 LCA 4562; and (g) Derivation Instrument(s).

197. As adjudicated, LCA 4562 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 3 contained 2 lo'i (irrigated terraces).

198. **Exhibit "A-97"** is TMK (2) 1-1-06-28, containing 0.038 acres, more or less, being (a) LCA 4726 (Volume 7 Page 462); (b) NR Volume 6 Page 193 (Hawaiian and English); (c) NT Volume 5 Pages 369 and 411 (Hawaiian and English); (d) FT Volume 3 Pages 236 and 274; (e) RP 3265 (Volume 14 Pages 323-324); (f) Translation of Apana 2 LCA 4726; and (f) Derivation Instrument(s).

199. As adjudicated, LCA 4726 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 contained two (2) lo'i (irrigated terraces).

200. **Exhibit "A-98"** is TMK (2) 1-1-06-29, containing 0.227 acres, more or less, being (a) LCA 4866 (Volume 3 Page 494); (b) NR Volume 6 Page 211 (Hawaiian and English); (c) NT Volume 5 Page 363 (Hawaiian and English); (d) FT Volume 8 Page 229; (e) Translation of Apana 2 LCA 4866; and (f) Derivation Instrument(s).

201. As adjudicated, LCA 4866 is a kuleana award for lands claimed by a native tenant

pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 was kalo (taro) land.

202. **Exhibit "A-99"** is TMK (2) 1-1-06-30, containing 0.075 acres, more or less, being (a) LCA 4853-D (Volume 3 Pages 832-833); (b) NT Volume 5 Pages 431-432 (Hawaiian and English); (c) FT Volume 8 Page 291; (d) RP 3276 (Volume 14 Pages 345-346); (e) Translation of Apana 2 LCA 4853-D; and (f) Derivation Instrument(s).

203. As adjudicated, LCA 4853-D is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 contained two (2) lo'i kalo (irrigated taro terraces).

204. **Exhibit "A-100"** is TMK (2) 1-1-06-31, designated Lot 46-A, containing 0.61 acres, more or less, being (a) LP Grant S-15846 (LMO Copy) and (b) Tax Assessment Sheet(s).

205. As granted, LP Grant S-15846 is a transfer of government land for agricultural homestead purposes. As assessed, Lot 46-A is zoned for agricultural use.

206. **Exhibit "A-101"** is TMK (2) 1-1-06-32, designated Lot 41-A, containing 0.70 acres, more or less, being (a) LP S-Grant 14781 (Volume 110 Pages 301-304) and (b) Derivation Instrument(s).

207. As granted, LP Grant S-14781 is a purchase of government land for agricultural homestead purposes. As described therein, Lot 41-A is a taro lot.

208. **Exhibit "A-102"** is TMK (2) 1-1-06-33, containing 1.32 acres, more or less, being (a) LCA 4772 (Volume 3 Page 485-486); (b) NR Volume 6 Page 198 (Hawaiian and English); (c) NT Volume 5 Page 368 (Hawaiian and English); (d) FT Volume 8 Page 224; (e) Translation of Apana 1 LCA 4772; and (f) Derivation Instrument(s).

209. As adjudicated, LCA 4772 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 was an ili (land

area).

210. **Exhibit "A-103"** is TMK (2) 1-1-06-34, containing 0.53 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet and (b) Tax Assessment Sheet(s) showing no lessee(s).

211. As assessed, TMK (2) 1-1-06-34 is zoned for agricultural use.

212. **Exhibit "A-104"** is TMK (2) 1-1-06-35, containing 0.036 acres, more or less, being (a) LCA 5051 (Volume 3 Pages 613-614); (b) NR Volume 6 Page 233 (Hawaiian and English); (c) NT Volume 5 Pages 236 and 370 (Hawaiian and English); (d) FT Volume 8 Page 236; (e) RP 3788 (Volume 13 Pages 37-38); (f) Translation of Apana 2 LCA 5051; and (g) Derivation Instrument(s).

213. As adjudicated, LCA 5051 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 contained one (1) lo'i (irrigated terrace).

214. **Exhibit "A-105"** is TMK (2) 1-1-06-36, containing 1.10 acres, more or less, being (a) LCA 5049 (Volume 3 Pages 495-496); (b) NR Volume 6 Page 232 (Hawaiian and English); (c) NT Volume 5 Page 362 (Hawaiian and English); (d) FT Volume 8 Pages 229-230; (e) RP 3257 (Volume 14 Pages 307-308); (f) Translation of Apana 1 LCA 5049; and (g) Derivation Instrument(s).

215. As adjudicated, LCA 5049 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 was a mo'o (narrow strip of land).

216. **Exhibit "A-106"** is TMK (2) 1-1-06-37, containing 0.065 acres, more or less, being (a) LCA 5055 (Volume 3 Pages 490-491); (b) NR Volume 6 Pages 234-235 (Hawaiian and



English); (c) NT Volume 5 Page 365 (Hawaiian and English); (d) FT Volume 8 Page 231; (e) Translation of Apana 2 LCA 5055; and (f) Derivation Instrument(s).

217. As adjudicated, LCA 5055 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 contained two (2) lo'i (irrigated terraces).

218. **Exhibit "A-107"** is TMK (2) 1-1-06-38, containing 0.85 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet(s) showing usage and (b) Tax Assessment Sheet(s) showing current lessee(s).

219. As assessed, TMK (2) 1-1-06-38 is zoned for agricultural use and leased for agricultural purposes.

220. **Exhibit "A-108"** is TMK (2) 1-1-06-39, containing 0.225 acres, more or less, being (a) LCA 4725 (Volume 3 Page 493); (b) NR Volume 6 Page 193 (Hawaiian and English); (c) NT Volume 5 Page 364 (Hawaiian and English); (d) FT Volume 8 Page 230; (e) RP 2800 (Volume 13 Pages 61-62); (f) Translation of LCA 4725; and (g) Derivation Instrument(s).

221. As adjudicated, LCA 4725 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot contained nine (9) lo'i (irrigated terraces).

222. **Exhibit "A-109"** is TMK (2) 1-1-06-40, containing 0.152 acres, more or less, being (a) LCA 4773 (Volume 3 Pages 491-492); (b) NR Volume 6 Page 199 (Hawaiian and English); (c) NT Volume 5 Pages 364-365 (Hawaiian and English); (d) FT Volume 8 Page 231; (e) RP 3261 (Volume 14 Pages 315-316); (f) Translation of Apana 2 LCA 4773; and (g) Derivation Instrument(s).

223. As adjudicated, LCA 4773 is a kuleana award for lands claimed by a native tenant

pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 contained one (1) lo'i (irrigated terrace).

224. **Exhibit "A-110"** is TMK (2) 1-1-06-41, containing 0.16 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet(s) showing usage and (b) Tax Assessment Sheet(s) showing current lessee(s).

225. As assessed, TMK (2) 1-1-06-41 is zoned for agricultural use and leased for agricultural purposes.

226. **Exhibit "A-111"** is TMK (2) 1-1-06-42, containing 0.464 acres, more or less, being (a) LCA 4774 (Volume 3 Page 490); (b) NR Volume 6 Page 199 (Hawaiian and English); (c) NT Volume 5 Page 365 (Hawaiian and English); (d) FT Volume 8 Page 231; (e) RP 2805 (Volume 13 Pages 71-72); (f) Translation of LCA 4774; and (g) Derivation Instrument(s).

227. As adjudicated, LCA 4774 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot was a mo'o (narrow strip of land).

228. **Exhibit "A-112"** is TMK (2) 1-1-06-43, containing 0.40 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet(s) showing usage and (b) Tax Assessment Sheet(s) showing current lessee(s).

229. As assessed, TMK (2) 1-1-06-43 is zoned for agricultural use and leased for agricultural purposes.

230. **Exhibit "A-113"** is TMK (2) 1-1-06-45, designated Lot 47-A, containing 0.83 acres, more or less, being (a) LP S-Grant 14533 (Volume 107 Pages 122-125) and (b) Derivation Instrument(s).

231. As granted, LP Grant S-14533 is a purchase of government land for agricultural

homestead purposes. As described therein, Lot 47-A is a taro lot.

232. **Exhibit "A-114"** is TMK (2) 1-1-06-46, designated Lot 40-A, containing 0.83 acres, more or less, being (a) LP Grant S-14888 (Volume 110 Pages 353-354) and (b) Derivation Instrument(s).

233. As granted, LP Grant S-14888 is a purchase of government land for agricultural homestead purposes. As described therein, Lot 40-A is a taro lot.

234. **Exhibit "A-115"** is TMK (2) 1-1-06-47, designated Lot 42-A, containing 0.54 acres, more or less, being (a) LP Grant 13239 (Volume 94 Pages 189-193) and (b) Derivation Instrument(s).

235. As granted, LP Grant 13239 is a fee simple conversion of Homestead Lease No. 67 for agricultural homestead purposes. As described therein, Lot 42-A is a taro lot.

236. **Exhibit "A-116"** is TMK (2) 1-1-06-48, designated Lot 38-A, containing 0.60 acres, more or less, being (a) LP Grant 13209 (Volume 94 Pages 37-41) and (b) Derivation Instrument(s).

237. As LP Grant 13209 is a fee simple conversion of Homestead Lease No. 78 for agricultural homestead purposes. As described therein, Lot 38-A is a taro lot.

238. **Exhibit "A-117"** is TMK (2) 1-1-06-49, designated Lot 39-A, containing 0.54 acres, more or less, being (a) LP Grant 13191 (Volume 93 Pages 473-477) and (b) Derivation Instrument(s).

239. As granted, LP Grant 13191 is a fee simple conversion of Homestead Lease No. 79 for agricultural homestead purposes. As described therein, Lot 39-A is a taro lot.

240. **Exhibit "A-118"** is TMK (2) 1-1-06-67, designated Lot 34-A, containing 0.65 acres, more or less, being (a) LP Grant 13591 (Volume 97 Pages 395-399) and (b) Derivation

Instrument(s).

241. As granted, LP Grant 13591 is a fee simple conversion of Homestead Lease No. 76 for agricultural homestead purposes. As described therein, Lot 34-A is a taro lot.

242. **Exhibit "A-119"** is TMK (2) 1-1-06-68, designated Lot 5-A, containing 0.56 acres, more or less, being (a) LP Grant S-15361 (Volume 115 Pages 317-321) and (b) Derivation Instrument(s).

243. As granted, LP Grant S-15361 is a purchase of government land by a homesteader for agricultural homestead purposes. As described therein, Lot 5-A is taro land.

244. **Exhibit "A-120"** is TMK (2) 1-1-06-69, designated Lot 3-A, containing 0.56 acres, more or less, being (a) LP Grant S-15844 (LMO Copy) and (b) Tax Assessment Sheet(s).

245. As granted, LP Grant S-15844 is a transfer of government land for agricultural homestead purposes. As assessed, Lot 3-A is zoned for agricultural use.

246. **Exhibit "A-121"** is TMK (2) 1-1-06-70, containing 2.76 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet(s) showing usage and (b) Tax Assessment Sheet(s) showing current lessee(s).

247. As assessed, TMK (2) 1-1-06-70 is zoned for agricultural use and leased for agricultural purposes.

248. **Exhibit "A-122"** is TMK (2) 1-1-06-72, designated Lot 37-A, containing 0.61 acres, more or less, being (a) LP Grant 13304 (Volume 95 Pages 13-17) and (b) Derivation Instrument(s).

249. As granted, LP Grant 13304 is a fee simple conversion of Homestead Lease No. 77 for agricultural homestead purposes. As described therein, Lot 37-A is a taro lot.

250. **Exhibit "A-123"** is TMK (2) 1-1-06-73, designated Lot 43-A, containing 0.75

acres, more or less, being (a) LP Grant S-15847 (LMO Copy) and (b) Tax Assessment Sheet(s).

251. As granted, LP Grant S-15847 is a transfer of government land for agricultural homestead purposes. As assessed, Lot 43-A is zoned for agricultural use.

252. The total acreage for all parcels assessed under TMK (2) 1-1-06, situate in Wailua, Ko'olau, Hana, Maui, is 30.227 acres, more or less.

253. **Exhibit "A-124"** is TMK (2) 1-1-07-03, containing 107 acres, more or less, being (a) RP Grant 1911 (Volume 10 Pages 237-238); (b) Translation of RP Grant 1911; (c) Tax Assessment Sheet(s) showing usage and zoning; and (d) Derivation Instrument(s).

254. As granted, RP Grant 1911 is a purchase of government land for agricultural purposes. As described therein, the lot ran from the mountain to the sea.

255. **Exhibit "A-125"** is TMK (2) 1-1-07-20, containing 53.50 acres, more or less, being (a) RP Grant 2091 (Volume 11 Pages 71-72); (b) Original translation of RP Grant 2091 with map; (c) Tax Assessment Sheet(s); and (d) Derivation Instrument(s).

256. As granted, RP Grant 2091 is a purchase of government land for agricultural purposes. As described therein, the lot runs from the government road to the sea.

257. The total acreage for all parcels assessed under TMK (2) 1-1-07, situate at Waianu & Pahoa, Ko'olau, Hana, Maui, is 160.50 acres, more or less.

258. **Exhibit "A-126"** is TMK (2) 1-1-08-04, containing 9.20 acres, more or less, comprised of two (2) different land titles, being: [1] (a) LCA 3472 (Volume 3 Pages 846-847); (b) NR Volume 6 Page 88 (Hawaiian and English); (c) NT Volume 5 Page 437 (Hawaiian and English); (d) FT Volume 8 Page 297; (e) Translation of LCA 3472; and (f) Derivation Instrument(s); and [2] (a) RP Grant 3177 (Volume 14 Pages 419-420) and (b) Derivation Instrument(s).

259. As adjudicated, LCA 3472 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, the lot was a taro (kalo) and house lot.

260. As granted, RP Grant 3177 is a purchase of government land for agricultural purposes. As described therein, the lot ran along Hamau Stream.

261. **Exhibit "A-127"** is TMK (2) 1-1-08-05, containing 120.97 acres, more or less, a portion of the Government (Crown) Land of Wailua, being (a) Tax History Sheet showing usage and Tax Assessment Sheet(s) showing no lessee(s).

262. As assessed, TMK (2) 1-1-08-05 is zoned for agricultural and conservation use.

263. **Exhibit "A-128"** is TMK (2) 1-1-08-09, containing 13.70 acres, more or less, being (a) RP Grant 3215 (Volume 14 Pages 495-496), (b) Map of RP Grant 3215; and (c) Derivation Instrument(s).

264. As granted, RP Grant 3215 is a purchase of government land for agricultural purposes. As described therein, the lot runs along Palauhulu Stream.

265. **Exhibit "A-129"** is TMK (2) 1-1-08-10, containing 103.82 acres, more or less, being (a) RP Grant 1899 (Volume 10 Pages 203-204), (b) Translation of RP Grant 1899; and (c) Derivation Instrument(s).

266. As granted, RP Grant 1899 is a purchase of government land for agricultural purposes. As described therein, the lot ran along Wailua Stream.

267. **Exhibit "A-130"** is TMK (2) 1-1-08-11, containing 151.65 acres, more or less, being (a) RP Grant 2549 (Volume 13 Pages 327-328), (b) Translation of RP Grant 2549; and (c) Derivation Instrument(s).

268. As granted, RP Grant 2549 is a purchase of government land for agricultural



purposes. As described therein, the lot ran along the Ditch of Wailua.

269. The total acreage for all parcels assessed under TMK (2) 1-1-08, situate in Ke'anae - Wailua, Ko'olau, Hana, Maui, is 397.41 acres, more or less.

270. **Exhibit "A-131"** is TMK (2) 1-2-02-09, containing 4.17 acres, more or less, being (a) RP Grant 3178 (Volume 14 Pages 421-422), (b) Map of RP Grant 3178, and (c) Derivation Instrument(s).

271. As granted, RP Grant 3178 is a purchase of government land for agricultural purposes. As described therein, the lot ran along Haiha Stream.

272. The total acreage for all parcels assessed under TMK (2) 1-2-02, situate at Makapipi, Ko'olau, Hana, Maui, is 4.17 acres, more or less.

273. **Exhibit "A-132"** is TMK (2) 2-9-01-14, containing 22.81 acres, more or less, comprised of four (4) different land titles, being [1] (a) LCA 5595-E (Volume 8 Page 320); (b) NR Volume 6 Page 305 (Hawaiian and English); (c) NT Volume 5 Page 436 (Hawaiian and English); (d) FT Volume 8 Page 119; (e) RP 3242 (Volume 14 Pages 277-278); (f) Translation of Apana 1 and Poalima LCA 5595-E; and (g) Derivation Instrument(s); [2] (a) RP Grant 1082 (Volume 6 Pages 135-136), (b) Translation of RP Grant 1082; and (c) Derivation Instrument(s); [3] (a) RP Grant 1918 (Volume 10 Pages 341-342), (b) Translation of RP Grant 1082; and (c) Derivation Instrument(s); [4] (a) RP Grant 3101 (Volume 14 Pages 267-268), (b) Translation of Apana 2 RP Grant 3101; and (c) Derivation Instrument(s).

274. As adjudicated, LCA 5595-E is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 contained twenty-seven (27) lo'i (irrigated terraces) covering 3.32 acres.

275. As granted, RP Grant 1082 contained 8 acres; RP Grant 1918 contained two (2)

poalima (chief's plantations) without survey; and RP Grant 3101 ran along three (3) streams and contained 9.82 acres.

276. **Exhibit "A-133"** is TMK (2) 2-9-01-23, containing 0.08 acres, more or less, being (a) RP Grant 1903 (Volume 10 Pages 211-212), (b) Translation of RP Grant 1903; and (c) Derivation Instrument(s).

277. As granted, RP Grant 1903 contained one (1) lo'i poalima (chief's irrigated terrace plantation) without survey.

278. **Exhibit "A-134"** is TMK (2) 2-9-01-25, containing 1.10 acres, more or less, being (a) LCA 5516 (Volume 8 Pages 332-333); (b) NR Volume 5 Page 63 (Hawaiian and English); (c) NT Volume 5 Page 494 (Hawaiian and English); (d) FT Volume 8 Page 117; (e) RP 3237 (Volume 14 Pages 267-268); (f) Translation of Apana 2 of LCA 3472; and (g) Derivation Instrument(s).

279. As adjudicated, LCA 5516 is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 was taro and kula (plain) land.

280. The total acreage for all parcels assessed under TMK (2) 2-9-01, situate in Honopou, Hamakualoa, Makawao, Maui, is 23.99 acres, more or less.

281. **Exhibit "A-135"** is TMK (2) 2-9-14-13, containing 0.154 acres, more or less, being (a) LCA 5595-E (Volume 8 Page 320); (b) NR Volume 6 Pages 305-306 [*numbered as "5495"*] (Hawaiian and English); (c) NT Volume 5 Page 496 [*numbered as "5495"*] (Hawaiian and English); (d) FT Volume 8 Page 119; (e) RP 3242 (Volume 14 Pages 277-278); (f) Translation of Apana 2 LCA 5595-E; and (g) Derivation Instrument(s).

282. As adjudicated, LCA 5595-E is a kuleana award for lands claimed by a native

tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 2 was a taro pasture.

283. **Exhibit "A-136"** is TMK (2) 2-9-14-23, containing 0.47 acres, more or less, being (a) LCA 5516 (Volume 8 Pages 332-333); (b) NR Volume 5 Page 63 (Hawaiian and English); (c) NT Volume 5 Page 494 (Hawaiian and English); (d) FT Volume 8 Page 117; (e) RP 3237 (Volume 14 Pages 267-268); (f) Translation of Apana 1 of LCA 5516; and (g) Derivation Instrument(s).

284. As adjudicated, LCA 5595-E is a kuleana award for lands claimed by a native tenant pursuant to the "Kuleana Act." As described by testimony thereto, Apana 1 was used for taro and pasture.

285. The total acreage for all parcels assessed under TMK (2) 2-9-14, situate in Honopou, Makawao, Maui, is 2.07 acres, more or less.

I declare under penalty of law that the foregoing is true and correct.

DATED: Honolulu, Hawaii, on December 30, 2014.

  
TERESA M. "TERI" GOMES

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMO, A,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAAU,  
PALAUHULU, 'OHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKAA, WAIOHUE,  
PAAKEA, WAIATAKA, KAPAULA,  
HANAWI and MAKAPIPI STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF TERRANCE P.K.  
AKUNA

DECLARATION OF TERRANCE P.K. AKUNA

I, Terrance P.K. Akuna, declare that:

1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a member of Nā Moku Aupuni O Ko'olau Hui.
4. My grandfather lived off the land, nothing else. I grew up fishing, hunting, and gathering.
5. I am a taro farmer. My family grows kalo on about 1½ to 2 acres of property irrigated by Waioakamilo and Kualani.
6. I am farming this land based on my desire to continue my cultural practices and traditions.
7. I learned how to farm taro from my family and the people who farmed these lands before I did.



8. Traditionally, my 'ohana gathered 'ōpae, 'o'opu, hihivai, pohole, 'ulu, banana, mountain apple, pepeiau, olena, and wauke in Honopou, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.
9. Traditionally, my 'ohana fished for ulua, 'ō'io, pala, kole, poopaa, enenue, anae, moi, akule, 'awa, pakeawa, aholehole, crab and lobster in or near the mouths of Honopou, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue.
10. My 'ohana also engaged in mālama 'āina and mālama kahawai by only taking what they could eat in and around Waikamoi, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Hanawi, Makapipi, and Waiohue.
11. Currently, my 'ohana and I gather the same things as my kupuna before me in Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. However, we can't get the same amount of these resources as my 'ohana used to be able to.
12. My family and I fish for whatever fish we are on for in or near the mouth of in Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Makapipi, and Waiohue. We catch the same kind of fish as our kupuna, just less of them. We have to go further. We also use newer tools than before time.
13. I gather and fish to feed my family and teach younger generations how we live in such an isolated place without stores. Our streams are our iceboxes.

14. We engage in mālama 'āina and mālama kahawai by only taking what we need from the streams we gather in and cleaning Waioakamilo, Kualani, and Wailua from makai to mauka. For example, my grandpa taught me when fishing for moi, you only keep the small ones, which are the males. The big females should be left so there will be more fish.
15. We also camp, fish, and hunt in and around Nuaailua and swim in the bays from Honopou to Makapipi. As soon as my son and nephew could walk, we would take them down to the beach.
16. I appreciate seeing the water flowing from mauka to makai in all streams from Honopou to Makapipi. This is nature at its prime.
17. If there is no water, there is no life. Life is everything. The lack of stream flow has been a problem for me because I had to move out and get a job to support my family.
18. If there was enough water in the streams, I would live at home and live off the land we were raised on, gathering what my kupuna gathered in and around Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula, Makapipi, and Waiohue. Right now, we can't open all patches because water won't flow down.
19. If there were more water in the streams, I would fish for all the fish that have been fished for generations in or near the mouth of all the streams from Honopou to Makapipi.
20. If water were put back in the streams, I would continue to mālama the streams by only taking what we could eat and cleaning all the rivers -- especially Piinaau, Palauhulu, Waioakamilo, Kualani, Wailua, and Waikani (Wailuanui) -- routinely, but healthy rivers clean themselves.
21. If there was more water in the streams, I would go camping, fishing, and gathering from Waikamoi to Makapipi. I would also appreciate the natural scenery in and around Honopou, Hanchoi, Waikamoi, Alo, Wahinepee, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, Nuaailua, Piinaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Hanawi, Makapipi, and Waiohue. I would enjoy the clean air, cool water, and native trees and shrubs.

I declare under penalty of perjury that the foregoing is true and correct.  
DATED: Kihei, Maui, Hawai'i, December 16, 2014.



TERRANCE P.K. AKUNA

COMMISSION ON WATER RESOURCE MANAGEMENT  
STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAAU,  
PALAUHULU, 'ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPILIULA, PUAKAA, WAIOHUE,  
PAAKEA, WAIATAKA, KAPAULA,  
HANAWI and MAKAPIPI STREAMS

CASE NO. CCH-MA13-01  
DECLARATION OF TY KĀWĪKA  
TENGAN, PhD

DECLARATION OF TY KĀWĪKA TENGAN, PhD

1. I am competent to testify to the matters herein, and unless otherwise indicated, I make this declaration based upon my personal knowledge, skill, experience, training and education.
2. I am a Native Hawaiian, born into a family with strong genealogical ties to our Hawaiian ancestors. Native Hawaiian custom and religion was and is an integral part of my family's daily life.
3. Today, I am a practitioner and a scholar of Native Hawaiian cultural and religious practices. I speak the Hawaiian language fluently.
4. In 2003, I received a PhD from the Department of Anthropology at the University of Hawai'i at Mānoa.

5. Currently, I am the Chair and Associate Professor of the Department of Ethnic Studies and also Associate Professor of the Department of Anthropology at the University of Hawai'i at Mānoa.
6. Through practice, community service, the writing of books, journal articles, and reports, I have dedicated my academic career to the study of Native Hawaiian culture and religion. Attached hereto as Exhibit A is a copy of my recent curriculum vitae.
7. My opinions in this Declaration are based upon my personal knowledge, skill, experience, training, and education.
8. Further some of my opinions in this Report are based upon the following source material: Alexander, W.D. *A Brief History of Land Titles in Hawai'i* (1882); Handy, E.S. Craigihill, *Hawaiian Planter* (1940); Handy, & Pukui, *Native Planters* (1972); and Maly, Kepa, VOLUME I *Wai O Ke Ola: He Wahi Mo'olelo No Maui Hikina. A Collection of Native Traditions and Historical Accounts of the Lands of Hāmākua Poko, Hāmākua Loa and Ko'olau, Maui Hikina (East Maui), Island of Maui* (2001).
9. I have reviewed the witness statements of Edward Wendt, Lezley Jacintho, and Terrance P. Akuna provided to me by the Native Hawaiian Legal Corporation.
10. I do not have a personal or familial relationship with any of the named Petitioners in this case.
11. Petitioners have neither paid me nor promised any compensation for my opinions or testimony in this matter.
12. On or about December 4, 2007, I testified as an expert witness at a State of Hawai'i administrative hearing before the Commission on Water Resource Management for the State of Hawai'i in "RE Iao Ground Water Management Area High-Level Source Water Use Permit Applications and Petition to Amend Interim Instream Flow Standards of Waiehe'e, Waiehu, Iao, & Waikapu Streams Contested Case Hearing," Case No. CCH-MA-06-01.
13. In general, Native Hawaiian spiritual tenets and beliefs are expressed and perpetuated in their relationship to each other and to their *kulāwī* (native land). The naming of winds, rains, landmarks, and waters perpetuate the traditional

knowledge that the inhabitants developed of these areas and their resources over centuries of cultivation and habitation.

14. The first inhabitants of the islands were remembered as akua "gods" for their capacity to endow nature with cultural features and "create" society.
15. Kāne and Kanaloa were two of the four primary akua in the Hawaiian pantheon; Kāne was associated with fresh water and taro, and Kanaloa with the ocean and fishing. Wai, fresh water, is an important element in Hawaiian spirituality and fundamental to the exercise of traditional and customary practices. Fresh spring water is presented as ho'ōkupu to the akua (gods). Kāne and Kanaloa are known to have introduced the ritual, social, and medicinal use of drinking 'awa (kava), a drink that requires the waters of Kāne.
16. Handy, Handy, and Pukui (1972) described the correlation between water and life in Hawai'i:  
  
...The life of taro was dependent upon water. In his role as life-giver, Kāne the procreator was addressed as Kane-of-the-water-of-life (Kāne-kā-wai-ola). Water (wai) was so associated with the idea of bounty that the word for wealth was *waiwai*. And water rights were the basic form of law, the Hawaiian word for which was *ka-na-wai*, meaning "relative to water..." [1972:19] [cited in in Maly (2001:21)].
17. East Maui was historically divided into 8 moku or districts, all meeting at a large rock on the northeast brink of the crater of Haleakalā, called Palaha. Alexander (1882:175-76).
18. The 27 streams from Honouliuli to Makapipi fall into the moku of Hāmākualoa and Ko'olau. The two moku are both included in the larger region known as known as Maui Hikina, East Maui, each having unique characteristics. Lyons (1875) and Coulter (1935) as cited in Maly (2001:7).

#### HĀMĀKUĀLOA

19. Hāmākualoa is characterized by numerous minute ahupua'a which indicate a dense population once settled there. Handy (1940:109).
20. J. Waiamānu, recounts the story of Kāne and Kanaloa (or Kāneloa, in this version) in *Ka Ho'omana Kahiko*, Ka Nupepa Kū'oko'a, January 19, 1865 in which Kāne and Kanaloa sailed to Maui and drank 'awa in Hāmākua. Because there was no



water, they caused fresh water to flow which was called "ka wai a Kaneloa" (the water of Kaneloa). The actual location of this spring, Kaneloa, is unknown today. Maly (2001:21).

21. Hāmākua loa is described as follows by firsthand accounts during the 1930s-1950s after the water diversions were in place:

Two *kama'aina* at Ke'anae said that there were small *lo'i* developments watered by Ho'olawa, Waipi'o, Hanalei, Hoalua, Kailua, and Na'ii'i'ihale Streams, all of which flow in deep gulches. Stream taro was probably planted along the watercourses well up into the higher *kula* land and forest taro throughout the lower forest zone. The number of very narrow *ahupua'a* thus utilized along the whole of the Hāmākua coast indicates there must have been a very considerable population. This would be despite the fact that it is an area of only moderate precipitation because of being too low to draw rain out of trade winds flowing down the coast from the rugged and wet northeast Ko'olau area that lies beyond. It was probably a favorable region for breadfruit, banana, sugar cane, arrowroot, and for yams and 'awa in the interior. The slopes between gulches were covered with good soil, excellent for sweet potato planting. The low coast is indented by a number of small bays offering good opportunity for fishing. The *Alaloa*, or "Long-road," that went around Maui passed through Hāmākua close to the shore, crossing streams where the gulches opened to the sea [Handy et. al. 1972:502] [as cited in Maly (2001:8) (emphases in Maly)].

22. Native testimony indicates "there are many *lo'i* [in Honopou]" *Ibid.* at 120-21, 125, 129, 194, 201. See also *ibid.* at 104, 106, 127, 130, 135, 203, 205-06, 208-10, 212, 214, 220, 225-26.

23. The famous Alaloa or Alanui that circled the island was created by the high chief Kiha-a-Pi'ilani (or Kihapi'ilani) after securing his rule over Maui. In *Ka Nūpepa Kūloa*, August 23, 1884, Moses Manu related that after paving sections of the trail in different parts of the island, Kihapi'ilani "began the paving in the forest of 'O'opulua [i.e., 'O'opulua], at Ko'olau, extending from Kawahinepe'e to Kaloa, then on to Pāpa'a'ea, and on to Ka'ohēkanu at Hāmākua Loa" (translation and emphasis by Maly (2001:27). Abraham Fornander (1996:206) also noted that Kihapi'ilani "kept peace and order in the country, encouraged agriculture, and improved and caused to be paved the difficult and often dangerous roads over the Palis of Kaupo, Hana, and Koolau—a stupendous work for those times, the remains of which may still be seen in many places, and are pointed out as the

"Kipapa of Kihapiilani" (cited in Maly (2001:28)). The trail was significant because it created an interconnected cultural and historical landscape where customary practices of gathering, farming, exchange, and travel could be conducted from Hāmākua Loa to Ko'olau and beyond.

## KO'OLAU

24. The Ko'olau region of Maui has been described as the "wettest coastal region in all the islands." Handy, Handy, & Pukui (1972:498) as cited in Maly (2001:8).
25. "Oopuola Gulch marked the northwestern boundary of Ko'olau. Its stream, and likewise Waikamoi, Puohokamoa, and Haipuaena streams watered small patches." Handy (1940:109).
26. Handy, Handy, and Pukui (1972:272) reported that "On the northeast flank of the great volcanic dome of Haleakala...the two adjacent areas of Ke'anae and Wailua-nui comprise the fourth of the main Maui centers and the chief center on this rugged eastern coast. It supported intensive and extensive wet-taro cultivation. Further eastward and southward along this windward coast line is the district of Hana, the fifth great center[.]" As cited in Maly (2001:7).
27. For generations following initial settlement, communities were clustered along the watered, windward (ko'olau) shores of the Hawaiian Islands. Along the ko'olau slopes, streams flowed and rainfall was abundant, and agricultural production became established. The ko'olau region also offered sheltered bays from which deep sea fisheries could be easily accessed, and near shore fisheries, enriched by nutrients carried in the fresh water, could be maintained in fishponds and coastal fisheries. It was around these bays that clusters of houses where families lived, could be found, and in these early times, the residents generally engaged in subsistence practices in the forms of agriculture and fishing. Handy, Handy, and Pukui (1972:287) cited in Maly (2001:6).
28. Waikamoi, Puohokamoa, and Haipuaena watered small *lo'i* areas. *Ibid.* at 9.
29. "Honomanu, a large stream with a broad deep valley at its seaward end and a good beach for fishing canoes and gear, facing its broad bay. Anciently Honomanu supported a large population. Old terraces run back into the valley as far as the level land goes[.]" *Ibid.*

30. Just beyond Honomanu is Nu'uailua [Nu'a'aialua], flat bottomed like Honomanu but smaller. Terraces cover the flatlands and much taro was formerly raised, watered by an ample stream; but the valley has long been uninhabited." *Ibid.*

31. Ke'eanae "is a unique wet-taro growing ahupua'a." *Ibid.* at 9. "It is on the broad flat peninsula of lava extending for about a half a mile into the sea from the western line of the valley that Ke'eanae's famed taro patches are spread out -- striking evidence of old Hawaii's ingenuity." *Ibid.*; see also *ibid.* at 137, 139-40, 145-46, 251, 254, 271, 273, 281-86, 288, 289.

32. In *Ka Nupepa Kuokoa*, dated October 4, 1923, Mrs. Annie Kalau related a visit to Maui Hikina wherein her hosts took her to Waianu at 'Ōhi'a and told her a story of how Kāne and Kanaloa used their spears to cause fresh water to flow for their 'awa; these waters irrigated lo'i in this valley at the time of her visit.

33. Beyond Ke'eanae "is a sizable bay formed by erosion where three streams flow into the ocean. . . . About half the gently sloping land seaward of the cliff was terraced with lo'i which were watered by Wailuanui (Big Wailua) Stream, the larger of the three that flow into the bay. . . . And on high ground there was a war temple" Maly (2001:10). "Wailua has been notable for its continued occupancy and cultivation by Hawaiian families." *Ibid.*; see also *ibid.* at 137, 142-44, 150-52, 154-56, 241-44, 246-51, 257, 277-79, 283, 291.

34. Beyond Wailuanui "there are a succession of small deep gulches, each one having a few lo'i: East Wailuaiki and West Wailuaiki (Little Wailua), Kapili'ula [Kopili'ula], Waiohue, Pa'akea, Kapa'ula, Hanawi. Then comes Nahiku, a settlement spread over gently rising ground above the shore, with a number of groups of lo'i watered from Makapipi Stream." *Ibid.*

35. In his 1861 story of the pig god Kamapua'a, published in *Ka Hae Hawaii*, G.W. Kahiolo noted that Wailuaiki was the home of the goddess Kapoma'ilele, the sister of Pele who distracted Kamapua'a with her flying genitals, luring him to Maui. *Ibid.* at 23.

36. The legendary story of Laukaieie as told by Moses Manu in *Nupepa Ka Oiaio* (1894-1895) provides an abundance of rich cultural information about the Ko'olau-Hāmākua region and its traditional and customary practices. Some activities include (starting in Nāhiku and going to Ho'olawa, adjacent to

Honopou): harvesting lū'au of the god at Nāhiku; seeing the kalo that grew on the cliffs of Hanawī and watching a man carry a large taro there; walking on a path at Waiohue; passing the point of Kanokupeu which is a hula'ana (trail that crosses the water between two points of land); watching noio birds, finding a kū'ula i'a (fishing shrine) at 'Ohea cliff; seeing the famed kala fish outside of the point of Mokumana at Pauwahu; passing Kaliae and its renowned winds; traveling to Wailuaiki famed in song where one can see women going to the shore of Kapiliikaunaoa; gathering awa and 'anae fish at Wailuaiki from a fishpond made by Kāne; seeing the stone body of the supernatural octopus Hā'alua off the landing of Wailuanui; arriving at the muliwai of Wai'ōlohe at Ke'anae; finding a nearby cave that ran to the uplands of Kūō; visiting a pond mauka of Puhipinao where the prophet shark Hi'u was born; glimpsing Kahekili's leaping place of Pu'ukanohua; entering a cave at Kawahinepe'e that led to Waikamō'i stream and 'O'opuola, where slept the supernatural 'o'opu Ka'o'opili; viewing a carved stone in a cave flanked by ti plants at Maka'iwa; reaching Hāwini to gaze at the cove of Hōlawa (Ho'olawa). Maly (2001:34-36). What emerges from this journey is the significance of pathways, those on land or sea, through caves or streams, for connecting the gods, land, and people in an integrated cultural landscape. At the core of this, free flowing water is central for creating abundance, life, and growth in the region.

37. Today the importance of water to the perpetuation of Hawaiian culture and tradition is echoed in the following witness statements: "Without the water, my whole way of life would be lost," Edward Wendt, par. 20, "Spiritually, we are connected to the water. Water is life. Without water we will not be." Lezeley Jacintho, par. 24, and "If there is no water, there is no life." Terrance P. Akuna, par. 18.

38. Fresh water is essential to the perpetuation of Native Hawaiian traditional customary practices. The return of streamflows will support the regeneration of the land and people.



I declare under penalty of perjury that the foregoing statements are true and correct, to the best of my knowledge, information, and belief.

  
TY KAWIKA TENGAN, PhD.

## CURRICULUM VITAE

### Ty P. Kāwika Tengan

#### Office Address

University of Hawai'i at Mānoa  
Department of Ethnic Studies  
2560 Campus Road  
George Hall 308  
Honolulu, Hawai'i 96822  
Tel: (808) 956-5144  
Fax: (808) 956-9494  
Email: ttengan@hawaii.edu

Department of Anthropology  
2424 Maile Way  
Saunders Hall 314  
Honolulu, Hawai'i 96822  
Tel: (808) 956-7831  
Fax: (808) 956-4893

#### Current Position

2013-2016 Chair, Department of Ethnic Studies, University of Hawai'i at Mānoa, Honolulu.

#### Education

2003 PhD, MA (2000), Department of Anthropology, University of Hawai'i at Mānoa, Honolulu. Dissertation: *Hale Mui: (En)gendering Hawaiian Men*.  
Geoffrey M. White, Chair.  
2000 Certificate, International Cultural Studies Program, University of Hawai'i at Mānoa and East-West Center, Honolulu.  
1997 B.A., Department of Anthropology modified with Native American Studies with Honors, Dartmouth College, Hanover.

#### Professional Positions

2008- Associate Professor, Departments of Ethnic Studies and Anthropology, University of Hawai'i at Mānoa, Honolulu, Fall 2008 till present.  
2003- Affiliate Faculty, Center for Okinawan Studies (2008), Department of Women's Studies (2005), Department of Political Science Indigenous Politics Program (2005), Center for Pacific Islands Studies (2004), University of Hawai'i at Mānoa; the International Cultural Studies Graduate Certificate Program (2003), East-West Center and University of Hawai'i at Mānoa  
2003-2008 Assistant Professor, Departments of Ethnic Studies and Anthropology, University of Hawai'i at Mānoa, Honolulu, Fall 2003 till Spring 2008.  
2003- Associate Graduate Faculty, Department of Anthropology, University of Hawai'i at Mānoa, Honolulu, Fall 2003 till present.

#### Grants, Honors and Awards

2012-2015 North Shore Field School, Kamehameha Schools, to conduct archaeology field school at Kūpopolo Heiau and related oral history and ethnographic research (\$225,997 over 3 yrs).  
2010 Hawai'i-Pacific Islands Cooperative Ecosystem Studies Unit Task Agreement, National Park Service, to conduct research on "Hawaiian Soldiering: Indigenous Traditions of Warriorhood" (\$20,000, 1yr).

- 1998-2003 Ford Foundation Predoctoral Fellowship, National Research Council (\$42,000 over 3 years).
- 1998-2003 Mellon Predoctoral Research Grant, Social Science Research Council (\$5,000, 1 year).
- 1995-1997 Mellon Minority Undergraduate Fellowship, Dartmouth College. To conduct ethnographic and historical research on Maui for Honors Thesis "The Architecture of Canoes and Nations: a Case Study in Hawaiian Cultural Nationalism" (\$5,000, 1 year).

## Books

- 2008 *Native Men Remade: Gender and Nation in Contemporary Hawai'i*. Durham, N.C.: Duke University Press.
- Nominated for the Society for the Anthropology of North America's 2009 Delmos Jones and Jagna Sharf Memorial Prize for the Critical Study of North America

## Edited Volumes

- 2010 *Genealogies: Articulating Indigenous Anthropology in/of Oceania*. Special Issue of *Pacific Studies: A Multidisciplinary Journal*, Guest editors T.P.K. Tengan, T.O. Ka'ili and R. Fonoti. Vol 33, Nos 2/3.
- 2001 *Public Anthropology: The Graduate Journal*. Edited at the University of Hawai'i at Mānoa by J. Walsh and T. Tengan.

## Refereed Journal Articles

- 2014 Tengan, Ty P. Kāwika and Lamaku Mikahala Roy. "I Search for the Channel Made Fragrant by the Maile": Genealogies of Discontent and Hope. *Oceania* 84(3):315-330.
- 2010 Tengan, Ty P. Kāwika, T. O. Ka'ili, and R. T. Fonoti. Genealogies: Articulating Indigenous Anthropology in/of Oceania. *Pacific Studies: A Multidisciplinary Journal* 33(2/3):139-167.
- 2009 Ty P. Kāwika Tengan and Jesse Makani Markham. Performing Polynesian Masculinities in American Football: From Rainbows to Warriors. *International Journal of the History of Sport* 26(16):2412-2431.
- 2008 Re-membering Panalā'au: Masculinities, Nation and Empire in Hawai'i and the Pacific. *The Contemporary Pacific* 20(1):27-53.
- 2005 Ethnography in Struggle: Tales from an "Ōiwi in the Anthropological Slot. *Anthropological Forum* 15(3):247-256.
- 2004 Of Colonization and Pono in Hawai'i. *Peace Review: A Journal of Social Justice* 16(2):157-167.
- 2003 Tengan, Ty P. Kāwika and T. Kanahēle. He Nīnauele me Tui Kanahēle. *Ōiwi: A Native Hawaiian Journal* 3:98-100.
- 2002 (En)gendering Colonialism: Masculinities in Hawai'i and Aotearoa. *Cultural Values* 6(3):229-238.
- 2001 White, Geoffrey M. and Ty Kāwika Tengan. Disappearing Worlds: Anthropology and Cultural Studies in Hawai'i and the Pacific. *The Contemporary Pacific* 13(2):381-416.
- 2001 Reclaiming Space for an Indigenous Anthropology: Some Notes from Social Sciences Building 345. *Public Anthropology: The Graduate Journal*.

- 2001 Julianne Walsh and Ty Kāwika Tengan. Public Positions: Engaging Anthropologists. *Public Anthropology: The Graduate Journal*.

## Book Chapters

- 2014 Portrait: Sam Kaha'i Ka'ai. In *Ea: Hawaiian Movements for Life, Land, and Sovereignty*, N. Goodyear-Ka'opua, I. Hussey, and E. K. Wright, eds, pp.115-123. Durham: Duke University Press.
- 2014 The Return of Kū? Performing Native Hawaiian Masculinity, Warriorhood, and Nation. In *Performing Indigeneity: Global Histories and Contemporary Experiences*, L. Graham and G. Penny, eds, pp.206-246. Lincoln: University of Nebraska Press.
- In press Embattled Stories of Occupied Hawai'i. In *Cultural Encounters: Ethnographic Updates from Asia and the Pacific Islands*. Suzanne Finney, Mary Mostafaezad, Guido Carlo Pigiassco, and Forrest Wade Young, eds. Honolulu: University of Hawai'i Press.
- 2002 Ayau, Edward Halealoha and T. Tengan. Ka Huaka'i o Nā 'Ōiwi: The Journey Home. In C. Forde, J. Hubert, and P. Turnbull, eds. *The Dead and their Possessions: Repatriation in Principle, Policy and Practice*, Pp.171-189. London: Routledge.

## Reviews

- 2010 Review of *Hā'ena: Through the Eyes of the Ancestors*. In *The Hawaiian Journal of History* 44:101-104.
- 2005 Tengan, Ty P. Kāwika and J.L. Perry. Review of Kū'ē: *Thirty Years of Land Struggle in Hawai'i*. In *The Hawaiian Journal of History* 39:171-175.
- 2003 Review of film *Ke Kālanā He Māhū: Remembering a Sense of Place*. In *The Contemporary Pacific* 15(1):231-233.

## Manuscripts

- In prep *Mobilizing Indigeneity: Hawaiian Soldiering and Memory in American Empire*. Book manuscript to be submitted to Duke University Press.
- In prep Tomlinson, Matt and Ty P. Kāwika Tengan, eds. *New Mana: Transformations of a Classic Concept in Pacific Languages and Cultures*. Under review with ANU Press.

## Other Publications, Reports, and Scholarly Products

- 2013 Lima, Pūlama, W. McElroy, J. Bayman, and T. K. Tengan. End of the Year Report for the 2013 UH Mānoa North Shore Archaeological Field School at Kūpopolo Heiau, Kāwailoa Ahupua'a, Wāialua District, O'ahu. Prepared for Kamehameha Schools. Honolulu: Department of Anthropology, University of Hawai'i at Mānoa.
- 2013 Save our Legacy. *The Hawai'i Independent*, April 23. Available at: <http://hawaiiindependent.net/story/save-our-legacy>
- 2011 Tengan, Ty P. Kāwika and Aggy Stevens-Gleason. Hawaiian Soldiering: Indigenous Traditions of Warriorhood. A Report to the National Park Service.
- 2010 The Return of Kū. In *E Kū Ana Ka Poia: Unification, Responsibility and the Kū Images* pamphlet for the Bernice Pauahi Bishop Museum exhibit.



- 2007 Report on the Archival, Historical and Archaeological Resources of Nā Wai 'Ēhā, Wailuku District, Island of Maui. With collaboration from J.L.A. Perry and N. Armstrong Prepared for the Office of Hawaiian Affairs.
- 2006 Tengan, Ty P. Kāwika and S.K. Kikiloi. Hui Panalā'au. In *Hui Panalā'au: Hawaiian Colonists in the Pacific, 1935-1942*. Honolulu: Center for Oral History, Social Science Research Institute, University of Hawai'i at Mānoa. Pp.xxiii-xxvii.
- 2006 Warren Nishimoto and Ty Tengan. Oral history interview with Victor B.S. Kim. In *Hui Panalā'au: Hawaiian Colonists in the Pacific, 1935-1942*. Honolulu: Center for Oral History, Social Science Research Institute, University of Hawai'i at Mānoa. Pp.48-91.
- 2006 Warren Nishimoto, Noelle Kahanu and Ty Tengan. Oral history interview with Arthur Harris and George Kahanu, Sr.. In *Hui Panalā'au: Hawaiian Colonists in the Pacific, 1935-1942*. Honolulu: Center for Oral History, Social Science Research Institute, University of Hawai'i at Mānoa. Pp.140-168.
- 2006 Warren Nishimoto and Ty P. Kāwika Tengan. Oral history interview with George Kahanu, Sr. In *Hui Panalā'au: Hawaiian Colonists in the Pacific, 1935-1942*. Honolulu: Center for Oral History, Social Science Research Institute, University of Hawai'i at Mānoa. Pp.169-250.
- 2003 Ka Li'u o ka Pa'akai. In *Kauakūlalahale* (Hawaiian Language Column). *Honolulu Star-Bulletin*. August 10. Available at: <http://starbulletin.com/2003/08/10/news/kauakulalahale.html>
- 2002 Identifying With Islands: Life on Baker in the Summer of 1936. In *Hui Panalā'au*. Pamphlet for Bishop Museum Traveling exhibit "Hui Panalā'au: Hawaiian Colonists, American Citizens." Pp.9-10.
- 2002 Scott Kekuewa Kikiloi and Ty Kāwika Tengan. Introduction: Hui Panalā'au. In *Hui Panalā'au*. Pamphlet for Bishop Museum Traveling exhibit "Hui Panalā'au: Hawaiian Colonists, American Citizens." Pp.1-2.
- Research Areas**
- Cultural anthropology, ethnic studies, indigenous theory and methodologies, Native Pacific cultural studies, identity formation, militarization, colonialism, tourism, nationalism, gender, masculinities, race, ethnicity, repatriation, museum practices, Hawai'i, Pacific.
- Courses Taught**
- ES 101 Introduction to Ethnic Studies, Department of Ethnic Studies
- ES 221 Hawaiians, Department of Ethnic Studies
- ES 301 Ethnic Identity
- ES 320 Hawai'i and the Pacific, Department of Ethnic Studies
- ES 380 Fieldwork in Ethnic Studies, Department of Ethnic Studies
- ES 480 Qualitative Research Methods, Department of Ethnic Studies
- ES 486 Peoples of Hawai'i, Department of Ethnic Studies, (Cross-listed ANTH 486)
- ANTH 152 Culture and Humanity, Department of Anthropology
- ANTH 316 Anthropology of Tourism, Department of Anthropology
- ANTH 419 Indigenous Anthropology, Department of Anthropology
- ANTH 485 Pre-European Hawai'i, Department of Anthropology
- ANTH 486 Peoples of Hawai'i, Department of Anthropology, (Cross-listed ES 486).

- ANTH 750d Research Seminar (ethnography): The Hawaiian State, Department of Anthropology
- ANTH 750d Research Seminar (ethnography): Hawaiian Ethnography, Theory and Practice, Department of Anthropology
- Media**
- 2013 Interviewee, "Agency that guards isle history on the lookout for a new leader," *Honolulu Star-Advertiser* (B.J. Reyes, reporter), August 13. Available at: [http://www.staradvertiser.com/newspremium/20130813\\_Agency\\_that\\_guards\\_isle\\_history\\_on\\_the\\_lookout\\_for\\_a\\_new\\_leader.html](http://www.staradvertiser.com/newspremium/20130813_Agency_that_guards_isle_history_on_the_lookout_for_a_new_leader.html)
- 2013 Interviewee, "North Shore Field School," "Ōiwi TV story, January 31 (B. Hoe, reporter). Available at: <http://www.oiwi.tv/live/channels/olelo/sb-1235/channels/kamehameha-schools-channels/north-shore-field-school/>
- 2013 Interviewee, "Archaeology Students Study North Shore Heiau," Hawai'i Public Radio story, January 21 (M. Solomon, reporter). Available at: <http://www.hawaiipublicradio.org/content/archaeology-students-study-north-shore-heiau>
- 2013 Interviewee, "North Shore Field School Offers Archaeological Training," KHON story, January 12 (B. Randle, reporter). Available at: <http://www.khon2.com/news/local/story/North-Shore-field-school-offers-archaeology/Edy-gdR-gEeHUZu-rEGxA.csp>
- 2010 Interviewee, *Under a Jarvis Moon*, documentary film, nominated for 2010 Hawai'i International Film Festival Best Documentary Award, Juniora Productions (N. Kahanu and H. Giumi, Co-directors).
- 2010 Guest, *Town Square* radio show, Hawai'i Public Radio, August 5 (B-A. Koslovich, host).
- 2010 Interviewee, "Exhibit Spotlights Rare Ku Images," Hawai'i Public Radio story, July 8 (N. Tanigawa, reporter). Available at: <http://www.hawaiipublicradio.org/content/exhibit-spotlights-rare-ku-images>
- 2010 Guest, "Bishop Museum" episode of *Nā 'Ōiwi 'Ōlino – People Seeking Wisdom* radio talk show, AM940, July 7 (R. Hudnall, host). Available at: <http://www.naoiwiolino.com/?p=330>
- 2009 Guest, "Being Hapa – Part I" episode of *Thinking Out Loud: Talking Issues, Taking Action* radio talk show, KZOO-AM 1210, October 19 (C. Yano, Host).
- 2009 Guest, "Decolonizing Indigenous Masculinity" episode of *Indigenous Politics: From Native New England and Beyond* radio show, August 4 (J. K. Kauanui, Host).
- 2009 Interviewee, *Noho Hewa: The Wrongful Occupation of Hawai'i* documentary film, winner of the 2008 Hawai'i International Film Festival's Best Documentary Award (Anne Keala Kelly, director and producer).
- 2009 Guest, "Nā Kāne: Hawaiian Men Using Cultural Traditions to Resolve Health and Social Issues" show of *Nā 'Ōiwi 'Ōlino: People Seeking Wisdom* Hawaiian talk radio program, AM 940, January 24 (With K. Kahoano, B. Galuteria, A. Nāhulu, and R. Takushi, hosts; K. Crabbe and K. Kaholokula, guests).
- 2008 Host, "Indigenous Media," Video on indigenous film and media production featuring Faye Ginsburg, Vilsoni Heremiko, Keala Kelly, and Ty Tengan

- (moderator), recorded for 'ŌLELO cable access television to be aired 11/27, 11/28, 12/4, 12/5.
- 2006 Interviewee, "In Memoriam" show on Hawaiian History and Memory, *Free Speech Radio News*, May 29 (Anne Keala Kelly, reporter). Available at: <http://fsrn.org/content/memoriam>
- 2005 Guest, "Indigenous Rights—2005," Show filmed for *Island Connections* program, recorded for 'ŌLELO cable access television, September (with I. Aoude, N. Goodyear-Ka'opua, and I. Winchester).
- 2004 Host, "No Wai ke Kulena?" Video on Bishop Museum NAGPRA guidance, recorded for 'ŌLELO cable access television, October (with Kēhaunani Abad, Edward Halealoha Ayau, and Lilikalā Kame'elehewa).
- 2003 Host, "Nā Kipuna 'Ōiwi," Video covering cultural and legal issues of repatriation efforts in the community, *Living Nation* Series Program, recorded for 'ŌLELO cable access television, June (with Edward Halealoha Ayau and Kēhaunani Cachola-Abad).
- 2002 Guest, "Decolonizing Hawaiian History," Video on anthropology, history, and Native Hawaiians, *Nā Leo Māka 'āinana* Program, recorded for 'ŌLELO public access television, October (with Lynette Cruz and Sally Engle Merry).

#### Invited Keynote Presentations

- 2014 Mana Kāne: Indigeneity, Masculinity and Power in Hawai'i. Scholar-in-Residence Address at the Annual Meeting of the American Men's Studies Association, Tacoma, March 27-29.
- 2014 "In Search of the Channel Made Fragrant by the Maile": Genealogies of Discontent (and Hope?). Distinguished Lecture delivered at the Annual Meetings of the Association for Social Anthropology in Oceania, Kamakohou, Kona, February 6-9.
- 2013 The Mana of Veterans: Indigenous Approaches to Healing, Trauma, and Masculinity. Invited Keynote talk for Division 51 Society for the Psychological Study of Men and Masculinity at the American Psychological Association Convention, Honolulu, August 3.
- 2013 Mana Kāne: Transformations of Indigenous Men's Knowledge, Power, and Potency in Hawai'i and Oceania. Keynote talk at Tuia Ngā Aho o te Mātauranga: Weaving the Threads of Indigenous Knowledge. Te Whare Kura Thematic Research Initiative, University of Auckland, Auckland, New Zealand, June 28.
- 2009 Na Kama o Mauiakamalo: The Descendants of Maui-of-the-loincloth. Keynote talk at "Ho'ōla Lāhui: Conference on Spiritual, Emotional and Physical Health of Native Hawaiians," Kamehameha Schools, Maui, July 11.
- 2009 Remaking Hawaiian Men. Keynote presentation at "Interrogating Power Native Pacific Sexualities Culture Performance and America" Symposium, University of Michigan, Ann Arbor, March 27-28.
- 2005 Re-membering Masculinities: Gender, Nation and Empire in Hawai'i and the Pacific. Plenary talk at "Moving Masculinities: Crossing Regional and Historical Borders," Australian National University, Canberra, Australia, November 29-December 2.

#### International Conference Presentations

- 2014 Finding the "We" in Oceania: Anthropology and Pacific Islanders Revisited. Paper presented at "Who are 'We'? Reimagining Alterity and Affinity in Anthropology," Wenner-Gren Workshop, University of Cambridge, September 3-5.
- 2009 Tough Stories: Narrating Local Okinawan American Soldiering Masculinity. Paper presented at "Islands as Contact Zones: Okinawa and East Asia, the Asia-Pacific Islands, University of the Ryukyus, Okinawa, November 28-29.
- 2009 The Journeys of Hawaiian Men: Cultural Politics and Indigenous Masculinities in Oceania. Presentation at the 11<sup>th</sup> Pacific Science Inter-Congress, Hilton Hotel, Tahiti, French Polynesia, March 2-6.
- 2007 Tengan, Ty P. K., T. Kā'ili, and R. Fonoti. Articulating Indigenous Anthropology in/of Oceania. Paper presented at the "Indigenous Anthropology" Working Session at the Annual Meetings of the Association for Social Anthropology in Oceania, Charlottesville, Virginia, February 21-24.
- 2007 "Where are the Brothers?" Questioning Hawaiian Men in the Movement(s). Paper given at "What's Next for Native American and Indigenous Studies?" An International Scholarly Meeting, University of Oklahoma, Norman, May 3-5.
- 2005 Hale Mui: A Hawaiian Model for Men's Cultural Education and Development. Presentation at the 7<sup>th</sup> World Indigenous Peoples' Conference on Education, Hamilton, New Zealand, Nov 27 - Dec 1.
- 2004 Hui Panalā'au: Performances in the Pacific Theater of Empire. Paper presented at the David Nichol Smith Memorial Conference, "New Voyagings on Old Seas: Performances in Honour of Professor Greg Denning," Australian National University, Canberra, Australia, July 19-22.
- 2002 Anthropologists, Hawaiians, and the University: An Indigenous Ethnography. Paper presented in the "Critical Ethnography" Symposium at the Annual Meetings of the Association for Social Anthropology in Oceania, University of Auckland, New Zealand, February 20-23.
- 2002 Masculinities in Hawai'i and Aotearoa: Colonialism, Gender, and Power in the Pacific. Paper Presented in the "Gender Histories" Working Session at the Annual Meetings of the Association for Social Anthropology in Oceania, University of Auckland, New Zealand, February 20-23.

#### National Conference Presentations

- 2013 Towards and 'Āina Anthropology: Reflections from the University of Hawai'i. Paper presented at the Annual Meeting of the Society for American Archaeology, Honolulu, April 3-6.
- 2012 The Mana of Kū: Indigenous Nationhood, Masculinity, and Authority in Hawai'i. Paper presented at the Annual Meetings of the American Anthropological Association, San Francisco, November 14-18.
- 2011 Return to Ft. Kamehameha: Martialing Memory in Occupied Hawai'i. Paper presented at the Annual Meetings of the American Anthropological Association, Montreal, QC, Canada, November 16-20.



| Ty P. Kāwika Tengan                               | Curriculum Vitae   | Page 8 of 16 |
|---|--|--------------|
| 2011  | "I Just Like to Play": Narrating Hawaiian Self and Masculinity on and off the Field. Paper to be presented at the Native American and Indigenous Studies Association Conference, Sacramento, California, May 19-21.  |              |
| 2010  | Hawaiian Soldiering: Indigenous Circuits through American Empire. Paper presented at the Annual Meetings of the American Anthropological Association, New Orleans, Louisiana, November 17-21.  |              |
| 2008  | Genealogies: Articulating Indigenous Anthropology in/of Oceania. Paper presented at the Annual Meetings of the American Anthropological Association, San Francisco, November 19-23.  |              |
| 2007  | Crabs in the bucket? Status, Class and Gender among Native Hawaiians. Paper presented at the Annual Meetings of the American Anthropological Association, Washington, D.C., November 28-December 2.  |              |
| 2006  | Re-membering Nationhood and Koa at the Temple of State. Paper to be presented at the Annual Meetings of the American Anthropological Association, San Jose, November 14-19.  |              |
| 2004  | Domesticating Frontiers: Occupations of the Panalā'au. Paper presented at the Association for Asian American Studies Conference, Boston, March 25-28 (Funded by Native Hawaiian Leadership Project Travel Award)   |              |
| 2003  | Narrating Hawaiian Men: Life Stories, Place and Identity. Paper presented at the Annual Meetings of the American Anthropological Association, Chicago, November 19-23. (Funded by University Research Council Travel Award)  |              |
| <b>Local Conference Presentations</b>             |  |              |
| 2012  | "From Dissertation to Author: Native Men Remade." Presentation at Native Hawaiian Education Association Convention, Kane'ōhe, Hawai'i, March 23-24.  |              |
| 2011  | "Hui Panalā'au: Native Hawaiians in World War II." Summer Teachers' Institute, National Park Service and Hawai'i Council for the Humanities, Tokai University, Honolulu, July 12.  |              |
| 2006  | "Kā i Mui (To thrust into the men's house): Cultural rites of passage for young boys and the Hale Mui." Presentation at 'Aha Kāne 2006 Native Hawaiian Men's Health Conference, Kamehameha Schools, Honolulu, Hawai'i, June 23-25.   |              |
| 2004  | Kānaka 'Ōiwi: Ancestors, Identity, and Kuleana. Presentation at the "Practical Pluralism Symposium," William S. Richardson School of Law, University of Hawai'i, Honolulu, April 16-17.  |              |
| 2003  | Navigating Graduate School as an 'Ōiwi. Presentation at Ka Li'u o ka Pa'akai 'Aha Kūikā Haumāna Ho'okā'oi Hawai'i 'Ōiwi Native Hawaiian Graduate Student Conference, Kamakūokalani Center for Hawaiian Studies, University of Hawai'i at Mānoa, August 20-22.                    |              |
| <b>Invited Colloquium and Panel Presentations</b> |  |              |
| 2013  | Discussant, "Binding the Cord for a Stronger Hawai'i: Hawaiian Transformations in Archaeology and Cultural Resource Management," The Annual Meeting of the Society for American Archaeology, Honolulu, April 3-6.  |              |
| Ty P. Kāwika Tengan                               | Curriculum Vitae   | Page 9 of 16 |
| 2012  | Panelist, "Mo'olonoh" and "Māhiti" workshops, 3 <sup>rd</sup> , 'Aha Kāne Native Hawaiian Men's Health Conference, Windward Community College, Kane'ōhe, Hawai'i, June 15-17.  |              |
| 2012  | Panelist, "Indigeneity, Anthropology and Native Studies in the Pacific and North America," Native American and Indigenous Studies Association, Uncasville, Connecticut, June 3-6.  |              |
| 2012  | Presenter, Micronesian Connections Forum, University of Hawai'i at Mānoa and East-West Center, Honolulu, February 16.  |              |
| 2012  | Panelist, "The Ceremonial and Social Usages of 'Awa in Hawai'i, Then and Now," Native Foods, Native Stories series, Bernice Pauahi Bishop Museum, Honolulu, February 2.  |              |
| 2010  | Panelist, "Kū Rising: The Roles and Responsibilities of Hawaiian Men Today," Bishop Museum, Honolulu, August 10.   |              |
| 2010  | Hawaiian soldiering: Queries into an ethnography of empire. Presentation in "Occupied Hawai'i: Issues of Nationhood and Colonialism" Roundtable, <i>The Place of Hawai'i in American Studies II</i> Symposium, Kamakūokalani Center for Hawaiian Studies, Honolulu, March 11-12. |              |
| 2010  | Tough Stories: Narrating Local Okinawan American Soldiering. Presentation to the Worldwide Uchinanchu Business Association-Hawai'i, Honolulu, January 7.   |              |
| 2009  | Panelist, "Native Men Remade," Hawai'i Book and Music Festival, Honolulu Hale, May 16.   |              |
| 2009  | Panelist, "Contemporary Indigenous Issues in Australia & Hawai'i," Roundtable with M. Ka'iana, P. Wolfe, H.-K. Trask, M. Kamahale, and k. ho'omanawanui, Art Auditorium, University of Hawai'i at Mānoa, April 30.   |              |
| 2009  | The Stories of Hawaiian Men. Presentation at Brown Bag Biography Series, Center for Biographical Research, University of Hawai'i at Mānoa, April 30.   |              |
| 2009  | Panelist, "Gridiron Warriors" roundtable discussion, at "Interrogating Power Native Pacific Sexualities Culture Performance and America" Symposium, University of Michigan, Ann Arbor, March 27-28.  |              |
| 2009  | Native Men Remade: Gender and Nation in Contemporary Hawai'i. Presentation at ISEPP (Institut Supérieur de l'Enseignement Privé de Polynésie), Tahiti, French Polynesia, March 3.  |              |
| 2009  | Native Men Remade: Gender and Nation in Contemporary Hawai'i. Presentation at the University of Hawai'i at Hilo.   |              |
| 2009  | Kā i Mui. Kā i Mui: The Journeys of Hawaiian Men. Presentation in Political Science Colloquium Series, University of Hawai'i at Mānoa, February 6.   |              |
| 2008  | Invited discussant on "Anthropology's Kuleana: Rights and Responsibilities in Anthropological Practice," Annual Meetings of the American Anthropological Association, San Francisco, November 19-23.   |              |
| 2008  | Native Men Remade: Gender and Nation in Contemporary Hawai'i. Paper presented in the Department of Women's Studies Colloquium Series, University of Hawai'i at Mānoa, April 4.   |              |



- 2008 Kuleana 'Ōiwi presentation at Teach-in on Burials, Land, Historic Preservation, Friends of SHPD and Kamakūkōalani Center for Hawaiian Studies, University of Hawai'i at Mānoa, March 14.
- 2007 Indigenous People of Hawai'i. Presentation at the Center for Asia-Pacific Exchange 27<sup>th</sup> Annual American Studies Forum, East-West Center, Honolulu, August 7-9.
- 2006 Re-membering Panalā'au: Masculinities, Nation and Empire in Hawai'i and the Pacific. Paper presented in the Department of Anthropology Colloquium Series (co-sponsored by Center for Pacific Island Studies and Department of Ethnic Studies), University of Hawai'i at Mānoa, October 31.
- 2006 Conceptualizing 'Ōiwi Anthropology. Presentation at Informal Session for Hawaiian Archaeologists and Anthropologists, Hawai'i Community College, Hilo, Hawai'i, July 22.
- 2005 Kā i Mua: Cast Forward/Into the Men's House. Mo'olāhui Hawai'i, A Hilo, Hawai'i, Nov 7.
- 2005 Hawaiian Masculinities Re-membered: Gender, Nation and Empire in Hawai'i and the Pacific. Paper presented in Anthropology Colloquium Series, Dartmouth College, Hanover, October 13.
- 2005 Hapa identity: Personal and Political Reflections from the Hawaiian Half. Presentation at "Being Hapa," Japanese American Social Issues Series in Hawai'i, Japanese Cultural Center Hawai'i, Jun 7.
- 2004 Kā i Mua: Cast Into the Men's House. Presentation for the Māori Studies Department and the Māori Men's Health Research Project in the School of Medical and Health Sciences, University of Auckland, New Zealand, May 10.
- 2004 Pu'ukohā: Re-membering Nationhood and Koa at the Temple of State. Paper presented in the International Cultural Studies Colloquium Series, East-West Center, Honolulu, April 21.
- 2004 'Ōiwi Strategies for Self-Determination. International Forum of Indigenous Nations Planning Meeting. Mākahe Resort, Mākahe, O'ahu. January 9-10.
- 2003 Hale Mui: Narration, Life Stories, and Identity. Presentation at the Annual Meeting of the 'Ahaui o Nā Kauka Association of Native Hawaiian Physicians. Hanaikamalama Queen Emma Summer Palace, Nu'uuanu, O'ahu. November 16.
- 2003 Ethnography in Struggle: The Challenges of Doing Anthropological Research in a Native Hawaiian Community. Poster presented at workshop entitled *The Challenges of Success*, Asian American and Pacific Islander Coordinating Committee, National Science Foundation, Arlington, Virginia, November 3-4 (Funded by National Science Foundation)
- 2003 Unsettling Ethnography: On the Hazards of the Occupation. Paper presented in "Notes From the Field" colloquium, Department of Anthropology, University of Hawai'i at Mānoa, October 23.
- 2003 Reflections on the Dartmouth Experience: The Kanaka 'Ōiwi View. Presentation given on panel at Native American Alumni Fly-In, Dartmouth College, New Hampshire, October 16-18.
- 2003 Hale Mui: (En)gendering Hawaiian Men. Presentation given at Maui Community College, Kahului, Maui, June 19.

### Conference and Symposium Organization

- 2013 Co-organizer, New Mana: Transformations of a Classic Concept in Pacific Languages and Cultures. Australian National University, Sep 19-20.
- 2012 Organizer, "Indigeneity, Anthropology and Native Studies in the Pacific and North America," Native American and Indigenous Studies Association, Uncasville, Connecticut, June 3-6.
- 2010 Moderator, "Kū Ki'i (Standing as the Image/Kū obtained)," Panel at 2<sup>nd</sup> 'Aha Kāne Native Hawaiian Men's Health Conference, Windward Community College, Kāne' ohe, Hawai'i, June 18-20 (With Keawe'aimoku Kaholokūla, Kūkōna Lopes, and Marques Marzan).
- 2009 Moderator, "Plenary Panel: Challenging Inequalities Among Nations," Association for Asian American Studies Annual Meeting, Hilton Waikāki, Honolulu, Hawai'i, April 22-25 (With K. Blaisdel, D. McGregor, and N. Silva)
- 2008 Moderator, "Panel: Planning Pono," Hawai'i Water Works Association Conference, Grand Wailea, Maui, October 29.
- 2006, 2007 Co-organizer of working session on "Articulating Indigenous Anthropology in/of Oceania" at the Annual Meetings of the Association for Social Anthropology in Oceania (San Diego, California, Feb 8-11 and Charlottesville, Virginia, Feb 21-24).
- 2005 Chair of session on "Re-viewing: Language and History" at *Ōlelo Mākuahine: New Hawaiian Language Based Resources*, Hawaiian Historical Society Conference, Hawai'i Pacific University, October 22.
- 2005 Co-organizer of informal session on "Indigenous Anthropology in/of Oceania" at the Annual Meetings of the Association for Social Anthropology in Oceania, Kauai, February 3-6.
- 2003 Chair of session on "Identity, Self, and Subjectivity" at the Annual Meetings of the American Anthropological Association, Chicago, November 19-23.
- 2003 Co-convenor of Ka Li'u o ka Pa'akai 'Aha Kūka Haumāna Ho'okā'oi Hawai'i 'Ōiwi Native Hawaiian Graduate Student Conference, Kamakūkōalani Center for Hawaiian Studies, University of Hawai'i at Mānoa, August 20-22.

### Memberships in Professional Associations

- 2013 Society for American Archaeology
- 2010-2012 Native American and Indigenous Studies Association
- 2008-2012 Association of Indigenous Anthropologists
- 2005-2011 Hawaiian Historical Society
- 2004-2005 Association for Asian American Studies
- 2003-2010 American Ethnological Society
- 2000-2010 Society for Cultural Anthropology
- 2000-2012 American Anthropological Association
- 2000-2002 Native Hawaiian Education Association
- 1998-2008 Association for Social Anthropology in Oceania

### Professional Service

- 2011- Member, Editorial Board, *Hūlili: Multidisciplinary Journal on Hawaiian Well-being*

- 2007- Member, International Advisory Board, *Intersections: Gender and Sexuality in Asia and the Pacific*.
- 2008-2012 Manuscript reviewer, Bergen Books, State University of New York Press, Minnesota University Press, University of Arizona Press, and Kamchamela Schools Press.
- 2002-2011 Submission reviewer, *Anthropologie et Sociétés, American Anthropologist, American Ethnologist, American Studies, Cultural Anthropology, The Contemporary Pacific, Huihui*.
- 2008, 2010 External reviewer for tenure dossiers of faculty at the Colorado State University (2010) and the University of Virginia (2008)
- 2006-2008 Member, Pacific Islander Scholarship Program Committee, Association for Social Anthropology in Oceania.
- 2007, 2009 External Reviewer, PhD Theses of Melissa Cragg (Chair: Mason Durie), Massey University, Aotearoa/New Zealand (2009) & Teena Joanne Brown Pulu (Chair: Michael Goldsmith), University of Waikato, Aotearoa/New Zealand (2007).
- 2004-2005 Member, 2005 Meeting Planning Committee, Association for Social Anthropology in Oceania
- 2001 Consultant for Hawai'i Ethnographic File on eHRAF, Human Relations Area Files.
- University Service**
- 2014 Member, Personnel Committee, Center for Pacific Islands Studies
- 2013- Member, Native Hawaiian Initiative, College of Social Sciences, University of Hawai'i at Mānoa
- 2011-2012 Member, Native Hawaiian Advancement Task Force, University of Hawai'i at Mānoa
- 2011 Participant, Commitment to Liberal Education Initiative, College of Social Sciences, University of Hawai'i at Mānoa, Spring and Fall
- 2011 Speaker, HAP-focus workshop, General Education Office, University of Hawai'i at Mānoa, October 3
- 2010- Member, Editorial Board, Hawai'i 'inuiākea Monograph Series, Hawai'i 'inuiākea School of Hawaiian Knowledge and University of Hawai'i Press
- 2008- Member, Editorial Board, Pacific Islands Monograph Series, Center for Pacific Islands Studies and University of Hawai'i Press
- 2010-2011 Member, Tenure and Promotion Review Committee, UHM
- 2005-2008 Member, Steering Committee (2005-2008), Curriculum Committee (2006-2008) and Admissions Committee (2005-2006), International Cultural Studies Graduate Certificate Program.
- 2005- Member, 5 PhD Committees: J. Salazar, (Poli Sci, 2011-present), C. Castagna (Geography, 2005-present), P. Moore (Poli Sci, 2010), J. Basham (Poli Sci, 2007, second dissertation written in Hawaiian), K. Wong (Linguistics, completed May 2006, first dissertation written in Hawaiian)
- 2004- Member, 4 MA Committees: T. Martinson (Hawaiian Studies, 2009), A. Sala (Music, 2007-present), C. Pang (Music, 2009), K. McKeague (Urban and Regional Planning, completed 2005).
- 2008, 2010 Member, 2 Honors Thesis committees: J. Russo (Political Science, 2008) and N. Nashiro (Political Science, 2010)

- 2006-2007 Member, Honors College Task Force Committee.
- 2006-2007 Member, Honors Futures Committee.
- 2006-2007 Member, Editorial Board, Center for Pacific Islands Studies Occasional Paper Series.
- 2006 Participant, Manoa Forum XIII "Civility," UHM College of Arts and Sciences, Double Tree Alana Hotel, Waikiki, Oct 6-8.
- 2003-2011 Guest lecturer: TPSS 416 Issues Concerning Biotechnology (A. Wicczorek, 2/27/09); Understanding Medicinal Properties of Hawaiian Plants (Wofford College Interim Course; B. Splawn and E. Richardson, 1/12/09); PACS 603 Representing Oceania (V. Hereniko, 10/27/08); POLS 390: Political Inquiry and Analysis (H. Aikau, 10/16/08); EDEF 678: Approaches to Educational Inquiry (W. Nishimoto, 10/14/08); WS 360/ES 365 Pacific/Asian Women in Hawai'i (M. Casumbal-Salazar, 9/25/08); Kōkua A Puni Summer Enrichment Program (HWST, 7/21/11 & 7/23/08); POLS 621: Politics of Indigenous Representation (H. Aikau, 3/22/07); EDCS 632: Qualitative Research Methods – Indigenous Research Methods (M. Maaka, 3/6/06); LAW 520: Advanced Legal Studies – Native Hawaiian Law (M. MacKenzie, 4/17/06); POLS 339/WS 439 Feminist Theory (H. Aikau, 3/14/05); POLS 686 Contemporary Native Hawaiian Politics (4/12/05, N. Silva); PACS 601 Learning Oceania (T. Wesley-Smith, 11/2/05); N. International Cultural Studies: History and Theory (M. Yoshihara, 11/16/05); AMST 683 Museums: Theory, History, Practice (K. Kosasa, 11/16/05); PACS 693: Cultural Identities: American and Pacific Perspectives (V. Hereniko, 2/5/04)
- 2004-2006 Member, Organizing Committee, Ho'okūlāiwi Research Institute for Kanaka Maoli and Indigenous Education.
- 2003- Member, Kūali'i, Native Hawaiian Advisory Council (Executive Committee Member 2004-2005).
- 2004-2006 Faculty advisor, BA in Interdisciplinary Studies (N. Tahauri).
- 2004 Submission reviewer, Occasional Papers Series, Women's Studies.
- 2004 Speaker, Teaching Assistants' training workshop, Center for Teaching Excellence, August 17.
- 2004 Faculty Marshal, Spring Commencement, May 16.
- 2004 Faculty advisor, Native Hawaiian Leadership Project Graduate Assistantship Program (Sean Nālemaile, GRA), Spring-Fall.
- 2003- Member, Pūko'a, System-wide Native Hawaiian Advisory Council.
- 2003-2005 Member, Native Hawaiian Leadership Project curriculum planning committee.
- 2003 Mentor for students from Reed College (Oregon), Marlboro College (Vermont), and Dartmouth College (Hanover), Fall.
- 2003 Orientation facilitator, Re-imagining Indigenous Cultures: The Pacific Islands, National Endowment for the Humanities Summer Institute, East-West Center, Honolulu, July 2.

#### Departmental Service

- 2013-2016 Chair, Department of Ethnic Studies
- 2014-2015 Member, Personnel Committee, Department of Anthropology
- 2012-2014 Faculty Advisor, Ethnic Studies Students Association, Fall-Spring
- 2011-2012 Co-chair, Awards Committee, Department of Anthropology, Fall-Spring



- 2011-2012 Member, Department Personnel Committee and Chinese Diaspora Specialist Search Committee, Department of Ethnic Studies, Fall-Spring
- 2010-2011 Member, Search committee for Race and Race Relations Specialist position, Department of Ethnic Studies, Fall-Spring
- 2010-2011 Member, Search committee for Ecological Anthropologist position, Department of Anthropology, Fall-Spring
- 2010- Convener, Cultural Anthropology Faculty Caucus, Department of Anthropology
- 2010- Member, Curriculum Committee, Department of Anthropology, Fall 2004 to Spring 2007, Fall 2010.
- 2007-2009 Chair, Colloquium Committee, Department of Anthropology, Spring 2007 to Fall 2009 (member since 2003).
- 2007 Coordinator, Anthropology Graduate Student Orientation and Service Learning at Ka'ala Farms, Wai'anac, September 15.
- 2006-2009 Member, External Relations Committee, Department of Anthropology, Fall 2006 to present.
- 2004- Member, ES 101 Curriculum Development Committee, Department of Ethnic Studies, Fall 2004 to present.
- 2003-2009 Chair, Outreach Committee, Department of Ethnic Studies, Fall 2003 to Spring 2009.
- 2007- Chair, PhD Committees for S. Barrier-Heinz, A. Stevens-Gleason, and P. Fifita.
- 2004- Member, 6 MA committees: J. Spoon (1/04-5/05), S. Nāleimaile (8/04-present), C. Claus (10/05-5/06), S. Barrier-Heinz (2/06-5/07), P. Fifita (6/07), K. Pongpanich (6/07), Department of Anthropology.
- 2003- Member, 6 PhD Committees: B. Ledward (8/03-present), J. Spoon (5/05-present), P. Christensen (12/05-present), T. Vu (3/06-present), and H. Katsumo (9/06-present), J. Stephen (8/07-present), Department of Anthropology.
- 2003-2005 Coordinator, service learning projects in Mākuu, Nū'uunu/Kaniakapūpū, Kahana, Waikane, and Keania, College of Social Sciences (with funding from the Hawai'i Pacific Island Campus Compact).
- 2005-2007 Video organizer, Ah Quon McElrath Fund for Social Change, Department of Ethnic Studies.
- 2003-2009 Guest lecturer: ES 310 Ethnicity and Community (U. Hasager, 7/14/09); ES 338 American Indian Experience (T. Castanba, 6/30/09); ES 330 Japanese in Hawai'i (J. Chinen, 9/8/08); ANTH 350 Pacific Islands Cultures (G. White, 11/9/04); ANTH 698 Professional Development (M. Graves, 9/22/04); ANTH 424 Culture, Identity, and Emotion (G. White, 10/23/03); ES 221 Hawaiians (D. McGregor, 10/5/06); ES 101 Introduction to Ethnic Studies (P. Ho, 10/3/06, 10/27/08; M. Das Gupta, 11/30/06) UCLA/UH Mānoa Multicultural Summer Program—Asian American Studies 187D (R. Labrador, 8/1/05, 8/2/06, 7/29/09) and ES 301 Ethnic Identity (J. Okamura, 8/1/03, 8/4/04, 8/3/05, 7/31/06, 7/29/09)

### Community Service

- 2014 Cultural expert for Native Hawaiian Legal Corporation on Petition to Amend Interim Instream Flow Standards for East Maui.

- 2013 Member, Selection Committee, State Historic Preservation Division Administrator Search Committee, July-October
- 2012-2013 Chair, Nāki'ikeabo, Association of Native Hawaiian Archaeologists and Anthropologists
- 2011 Consultant, State Historic Preservation Division Consultation on History/Culture Branch, Honolulu, October 14
- 2011- Expert witness for Native Hawaiian Legal Corporation lawsuit *Davis v Abercrombie* in First Circuit Court seeking protection of religious rights of Native Hawaiians incarcerated on continental U.S.
- 2009-2011 Treasurer, Hawaiian Historical Society (Trustee in 2008)
- 2010 Principal Humanities Scholar, *E Kū Ana ka Paia: Unification, Responsibility and the Kū Images*, Hawai'i Council for the Humanities
- 2008-2013 Grant to the Bernice Pauahi Bishop Museum (\$10,000)
- Co-convenor, Friends of State Historical Preservation Division community coalition
- 2008- Member, Institutional Review Board, Native Hawaiian Health Care Systems
- 2007 Expert witness, 'Iao Ground Water Management Area High-Level Source Water Use Permit Applications and Petition to Amend Interim Instream Flow Standards of Waiehe, Waiehu, Iao, & Waikapu Streams Contested Case Hearing, Before the Commission on Water Resource Management, State of Hawai'i.
- 2005-2006 Preparer of expert declarations for court cases *Mālama Mākuu v Donald Rumsfeld* (for plaintiffs, 1/06), *Nā Lei Ali'i Kawananākoa and Royal Hawaiian Academy of Traditional Arts v Bishop Museum and Hui Mālama i Nā Kūpuna o Hawai'i Nei* (for defendants, 12/05), and *'Ūloaokalani Coalition v Donald Rumsfeld* (for plaintiffs, 5/06); and comments on Draft Environmental Impact Statement for Military Training at Mākuu Military Reserve (10/05).
- 2005 Expert witness, Native American Graves Protection and Repatriation Review Committee meeting, Honolulu, March 13.
- 2004-2005 Member, Kōmike Hemo Kula a me ke Kōmike Mea Kūikawā a me ke Kōmike Mākuu, Pūnana Leo o Honolulu Hawaiian Language Immersion Preschool, Honolulu.
- 2004- Po'o, Mo'o Lono, Hale Maa o Kūali'i (Head of the Lono order of the Men's House of Kūali'i), O'ahu. Co-organizer of annual Makahiki Nui, Kualoa Beach Park (2005-2010); Orator, Chanter, and Keeper of Kava Bowl at ceremonies held at Healing Our Spirit Worldwide (Sep 3-10, 2010, O'ahu); Hawai'i Conservation Conference (August 4-6, 2010); Huaka'i i Aotearoa (April 30-May 11, 2004); and annual ceremonies at Pu'ukoholā Heiau, Kawaihae (2004-2010)
- 2003-2004 Member, ke Kōmike Ho'okipa a me ke Kōmike Mākuu, Pūnana Leo o Honolulu Hawaiian Language Immersion Preschool, Honolulu
- 2001- President, Board of Directors of Hui Ho'oniho, Non-Profit Native Hawaiian Organization Dedicated to the Perpetuation of Hawaiian Dry Masonry Traditions.
- 1998- Member, Hui Mālama i Nā Kūpuna O Hawai'i Nei, Native Hawaiian organization caring for ancestral remains; O'ahu, October 1998 to present. Kona district community liaison and protocol instructor, Project Ola Nā Iwi community workshops established to educate and train Hawaiian community in traditional burial practices (2000-2001).

I, Healoha Carmichael, under penalty of perjury hereby state the following is true and accurate to the best of my knowledge and belief:

The statements below are based upon my personal knowledge.

1. I am Hawaiian.
2. I grew up in Wailua and Ke'anae in East Maui.
3. I learned traditional and customary gathering practices from my grandmother, 'Awapuhi Carmichael, who learned practices passed down from her Hawaiian elders.
4. Traditionally, my 'ohana gathered 'opae, watercress, lū'au, hahā, pepeiao, hihiwai, pupulo; and goldfish in Wahinepee, Puohokamoa, Hāipuaena, Punalau/Kolea, Honomanu, Nuaulu, Pīnaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Waiohue, and Makapipi.
5. Traditionally, my family would also pick 'opihi on the way home from gathering and also catch 'o'opu at Waiolehe and Ching's pond in Palauhulu.
6. My 'ohana also engaged in mālama 'āina and mālama kahaikai at Honomanu, Pīnaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Waiohue, and Makapipi, and Waiohue by gathering according to the moon, not always going to the same places so we didn't overharvest the stream, and taking care of the ko'a's to keep the population up.
7. Currently, I gather 'opae in Pīnaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, Hanawi, Waiohue, and Makapipi. I gather hihiwai in Waiohue and Kopiliula. We have to go high in the mountains to find the 'opae and hihiwai. I practice the traditions my grandmother taught me, including what colors not to wear when gathering, how we should walk on the sides of the river, and how we should be quiet when we carry out these traditions. I was taught to always look up at the mountain to look out for big water.
8. I also fish for moi, wholehole, uouo, and mullet in and around the mouths of Pīnaau, Palauhulu, 'Ōhi'a/Waianu, Waioakamilo, Kualani, Wailua, Waikani (Wailuanui), West Wailuaiki, East Wailuaiki, Kopiliula Puakaa, Paakea, Waiaaka, Kapaula, and Hanawi. I also dive for kole and pick 'opihi. Now, there's not much moi.
9. I gather to feed my family and as recreation.
10. I continue to engage in mālama 'āina and mālama kahaikai as my grandmother taught me, following her instruction to gather according to the moon and from different places so we don't overharvest.
11. My family and I enjoy swimming in Ching's Pond at Pīnaau. However, in some places the water is dirty and just sits because the diversions obstruct the flow. I got a staph infection four times from swimming in the water.
12. I've noticed the change in water flow. For example, at East Wailuaiki, you can see the ditch, see the water dropping into it, and then look below the ditch only to see the pond is completely dry. At Hanawi, the side above the ditch has water, the side below the ditch has nothing. Mountain Pond at Pīnaau is bone dry. So is Kikokiko Spring. Most of the time, you have to wait for it to rain before you see any water in the stream. If you wait a couple days for the rain to clear up, the streams are beautiful. Otherwise they are typically dry.
13. The change in water flow affects the populations of stream animals like 'opae, hihiwai, and 'o'opu. It's not at all like what my grandmother described it was like

IN THE CIRCUIT COURT OF THE FIRST CIRCUIT

STATE OF HAWAII

HEALOHA CARMICHAEL, LEZLEY JACINTHO, and NA MOKU AUPUNI O KO'OLAUI HUI,

Plaintiffs,

vs.

BOARD OF LAND AND NATURAL RESOURCES, SUZANNE CASE, in her official capacity as Chairperson of the Board of Land and Natural Resources, the DEPARTMENT OF LAND AND NATURAL RESOURCES, ALEXANDER & BALDWIN, INC., EAST MAUI IRRIGATION CO., LTD., HAWAIIAN COMMERCIAL AND SUGAR CO., and COUNTY OF MAUI, DEPARTMENT OF WATER SUPPLY, Defendants.

DECLARATION OF HEALOHA CARMICHAEL



15. I've also noticed invasive trees like the African tulip moving in where the water has stopped flowing due to the diversions.

16. The impact of the diversions on this environment is tremendous. When you kill a stream and you allow invasive species to take over, that's a sin. The dewatering of the stream is not caring for it. It's not *mālama 'āina*.

17. I am concerned about the fact that there has never been an environmental assessment or impact statement to analyze what these large-scale diversions have done and will do to this environment. I am also concerned that A&B and EMI continue to get permits to use ceded lands in a way that negatively and significantly impacts my 'ohana and Native Hawaiians in violation of the law.

DATED: Ke'anae, Hawai'i, May 4<sup>th</sup>, 2015.

*Healoha Carmichael*  
HEALOHA CARMICHAEL

IN THE CIRCUIT COURT OF THE FIRST CIRCUIT

STATE OF HAWAII

THEALOA CARMICHAEL, LEZLEY JACINTHO, and NĀ MOKU AUPUNI O KO'OLA HUI,

Plaintiffs,

vs.

BOARD OF LAND AND NATURAL RESOURCES, SUZANNE CASE, in her official capacity as Chairperson of the Board of Land and Natural Resources, the DEPARTMENT OF LAND AND NATURAL RESOURCES, ALEXANDER & BALDWIN, INC., EAST MAUI IRRIGATION CO., LTD., HAWAIIAN COMMERCIAL AND SUGAR CO., and COUNTY OF MAUI, DEPARTMENT OF WATER SUPPLY.

**Defendants.**

### DECLARATION OF LEZLEY JACINTO

I, **Lezley Jacintho**, declare that:

- 1.1. The statements below are based upon my personal knowledge.
2. I am Hawaiian.
3. I am a taro farmer. I have been growing kalo in Honopou, East Maui, Hawaii, for 10 years.

- I am a taro farmer. I have been growing kalo in Honopou, East Maui for about six years now on approximately two acres of land in the State of Hawai'i's Huelo license area.



4. I am farming this land based on my family history and talking with kupuna about practices their parents traditionally engaged in to farm lo'i long before we continued those customs.
5. I learned how to farm taro from Beatrice Kepani Kekahuna and Lurlyn Scott.
6. My 'ohana has lived in Honopou for many generations.
7. Traditionally, my 'ohana gathered 'ulu, kalo, uala, moi, aholehole, banana, 'o'opu, pūpū, kala, hau, native crayfish, hihiwai, 'opihi, limu, pohole, mango, 'awapuhi, ō leaf, lū'au, guava, watercress, oranges, and medicinal plants in and around Honopou.
8. Traditionally, my 'ohana fished for aholehole, honu, moi, mullet, poopaa, puihi, ulua, lobster, pāpio, 'ō'io, lae, uhu, menpachi, kole, black crab, haukiuki, kupipi, and opihi in or near the mouth of Honopou, Punalau/Kolea, Honomanu, Hanawi, and Makapipi. They also gathered limu in those areas.
9. My 'ohana also engaged in mālama 'āina and mālama kahaawai. They were aware of spawning times, they cleaned the 'auwai, gathered only what was needed, gathered and fished with the moon cycle, rebuilt walls, and cleaned Honopou.
10. Currently, my 'ohana and I gather pohole, banana, avocados, 'ulu, mango, orange, puakenikeni, and lū'au in and around Honopou and Honomanu. We also pull kalo if it is not rotten.
11. My family and I fish for pāpio, enenue, moi, prawns, lobster, haukiuki, 'opihi, and kupipi in or near the mouth of Honopou and Honomanu.
12. I gather and fish to feed my family, teach my kids to feed themselves, and live as our grandparents did.
13. My family engages in mālama 'āina and mālama kahaawai by cleaning Honopou and nearby ponds, planting kalo, cleaning, and working together to grow food.
14. We also swim in the ponds, teach our kids how to swim, catch prawns, fish, and play games in and around Honopou.
15. I appreciate the natural beauty of Honopou, including the birds and dragon flies. I love the smells of 'awapuhi and other flowers. I enjoy looking around, taking in the beauty and the greenery, and hearing rushing water while sitting on Lurlyn Scott's deck next to the pond.

16. Water is used to irrigate my lo'i as well as other lo'i. The level of water barely feeds those lo'i. More water is needed as we continue to open more lo'i. The water also feeds homes situated around these lo'i, homes which have been established for generations.
17. The lack of stream flow harms our taro. We have lost taro due to root rot and other diseases.
18. Because the streamflow connects to the ocean, diverted streamflow restricts spawning of different species of fish. Thus, the lack of streamflow also affects our gathering rights as Hawaiians and our ability to feed our 'ohana as was once possible. Native species like 'o'opu cannot travel back up stream due to lack of water, which compromises their reproduction and life cycle. Our families who live in this area cannot gather enough resources from the ocean and streams because there is not enough fish, hihiwai, 'ōpae, and 'o'ōpi living in them. The low stream flow has also caused people to move away to provide better for their family, unable to sustain their families with the limited food resources available as a result of the diversions.
19. Additionally, swimming in the ponds is a form of recreation we all enjoy. It should continue to be enjoyed; not compromised by improper flow which can cause stagnate water that breeds leptospirosis and other bacteria.
20. Spiritually, we are connected to the water here. Water is life. Without water we will not be.
21. It is for these reasons – the long list of harmful impacts resulting from A&B and EMI's large-scale diversions all along our ceded lands – that the lack of an environmental assessment for A&B and EMI's use of these state lands upsets me and my community.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Honopou, Maui, Hawai'i, May 15, 2015.

  
LEZLEY JACINTHO

10. I also engage in mālama 'āina and mālama kahuawai by clearing stream banks of vegetation and rubbish that otherwise block stream flow in and along Honomanu, Piinaau, Palahalulu, Waiokamilo, Kualani, Wailua, Waikani (Wailuanui), West Waiuaki, East Waiuaki, Hanawi, and Waiohue.

11. In the same manner that I learned my traditional and customary practices from my kupuna, many Nā Moku members also learned to gather, fish, and farm in and/or alongside streams in the Honomānu, Keʻānae, and Nahiku license areas and continue to do so today.

12. For me, gathering and fishing from the streams enables me to provide a protein source to my ʻohana and neighbors, including kupuna, who may be unable to gather and catch their own fish. I also aim to teach the ʻōpio the traditional practices to mālama streams and gather and fish from the streams and coast lines.

13. Dewatering the streams has prevented my generation from teaching ʻōpio how to mālama streams and use techniques wisely to gather from streams and fish along coastline near the muliwai.

14. The diminished stream flow has negatively affected the muliwai and the coastal fisheries. Certain volumes of water and enough flow is required to maintain a good kalo crop. As with many other Nā Moku members, much of my kalo could not survive the emptying of these streams, so it has made farming more difficult. Additionally, some of my neighbors have abandoned kalo farming because the streams had stopped flowing.

15. The lack of stream flow has also allowed vegetation along the stream banks to block the stream beds, and has permitted invasive snail species and African tulips to take over the taro crop.

16. Ultimately, the loss of stream water has changed the whole way of life in Wailuanui-Keʻānae. It takes more time to find the resources to gather, which robs me and other Nā Moku members of time for recreation and time with ʻohana.

17. Without water, our whole way of life would be lost.

18. Many original members of Nā Moku have died since we first petitioned for the return of water to these streams. It makes me sad and lose hope. They never lived to see the water return to the loʻi in 2008. I am afraid I will not live to see the return of the water we are now fighting for.

19. I am disappointed and concerned that there has been no environmental review of A&B and EMI's use of our ceded crown lands. There are environmental impacts that have been obvious for decades that continue today. How these corporations have managed to get permits from the Board of Land and Natural Resources year after year without following the law is outrageous.

20. Corporations last forever. Traditional people do not. Crown lands should be set aside for the benefit of the people.

I declare under penalty of perjury that the foregoing is true and correct.

DATED: Wailuanui, Hawaiʻi, May 19, 2015.



EDWARD WENDT



COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM  
INSTREAM FLOW STANDARDS FOR  
HONOPOU, HUELO (PUOLUA),  
HANEHOI, WAIKAMOI, ALO,  
WAHINEPEE, PUOHOKAMOA,  
HAIPUAENA, PUNALAU/KOLEA,  
HONOMANU, NUAAILUA, PIINAAU,  
PALAUHULU, \*ŌHI'A (WAIANU),  
WAIOKAMILO, KUALANI, WAILUANUI,  
WEST WAILUAIKI, EAST WAILUAIKI,  
KOPIIULA, PUAKEA, WAOHUE,  
PAAKEA, WAIAAKA, KAPAUULA,  
HANAWI and MAKAPIPI STREAMS

CASE NO. CCH-MA13-01

DECLARATION OF LURLYN SCOTT

Declaration of Lurlyn Scott

I, Lurlyn Scott, hereby declare that:

1. I live and farm taro in Honopou Valley and have gathered in Honopou Stream and diverted water for my family's lo'i kalo my whole life.
2. I've seen Honopou Stream during dry seasons, wet seasons, high flows and low flows.
3. In 2008, interim instream flow standards were set for two points along Honopou Stream. The IIFS were not met for the most part following the 2008 decision and subsequent modifications to the diversion structures.
4. Around April 2016, I noticed the flows in Honopou Stream were much higher than ever before and more than what I would expect to flow naturally under undiverted conditions.
5. The higher flows overflowed my 'auwai on several occasions and the overflows and silt and debris carried in them fills my 'auwai which now require constant cleaning.
6. Although I've spent my life asking the Commission to restore water to Honopou Stream, I am concerned that water diverted from streams to the East of Honopou is being

brought through the ditches and dumped in Honopou Stream so that the water flows are higher in the stream when normally summer flows are lower. My family and I rely on the lower summer flows to gathering and recreation and the high flows limit our ability to go in the stream for these purposes.

7. The additional water concerns me because I also gather in other streams to the East and I support the restoration of those streams to support my traditional and customary practices, as well as the practices of other East Maui community members. I also do not know the possible harmful impacts of adding more water than natural will have on the integrity of the Honopou stream bed, the health and life cycles of the stream animals and nearshore fisheries, the promotion of erosion, and other environmentally destructive impacts.

DATED: Honopou, Maui, HI, January 5, 2017.

Lurlyn Scott



10238-02  
September 23, 2019

Ms. Camille Kalama and Ms. Summer Sylva, Staff Attorneys  
Native Hawaiian Legal Corporation  
1164 Bishop Street, Suite 1205  
Honolulu, HI 96813

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Kalama and Ms. Sylva:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. You provided early consultation comments by letter dated December 29, 2016, which was prior to the publication of the EISP on February 8, 2017. You also provided written comments on the EISP on dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix J (as to the early consultation comments) and Appendix M (as to the EISP comments).

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Chapter 4 of the Draft EIS discusses the existing environment, impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O), and mitigation measures. As relevant and appropriate, the discussion of impacts includes those pertaining to conditions before and after the closure of sugar cultivation in 2016. Various technical studies are appended the Draft EIS and provide

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Camille Kalama and Ms. Summer Sylva  
Page 2  
September 23, 2019

detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

3. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, terrestrial flora and fauna and invasive mosquitoes. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
4. The Draft EIS includes in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
5. Figure 1-1 in the Draft EIS illustrates the EMI Aqueduct System overlaid on the Department of Land and Natural Resources (DLNR) Division of Aquatic Resources (DAR) geographic information system (GIS) data of streams. An electronic drawing of the EMI Aqueduct System was georeferenced by Akinaka & Associates, Ltd. to depict major diversions on East Maui streams on a United States Geological Survey (USGS) GIS base map. Due to the complexity of the EMI Aqueduct System and the level of detail shown on the map, not all of the minor diversions could be associated with a stream or tributary. The stream names shown are from the DAR GIS database but a few of those stream names may differ from how some East Maui residents may refer to them. Moreover, certain streams that were identified during certain proceedings before the CWRM do not have associated GIS data and therefore could not be precisely located on the map. Table 1-2 in the Draft EIS reconciles discrepancies between stream names used in the February 2017 EIS Preparation Notice and the CWRM D&O.
6. For the purposes of the Draft EIS, diversion quantities from the CWRM D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
7. For purposes of this Draft EIS, the list of streams assessed as part of the License Area is taken from the D&O. The Draft EIS discusses impacts to hydrology associated with the Proposed Action in Section 4.2 of the Draft EIS as well as the reports various technical reports prepared for the Draft EIS, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure



10238-02  
Letter to Ms. Camille Kalama and Ms. Summer Sylva  
Page 3  
September 23, 2019

Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

8. The impacts of access into the License Area are discussed in the SWCA report and the Archaeological Literature Review and Field Inspection report (See Appendices B and E, respectively). These impacts are also discussed in the Draft EIS in Section 4.4 pertaining to the natural environment and Section 4.5 on historic and archaeological resources.
9. The Cultural Impact Assessment (See Appendix F) includes a tabulation and evaluation of traditional cultural practices, including those provided through interviews and declarations from the CWRM's proceedings on the IIFS.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Charlotte O'Brien  
February 23, 2017  
Ha'ikū Park and Community Center  
Excerpt of Transcript by Ralph Rosenberg Court Reporters, Inc.

MS. O'BRIEN: I would like the EIS to include an assessment of the importance of the -- I'd like the EIS to assess the fragility of the food security of all of the Hawaiian islands due to the imminent threat of climate change and the potential for -- for the potential of international and even national political instability. This is a state security issue, not that I'm not sympathetic to all of the other issues, but this is a state security, food security issue. I think that for our law enforcement people -- I'm sorry, for our lawmakers to make and form the decisions, this EIS should assess the potential of the development of what A & B has called their important agricultural lands, 27,000 acres, the importance of that to the food security of all of the Hawaiian islands, in the same way that the bread basket of the Midwest helps small farmers in the south, in the east, in the west. To supplement their pasture animals, the pigs of the Big Island are importing grain at the cost of \$8.80 a bushel for soybeans. That's just the shipping cost. \$8.21 a bushel just for corn. I called Matson myself. Now there's no way that you can be a small pig farmer on the Big Island and pay those as the prices in addition to what you're paying for the grain.

So this is a food security issue for all of the Hawaiian islands, and I think that needs to be assessed in this EIS, because it needs to be assessed whether or not it should become a public trust. And I'm not saying that we need to take the land from A & B. I think we can pay them what they carry for the asset on their books. Whatever their historical asset value of that land is on their books, the State could pay them for that so they're not out anything. And the EMI, if the State runs it, A & B can lease water just like anybody else according to need and according to value to the citizens of the State of Hawaii. And I'll write more in my written statement.



10238-02  
September 23, 2019

Ms. Charlotte O'Brien

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. O'Brien:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui. The environmental impacts of the potential Water Lease will be assessed.
2. Sections 4.3.1 and 4.3.2 of the Draft EIS and the Assessment of Streams and the Ocean Water Chemistry report (See Appendix A) discuss climate change impacts related to the Proposed Action.
3. Section 2.1.4 of the Draft EIS includes a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Charlotte O'Brien  
Page 2  
September 23, 2019

4. Sections 1.1 and 1.2 of the Draft EIS discuss the purpose and objectives of the Proposed Action, including the development of diversified agriculture in the fields of Central Maui. The relationship of Mahi Pono's Farm Plan to various land use plans, policies and controls is discussed in Chapter 5, including Section 5.1.1 on the Hawaii State Plan; Section 5.1.2 on the State Functional Plans, especially the Agriculture Functional Plan; Section 5.1.4 on Important Agricultural Lands; Section 5.2 Governor Ige's Sustainability Initiative; and Section 5.4 the Maui County Land Use Plans and Policies.

5. Chapter 4 of the Draft EIS and the Agricultural and Related Economic Impacts Report (See Appendix I) discuss the anticipated impacts of the Proposed Action on agriculture.

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**From:** [Wilson Okamoto Corporation](#)  
**To:** [Earl Matsukawa](#); [Keola Cheney](#); [Rebecca Candlisha](#)  
**Subject:** FW: EISPN for Proposed Lease for the Nahiku, Ke`anae, Honomanu, and Huelo License Areas of Public Land, Maui, Hawaii  
**Date:** Friday, March 10, 2017 3:07:07 PM  
**Attachments:** [image001.jpg](#)

**Jeanine S.H.Y. Morioka**  
Secretary

Wilson Okamoto Corporation

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

**From:** Chelsea Huddleston  
**Sent:** Friday, March 10, 2017 3:06 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** EISPN for Proposed Lease for the Nahiku, Ke`anae, Honomanu, and Huelo License Areas of Public Land, Maui, Hawaii

Dear Mr. Okamoto,  
Mahalo for the opportunity to provide comments on this Environmental Impact Statement Preparation Notice (EISPN) for the use of water from four license areas consisting of 33,000 acres of public lands and waters in East Maui.

As a resident of

I am affected by how our streams and watersheds are managed. Because of my interest, I would like to request that the Draft EIS for this proposed Lease include the following information which is not clearly indicated in the EISPN

- Full disclosure of every single diversion along the East Maui Irrigation system
- Full disclosure of the amount of water proposed to be taken from each stream, license area and from the entire license area daily (on average and at minimum and maximum)

- The impact of how the proposed diversions may affect federally listed plant/ bird/bat & insect species in lease areas
- The impacts of diverting water from East Maui streams on outdoor recreational activities

- The impacts on the maintenance of ecosystems

- The impacts on traditional and customary Hawaiian practices (including kalo farming)
  - A discussion of alternatives including: shorter lease periods, less volumes than proposed, termination of diversions from the Nahiku and/or Keanae areas
- Thanks for your attention to these important issues/ concerns. I look forward to following the EIS review process closely and for the opportunity to review the draft EIS.

Best,  
Chelsea Huddleston

--  
[Chelsea Huddleston](#)



10238-02  
Letter to Ms. Joyclynn Costa  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

eston  
y

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Ms. Huddleston:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

5. The Draft EIS assesses the impacts of the Proposed Action on recreational uses and facilities in Section 4.8.
  6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)
  7. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
- Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.  
Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**  
Ms. Cheryl Kekahuna  
February 23, 2017  
Haʻikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. KEKAHUNA: My name is Cheryl, also known as Pohe, Kekahuna. I'm the safety director for the Nahiku Community Association, as well as a resident of Lower Nahiku. I am here today to oppose a 30-year lease proposed by A & B. I would like to start with a couple questions.

Why after HC&S was officially done in December 2016, the water wasn't restored to all the rivers, being there's no sugar cane in production? And where is the water that was irrigated for the sugar cane? Now, it seems almost coincidental that the same month HC&S was done, A & B sold 300-plus acres in Paia. The message I got from that was, here we go, progress. And it was clear to me that A & B can't be trusted. They have their own agenda. In A & B's Environmental Impact Statement, your EIS for February, you need like a lawyer or a dictionary to kind of understand this.

However, there was something that caught my attention. Under the proposed action, there's a statement that:

"Aqueduct system continues to serve a critical role in providing upcountry Maui and Nahiku community with water, and should the delivery of water from EMI aqueduct system be curtailed, upcountry Maui and the Nahiku community would be left without a reliable source of water."

Now, I had to Google the definition of "curtail." It states:

"To reduce in extent or quantity, impose a restriction on, or deprive someone of something."

Makapii, Hanawi, Haipuaena automatically runs through our island blood. I ask: Are you God? Who gave you the right to deprive us of our right to live? Back in the day when our great grandparents, uncles, grand uncles, grandparents used to work for EMI, the streams and rivers were properly managed. The rivers never ran dry and all-- and was well maintained. Is that the case now?

We, as kanaka ʻōle, have to fight for our water. Our kava farmers in Keanae for over a decade have been fighting for the rivers to be restored to their (Hawaiian). And here comes A & B with their proposals and greed for more water. State and county representatives, are you going to allow A & B to deprive and be unjust to the people and county you represent?

And lastly, I would just like to end my testimony by simply saying: Remember our rivers are sacred. There's kaona in these rivers. Don't let the hewa follow you.





Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke‘anae, Honomanū, and Huelo License Areas. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai‘i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Section 1.3.4 of the Draft EIS discusses the Commission on Water Resources Management's (CWRM) June 20, 2018 Interim Instream Flow Standard (IIFS) Decision and Order (D&O) and the authority of the BLNR to issue a Water Lease for non-instream uses pursuant to Hawaii's Revised Statutes (HRS) § 171-58, that is subject to the IIFS set by CWRM.
3. For the purposes of this EIS, diversion quantities from the D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. Modifications or removal of diversion structures for streams in the License Area are those streams designated for full or partial restoration by the D&O.
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of  
1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Christina Hemming  
February 23, 2017  
Haʻikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. HEMMING: Hi. My name is Christina Hemming, and I actually live on Kuiaha stream. It's been running lately here in Haiku, which has been great. But today I went down there, and it's pretty much all done. Everett Dowling's got a well up above. Okay. So this is an EIS. We've got to fit into their paradigm in order for it to count.

So the number one thing I want to be part of the EIS is the EIS has to be consistent with the development resource plan, which has some very stringent rules. And some of those rules are -- well, first of all, the first rule it says is it only looks 20 years out. And you know it says the rules are only for 20 years out. So how can you ask for a lease for 30 years when in the rules themselves, in 13.170.32, it says a 20-year vision. So the lease should only be considered for the rules that have the paradigm of 20 years.

Second of all, who is the lease going to go to? Who -- can the lease be transferred if you -- if they agree to this and it goes through, will the lease be able to be transferred or subdivided to multiple entities. Number two. The instream flow standards need to be -- all the -- everything needs to go up, all the water needs to go into the stream, and then you ratchet it down to see how much is actually needed.

And this is where it gets kind of tricky for me, because I personally feel like East Maui needs to be designated as a water management resource area, just like west Maui. Because technically, if it's not designated as a water resource management area, all the waters that's been flowing down to Central Maui, that's a crime. That's a crime against the water laws of the State of Hawaii. And no one has been discussing it if they want to take the water from anywhere on East Maui and take it down to central valley without a water management designation area -- which means they have to tell you all the wells. Everybody's got to get a permit for any well they drill. They have to tell how many wells there are.

They've got to do a study on the quality of water, and all of that goes into can they release water out to another area of the island. Otherwise, if it's not declared a water management area and the aquifers aren't protected, then this EIS application is illegal based on the Water Resource Commission rules. You have to project the usage of water, you have to identify the sources of water, you have to have the existing uses of water all part of the EIS; you have to have the capacity, and it all has to be part of a 20-year analysis plan.

The last time I went to a water meeting was like in '99, '98, and it was on the Kaupo ditch system. And I remember when DUNR awarded the Kaupo ditch system to the Kaupo Ranch for \$600 a year, in

Scoping Meeting Comments of Ms. Christina Hemming  
Page 2  
February 23, 2017

quarterly payments of \$125 or \$150. So the amount of money that the people are paying for the water and then leasing it back to the people is a crime. And that should also be addressed. So the impact of the construction by EMI on the water quality should also be addressed in the EIS, please. And you have to follow the state resource code. And the lease should not be able to be transferable, and that should be -- because, hey, guess what? Monsanto, you know, guess what, there's a ton of companies. Do you know how privatized water has become in the United States? We don't want a Japanese bottling plant moving out there and taking all the water and then shipping it over to Japan or China or wherever else, where they are desperate for clean water. So that should also be part of the EIS. Thank you so much.



10238-02  
September 23, 2019

Mr. Christina Hemming

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Hemming:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including discussion of alternative lease duration and terms.
3. Section 1.3.4 of the Draft EIS discusses the Commission on Water Resources Management's (CWRM) Interim Instream Flow Standard (IIFS) Decision and Order (D&O) and the authority of the BLNR to issue a Water Lease for non-instream uses pursuant to Hawai'i Revised Statutes § 171-58, that is subject to the IIFS set by CWRM.
4. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the D&O were used to estimate the maximum amount of water to be diverted

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Christina Hemming  
Page 2  
September 23, 2019

by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

5. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**SUBJECT: EISP: PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS – SCOPING MEETING, FEBRUARY 22-23, 2017**

*With the economic climate & the ecological changes of the planet in mind our priority needs to be food sustainability, by here on Maui, not corporate profit to grab food we need water, the fish need fresh water too!*

*Aloha*

(include additional sheets as necessary)

PLEASE PRINT: Name: *Christine Carter* Phone: *808 542-2234*

Organization:

Address: *Huelo*

Email:

Please submit comments by March 10, 2017 or email [woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

\*Receipt of e-mailed comments will be confirmed via e-mail. If you do not receive a confirmation message, please contact our office (see contact information, above).



10238-02  
September 23, 2019

Ms. Christine Carter  
280 W. Waipio Road  
Haiku, HI 96708

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Carter:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated February 23, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 4 an assessment of the impacts of the Proposed Action. Section 4.3.1 discusses climate change impacts related to the Proposed Action.
3. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
4. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Christine Carter  
Page 2  
September 23, 2019

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

Clifton M. Hasegawa  
President and CEO Clifton M. Hasegawa & Associates, LLC  
1322 Lower Main Street A5  
Wailuku, Maui 96793  
Telephone: (808) 419-5481  
Email: [clifhasegawa@gmail.com](mailto:clifhasegawa@gmail.com)  
LinkedIn: <https://www.linkedin.com/in/cliftonhasegawa>

June 28, 2017

VIA EMAIL

Mr. Earl Matsukawa, AICP  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Re: EIS – Alexander & Baldwin and East Maui Irrigation

Dear Mr. Matsukawa:

Maui Mayor Alan Arakawa predicted as early as 2005 that Hawaiian Commercial Sugar Company (HC&S) would cease to exist as a major part of Maui's economic engine. While the impact of the economic downturn played a part, HC&S's parent Alexander & Baldwin (A&B) to resource major and essential programs and projects vital to HC&S's ability to continue sugar operations was the lynchpin for HC&S's demise. But one example is A&B's failure to adequately and timely provision the HC&S Puunene Mill to comply with EPA pollution and emission standards and requirements. A&B delayed and delayed, asked for and received waivers, until finally Maui Electric Company, Ltd. (MECO) terminated its Power Purchase Agreement (PPA) with HC&S to provide firm-power to the Maui Grid. Selling electricity generated from HC&S biomass plant to MECO was a loss of a major revenue and income stream for HC&S.

The financial commitment of A&B to its diversified agricultural model is not part or included in the Environmental Impact Statement Preparatory Notice (EISPN) nor specifically raised in the Consultation Comments included as part of the EISPN. Inclusion of detailed financial statements, balance sheets and projected budgets for its diversified agriculture operations is of paramount significance and importance to justify the 30 year term of the lease as being requested by A&B. A&B's unequivocal and firm commitment to diversified agriculture for 30 years, as discussed below, is not established, affirmed or substantiated.



As stated in the EISPN,

The purpose of the EIS process is to disclose to government agencies, the general public, stakeholders, and decision-makers the anticipated impacts of a project and to identify feasible measures that might be taken to mitigate potential impacts.

Statements made by Christopher J. Benjamin, President and Chief Executive Officer of A&B and information contained in the A&B 2016 Annual Report + Form 10-K filed with the United States Securities and Exchange Commission (SEC) filed on March 1, 2017 reinforce the need for a comprehensive, full and complete disclosure of A&B's financial commitment to diversified agriculture, near-term, short-term and long-term, be included and made a part of the EIS for review, evaluation and decision by government agencies, the general public, stakeholders, and final decision-makers. Specifically,

### 1. Reimagining A&B

The cessation of sugar operations, like our separation from Matson four years earlier, changed the character of the Company and provided the opportunity for a fresh articulation of our future direction. We embarked on this process last spring, and what emerged over the summer was a two-pronged strategy to increase our net asset value (NAV) and enhance the market's appreciation of that value. Those objectives are guiding our increased focus on Hawaii commercial real estate (CRE). – Christopher J. Benjamin, President and Chief Executive Officer of A&B Letter to Shareholders.

Source: A&B 2016 Annual Report + Form 10-K. Filed March 1, 2017, accessed June 28, 2017 <https://www.sec.gov/Archives/edgar/data/1545654/000154565417000003/alex201610k.htm>

### 2. Alexander & Baldwin (ALEX) CEO Chris Benjamin on Q1 2017 Results – Earnings Call Transcript

Seeking Alpha. May 7, 2017, accessed June 28, 2017 <https://www.google.com/amp/s/seekingalpha.com/amp/article/4070402-alexander-and-baldwins-alex-ceo-chris-benjamin-q1-2017-results-earnings-call-transcript>

5 years ago, we were primarily a shipping company with a diversified and mostly nonstrategic commercial real estate portfolio, primarily on the U.S. mainland. We had a large sugar plantation and an expanding development pipeline.

Today, following several proactive steps in the real estate business and unavoidable sensation – cessation of our sugar operation, we are a Hawaii-focused real estate company with an increasingly strategic commercial portfolio that is generating nearly 40% More NOI [Net Operating Income] than just 5 years ago.

That's great progress, but we have further to go and are patiently moving toward our goal of even greater concentration and a larger footprint in Hawaii commercial real estate. I say patiently because we're focused on creating long-term sustainable value, and that's not done overnight. It's created by dispositions and taking comprehensive steps to build asset and land dispositions and taking comprehensive steps to build their value over time. And this is what I'm most excited about right now, the energy and enthusiasm of our team building this value. Diversified agriculture efforts are coming along well. We don't expect this to be a near-term driver of profitability.

[Clarification Supplied]

### 3. Risk Factors.

a. "There is no assurance that the Company will be able to transition to and implement a new diversified agricultural model, which could have an adverse impact on the Company's results of operations." Page 19.

b. **"The diversified Agricultural model may not achieve the financial results expected.** The company is currently evaluating several categories of replacement agricultural activities in the transition to the diversified model, including but not limited to energy crops, agroforestry, grass finished livestock operations, diversified food crops/agricultural park, and orchard crops. There is no assurance that the Company's replacement agricultural activities will be economically feasible or improve Land Operations segment's operating results." [Emphasis in original document] Page 19.



10238-02  
September 23, 2019

Mr. Clifton M. Hasegawa  
President and CEO Clifton M. Hasegawa & Associates, LLC  
1322 Lower Main Street A5  
Wailuku, HI 96793

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Hasegawa:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated June 28, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

- c. "A&B's Land Operations segment creates value through actively managing and deploying the Company's land and real estate-related assets to their highest and best use. Primary activities of the Land Operation segment include leasing agricultural land, planning, zoning, financing, constructing, purchasing, managing, selling, and investing in real property, renewable energy, and diversified agriculture." Page 8.

Note Supplied. In terms of priority diversified agriculture is last.

Source: A&B 2016 Annual Report + Form 10-K, Filed March 1, 2017, accessed June 28, 2017. Cited above.

#### 4. Alexander & Baldwin

"**Alexander & Baldwin** is a premier Hawaii company with interests in commercial real estate, land operations, materials and infrastructure construction. We are a 147-year old company, rooted in our Hawaii land heritage, leveraging our unique assets for long-term growth." [Emphasis in original document]

Source: A&B. Accessed June 28, 2017 <http://alexanderbaldwin.com/>

Factual evidence to establish, affirm and substantiate Alexander & Baldwin's financial commitment to fully resource its diversified agricultural model for the entire 30-year term lease is material and relevant to any entitlement to water. If the financial information, as stated above, is not included in the EIS document, the EIS will be incomplete. The government agencies, the general public, stakeholders, and decision-makers will denied the ability to make informed, knowledge-based, accurate and complete decisions. Any decisions thus made will violate the Public Trust, a violation of the Hawaii State Constitution.

Thank you very much.

Respectfully,

Clifton M. Hasegawa

3. The Draft EIS will include in Chapter 4 an assessment of the impacts of the Proposed Action. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an Agricultural and Related Economic Impacts Report (See Appendix I) and an Economic and Fiscal Impact Analysis Report (See Appendix H).
4. The Draft EIS will discuss in Section 3.4.3 the capital investment costs associated with Mahi Pono's Farm Plan.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

  
Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

Clive Drew  
Senior Agribusiness Value Chain Consultant



February 21, 2017

Wilson Okamoto Corp.  
Attn: Earl Matsukawa  
1907 S. Beretania St., Ste 400  
Honolulu, HI 96826

Re: Long-term A&B water lease

RECEIVED  
FEB 27 2017  
WILSON OKAMOTO CORPORATION

"Water is Life"

The Central Valley of Maui can be considered a savannah woodland environment. It mostly has low rainfall, strong trade winds and high solar radiation, so evapotranspiration is high. Without irrigation with water from the windward East Maui watershed, the area would likely revert to leawe and hale koa with bunch grasses such as buffel grass and guinea grass only suitable for seasonal grazing at low stocking rates. Fire hazard would also be rampant.

The East Maui watershed also supplies water to upcountry Maui for residential purposes, plus truck farming in Kula and supply to the Kula Agricultural Park. There is a large backlog of upcountry water meter applications.

The East Maui ditch system has also served as a flood mitigation measure for East Maui valleys so there are fewer "lao Valley incidents" destroying property, infrastructure and requiring heavy County, State and Federal disaster assistance.

Irrigation in the Central Valley also reduces fire hazard and the tail water and deep percolation also assist in recharging underground aquifers so there is not loss in well pumping capacity or salt water intrusion.

Historical records would show the volumes of water harvested through the East Maui ditch system. It is conceivable that water use was previously much higher since total acreage in sugar and pineapple was much higher, plus mill operations. Also, water use efficiency greatly improved when there was conversion from flumes and furrow irrigation to drip irrigation. There was also previously more active truck farming, flowers farms and greenhouse operations in Kula.

The County Planning Commission and Department of Water Supply can provide projections on future up-country water demand.

The focus in this deposition is on agricultural use for water for the 27,000 acres in the A&B permit application.

Governor Ige has issued a challenge for Hawaii to double its agricultural production. The irrigated HC&S lands in the Central Valley of Maui can make a significant contribution to that call.

Sugarcane has a high water requirement because of the high yields of biomass produced. So, it is conceivable that future demand for water would be somewhat less under diversified agriculture.

It is inconceivable that a single mono-crop will replace sugarcane over the entire landscape – if that were the case then A&B would have already transitioned land into that enterprise.

So, what we are looking at is a mosaic of different agricultural enterprises on the landscape, and preserving as much land as possible for productive agriculture, and maintaining the scenic beauty of the Central Valley for current and future generations.

Therefore, it is not possible to arrive at a definitive figure on future water requirements for agriculture on the 27,000 acres. A key factor in permitting is to allow for highest and best use of the land-based resource.

Some enterprises would actually require greater volumes of water/acre compared to sugarcane – examples include taro, lau lau, fresh water aquaculture, and some of the vegetable crops. But, all of these in aggregate would represent small acreage.

Enterprises such as corn silage, corn seed production, fodder crops, and bio-energy crops such as sorghums (and sugarcane) would require similar water requirements to sugarcane. In aggregate these could represent large acreage.

Enterprises such as coffee and fruit trees would require less water than sugarcane under drip irrigation systems. In aggregate these could represent significant acreage at the higher elevations of the HC&S plantation.

Pastures would require less water than sugarcane, but would need to be irrigated to complement dry season conditions on ranches, and provide a regular supply of grass-fed beef, or growing out weaners as stocker animals. The method of water application would be a deciding factor, since drip irrigation is not very suitable for pasture, overhead sprinklers are not cost-effective, so flood basins are effective, but have a high water requirement. There is also a demand for livestock drinking purposes. In aggregate, dryland grazing could be a default position, but not likely due to the heavy investment required in infrastructure (fencing, pasture establishment, drinking water, shade, corrals, etc) with low stocking rates. Irrigated pastures/fodder crops could potentially have a similar demand for water as drip irrigated sugarcane, and represent substantial acreage.

Provision would also need to be made for agro-processing in various forms (packing sheds, etc) but in aggregate likely less than a sugar factory. Some of this water would need to be of potable quality.

So, overall, it is challenging to predict the future demand for East Maui water for the 27,000 acres. As a guesstimate, I would say the permit should be for 80% of what was required for the sugar operation. Losses through the distribution system and storage reservoirs would be similar – if the infrastructure is

maintained. Also, not all that water is required on day one, since it will require several years for the HC&S lands to transition to diversified agriculture.

It is expected that the HC&S land will be leased out and/or sold to multiple users with multiple irrigation water requirements. Therefore, and extensive water metering system will need to be installed throughout the plantation, including field-specific water allocations – and possibly a system of water credits that can be traded

Many crops require Class I irrigation water, and drip irrigation can be sustained from ditch water with filtration systems and algacides. Irrigation with potable water supplied through the DWS distribution system is not cost-effective.

As mentioned previously, the Central Valley is a savannah environment with high evapotranspiration. Water is life! Any prospective lessee or buyer of A&B land will first ask about access and availability of water for agriculture and any associated agro-industry. A&B has to be in a position to provide a definitive answer that can be written into the lease or purchase agreement. Otherwise, the rhetoric about diversified agriculture and a green Central Valley of Maui will wither on the vine.

The sugar industry is already pau on Maui. The process of moving forward has to be done in a systematic yet expeditious manner. Otherwise, rehabilitation of dilapidated infrastructure and overgrown fields will become a deal-breaker for diversified agriculture.

Sincerely,



Clive Drew

Senior Agribusiness Value Chain Consultant





10238-02  
September 23, 2019

Mr. Clive Drew

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Drew:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated February 21, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Clive Drew  
Page 2  
September 23, 2019

3. The Draft EIS will include in Chapter 4 an assessment of the impacts of the Proposed Action. Various technical studies will be appended to the Draft EIS and provide detailed examinations, including an Agricultural and Related Economic Impacts Report (See Appendix I) and an Economic and Fiscal Impact Analysis Report (See Appendix H).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant





10238-02  
September 23, 2019

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Mr. Nemet:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

Environmental Impact Statement Preparation Notice  
Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas  
Scoping Meeting Comments of

Mr. Cody Nemet  
February 22, 2017  
Maui Electric Company Community Meeting Room  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. NEMET: Aloha kakou. I'm born and raised here and I've been a resident and active member of our community. I'm here today to express my views and to inquire that we make sure we are provided with a thorough and proper EIS survey. I do believe in restoring our rivers from mauka to makai and sustainability for the future of our native and local farmers. It is also important to me that we revitalize the life that connects mauka to makai as well for our sustainable future. We, as a community, have concerns. The EIS should address full disclosure to see all diversions, roadways, public access areas pertaining to the East Maui Irrigation, including maps representing the names of streams and diversion amounts being taken for each licensed area, the average, maximum, and minimum amount. It is important that the community has access to this information and that we are given facts, not generalized ideas.

With such a valuable resource at stake, I feel we need to explore all options besides those proposed. But alternatives may be using -- uses including one that involves the use of water from less than all four license areas, a proposal to look to shorter term leases how much -- as a much safer way to monitor and manage compared to the proposed 30-year lease. There needs to be access for cultural and gathering purposes, access for restoration and maintenance, including what the future impacts will be for the future of these purposes.

I see a window of opportunity to make a great change to benefit the number one provider, not the corporations, not the employers, but the aina. Action and reaction is the key when dealing with so much disturbance and change. Let us be mindful for the future and learn from our past. Mahalo.

Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

4. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

ALAN M. ARAKAWA  
Mayor

STEWART STANT  
Director

MICHAEL M. MIYAMOTO  
Deputy Director



COUNTY OF MAUI  
DEPARTMENT OF  
ENVIRONMENTAL MANAGEMENT  
2050 MAIN STREET, SUITE 2B  
WAILUKU, MAUI, HAWAII 96793

March 29, 2017

Mr. Earl Matsukawa  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

RECEIVED  
APR 06 2017  
WILSON OKAMOTO CORPORATION

SUBJECT: PROPOSED LEASE FOR THE NAIKU, KEANAE, HONOMANU, AND  
HUELO LICENSE AREAS  
ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISP/N)

We reviewed the subject notice and have the following comments:

1. Solid Waste Division comments:
  - a. None.
2. Wastewater Reclamation Division (WWRD) comments:
  - a. The County does not have a wastewater system in any of the subject areas.

If you have any questions regarding this letter, please contact Michael Miyamoto at 270-8230.

Sincerely,



MICHAEL M. MIYAMOTO  
Deputy Director of Environmental Management

MICHAEL RATTE  
Solid Waste Division  
ERIC NAKAGAWA, P.E.  
Wastewater Reclamation Division

EM



10238-02  
September 23, 2019

Mr. Michael M. Miyamoto  
Deputy Director of Environmental Management  
2050 Main Street  
Suite 2B  
Wailuku, HI 96793

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Miyamoto:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 29, 2017. We acknowledge receipt of your comments that the Solid Waste Division does not have any comments and from the Wastewater Reclamation Division stating that the County of Maui does not have a wastewater system in the License Area which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant





**WILSON OKAMOTO  
CORPORATION**  
INNOVATION • PLANNING • ENGINEERING

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>  
Attention: Mr. Earl Matsukawa

**RECEIVED**  
MAR 06 2017  
WILSON OKAMOTO CORPORATION

**SUBJECT: EISP: PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU,  
KE'ANAE, HONOMANU, AND HUELO LICENSE AREAS –  
SCOPING MEETING, FEBRUARY 22-23, 2017**

In addition to the comprehensive and extensive testimony by community members on Feb. 22, I would like to request the following be included in the draft EIS:

A complete audit of the DMT ditch operations, including revenue, expenses, maintenance, capital improvements, etc.

To address the idea of who should operate the DMT system for water delivery, it is necessary to know what is involved in its operations. If there is to be no consideration of moving control of the delivery system, then any RFP for the water rights is a superficial effort. Please consider allowing multiple proposals that might complement each other as another option to selling out our water resources to one big business.

(include additional sheets as necessary)

PLEASE PRINT: Name: Kelly T. King Phone: (808) 283-1454

Organization: Maui County Council

Address: 200 S. High Street

Wailuku HI 96793  
Email: kelly.king@maui-county.us

Please submit comments by March 10, 2017 or email [woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

\*Receipt of e-mailed comments will be confirmed via e-mail. If you do not receive a confirmation message, please contact our office (see contact information, above).

(Fold on dotted lines and seal with tape or staple)

HONOLULU HI 968

04 MAR 2017 PM 2 L

Kelly T. King, Council member  
Maui County, 200 S. High St.  
Wailuku HI 96793

Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
Attention: Mr. Earl Matsukawa

56826-130100

(Fold on dotted lines and seal with tape or staple)

002360



10238-02  
Letter to Ms. Kelly T. King  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Ms. Kelly T. King  
200. High Street  
Wailuku, HI 96793

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. King:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 4, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

3. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
4. The Draft EIS will include in Chapter 4 an assessment of the impacts of the Proposed Action. Various technical studies will be appended to the Draft EIS and provide detailed examinations, including an Agricultural Impact Report (See Appendix I) and an Economic and Fiscal Impact Analysis Report (See Appendix H).
5. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action. Section 3.1.2 will include an explanation or alternative ownership of the EMI Aqueduct System.
6. The Draft EIS will discuss in Section 3.4.3 the capital investment costs associated with Mahi Pono's Farm Plan. Costs associated with maintaining the EMI Aqueduct System are discussed in Section 4.15.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



Written Testimony:

February 23, 2017

Environmental Impact Statement Preparation Notice  
Proposed by Alexander & Baldwin Inc. and East Maui  
Irrigation Co., Limited (EMI)

Subject: Proposed Water Lease: The Issuance of a one  
long-term (30 year) Water Lease from the Board of Land  
and Natural Resources (DLNR- State of Hawaii) to  
Alexander & Baldwin Inc. and East Maui Irrigation Co.,  
Limited (EMI)-Re: State lands in the Nahiiku, Keanae,  
Honomanu and Huelo License Areas.

My name is Corinna Kekahuna. I am a 6 generation  
descendant of Kaho'okele/Ka'alanimikihau of Nahiiku and  
my residence is located below Makapi'i Stream. Now  
upon reading the EISP that was prepared for A&B/EMI,  
a statement bothered me deeply.

Quote-" The EMI Aqueduct continues to serve a critical  
role in providing Upcountry Maui and the Nahiiku  
community with water, and SHOULD the delivery of  
water from the EMI Aqueduct System be CURTAILED,  
Upcountry Maui and the Nahiiku Community would be left  
WITHOUT a reliable source of water."-unquote.

Now I ask you....Is this 30 year lease more important  
than that of a community that as been around for more  
than 8 generations?? The village whose history totes the  
rubber plant farm and canoe building? Isn't it said that  
"Diversions shall be done without injury to the rights of  
others?". (HC&S v. Walluku Sugar 15 Haw. 675 (1904).  
And what about the County of Maui's Dept. of Water  
Supply?

What plans do they have in place if such a thing was to  
happen since we pay our water bill to DWS???

The monopolization of our streams need to stop. 141  
years of it...enough already....3 sugar mills and 2  
pineapple canals...gone.....what more??  
Development?? For whom and why?? Back in 2010, it  
was 27 streams, now it's 39 and according to another  
it's 31 perennial streams and is currently authorized to  
divert 80 million gallons of water per day based on the  
one (1) year revocable permit. With the 30 year lease ,  
EMI will divert 100 million gallons per day, 20% in  
excess of what's been granted as of Dec. 2016...5 (five)  
times more than what A&B is currently taking from East  
Maui. Why, when it comes to A&B, the numbers never  
jive. Where is the Scope of Service submitted by A&B to  
DLNR so we know exactly who, what, where, how and  
why. No transparency with this entity. Consultation of  
agencies, citizen groups and individuals?? The Nahiiku  
Community Association wasn't notified. I will keep the  
faith that the State of Hawaii (CWRM agency-State Water  
Code in which all waters of the State are held in trust  
for the benefit of the citizens of the State) and the  
County of Maui-DWS do the right thing for the people and  
preserve what we have. There were some good  
suggestions by a few consultations...it's just that  
outside of domestic water use, there should be no more  
unnecessary diversions...I would need to know what type  
of Agriculture is in need of excess water and where in  
Central Maui.

Thank you for your time.

Contact:

Corinna Kekahuna



10238-02  
September 23, 2019

Corinna Kekahuna  
[Redacted] Association

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Kekahuna:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated February 23, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17: A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action, including the proposed water uses, is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action. Historical as well as estimated water requirements for agricultural uses related to the Proposed Action are assessed in the Agricultural and Related Economic Impacts Report by Placsh Econ Pacific, LLC (See Appendix I).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Corinna Kekahuna  
Page 2  
September 23, 2019

4. For the purposes of this Draft EIS, the stream list used was from the CWRM D&O which is discussed in Section 1.3.4.
5. Chapter 9 of the Draft EIS will include a list of all persons and organizations consulted as part of the EISPN process.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Dan Clark  
February 23, 2017  
Haʻikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. CLARK: Okay. Now at any rate, they spoke of all of the streams and the mountains springs all throughout -- from Nāhiku on out. I'm still a student there in Keanae. I've been fortunate to be taught by a lot of the elders about farming. I raise taro. I have an affinity for taro in my family from Nualolo Valley on the Napali Coast of Kauai. And though I might not seem that much koko, but I do have. I wanted to -- I guess you wanted the specifics as to what you can use in your EIS. Of course I want to -- I'd like to say that I'm opposed to, first off, the issuance of a license for Alexander & Baldwin for the continuance of diversion of water. There needs to be an incline of this -- a removal, a plan.

This is recorded or --

MODERATOR SENNELLY: She's taking it down.

MR. CLARK: Yeah, okay.

MODERATOR SENNELLY: And we have a video.

MR. CLARK: Thank you. Anyhow, it has been 120 years of construction and diversion. I've been up in the mountains, I've seen where all the water, every drop of water that they can actually take from the side of a hill by putting little PVC pipes hidden at -- you know, to a particular stream, that ends up in the ditch itself, diverting it out here. Now in times of a lot of water, a lot of rain, the water is brought out so far and then dumped into a river out here. That doesn't make sense to me, you know. The ditch is running full, they'll dump the water all the way out here, as opposed to discharging the water back to the streams from which they took the water.

Second off, at times I have to sponge my water off the auwai, yeah, fronting our kalo patches, sponge pretty much the water into the patch. I'm serious. The water is hugging the bottom of the ditch, you know. I've been working with, you know, the Waialua people in trying to clear our pipeline from Waikane down to Waialua to, you know, get water to feed the Hana side for the past four years. And we will get there, we will get the water distributed. But what I've found is that attending these meetings with the Water Resources Commission, they were looking for reasons why to deny these people their water.

First they went in and they tried to confuse the farmers as to where the geographic location of their water was coming from, feeding their loading system. Right? And then the Water Department steps in

Scoping Meeting Comments of Mr. Dan Clark  
Page 2  
February 23, 2017

and says, where do you think your water comes from? I'm listening, why the heck is the Water Department asking this? Do you have a water meter, they say? Well, shucks, of course we have. We're fortunate. We paid for that well system, right? We may not have paid for all of it, but we as stepchild way out there, that's how the system goes. The community assists the rest of the communities in, you know, providing moneys that make it possible for us to dig that 400-foot well. That water belongs to us in the district, yeah. It feeds the Keanae-Waialua Nui area. Same thing with Nāhiku. I was listening to the lady talking about the water from above. Now I would like to see the water metered that comes into the Parshall flume that feeds the Keanae loading system. Okay.

I want to know, not by guess and by golly. I want to know what water is being fed us, because the water is warm in the kalo patches. We have root rot and all kinds of diseases that come off from that, you know, failure to provide cool, clean water, which is what the kalo require for a good harvest. And Keanae was not issued an amount of water necessary for our -- you know, all the loading in there. And they said, well, you've got all -- you've got all Buffalo grass or California grass in there. And there's a system. The Hawaiians have been raising taro in there for 800 years. They know certain patches got to go fallow, right, you've got to regenerate it. So they're saying, well, because the kids coming behind you guys are not interested in the taro, we're going to take the water. No, I'm sorry, that's not the case. You let the water run to the sea, yeah. And there is 14 vertical shaft wells all along the isthmus, in between the two mountains here, if A & B is not telling you that, yeah, 400 feet deep, right, down into the basal land's crystal clear water. My field was water and wastewater. 40 years, I put in there, in operating wastewater plants and water treatment systems. I know about water. But when I brought that to the attention of Dr. Miiki, you know, he immediately shut down, that I didn't have the right to bring that up in that particular meeting, the Water Resources meeting.

All I'm saying is -- I talked to some young lady that was working agriculture with MCC, or now it's called Maui College, and I was explaining to her, you know, how the systems were all managed and the konohiki of the district determined, you know, what amount of water went where and nobody cut anybody short. That water was allowed to flow cool to all these farmers so that they can farm the land. And I'm sorry, but I lost trust in the Water Resources Commission. I'm concerned that they're going to be making the ultimate decision on this particular EIS request. And I'm happy for the meeting that you're putting on here, yeah. All I'm saying is that give us the water that we need to farm. Also meter the water. So if you tell us that 3 mgd is what our allotment is, until they can deconstruct that whole ditch system, then I'd like to know, put that Stevens meter back that A & B had inside of that -- what do you call it? -- right there at the Parshall flume, okay? Right there above Keanae with the spring water. That spring comes from the ground. If it's not fed from above, the water is diverted, it's not going to come up on the spring through the stream. Okay? So, I'm sorry, but I'm frustrated that, you know, not all is going to be heard. The meeting is, by design -- this young lady told me it's by design to have the meetings out here as opposed to inside of Keanae, at the Keanae school for the other families that were directly affected. By design, she told me. I said, okay, but I'm not going to fault Wilson Okamoto for that. I worked with you in wastewater and a lot of the design over the years, so I know that your intent is good.

February 23, 2017

The thing is that I think, as the lady said, it needs to be everything transparent and clear, you know, so everybody's comfortable with the decision going forward.

And thank you very much this evening for your time.

RECEIVED  
MAR 27 2017

WILSON OXAMOTO CORPORATION

**PUBLIC MEETING:**

**ENVIRONMENTAL IMPACT STATEMENT:  
PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE,  
HONOMANŪ, AND HUELO LICENSE AREAS**

FEBRUARY 22<sup>nd</sup>, 2017, WEDNESDAY, 5:00 PM TO 7:00 PM

FEBRUARY 23<sup>rd</sup>, 2017, Thursday, 5:00 PM TO 7:00 PM

**AGENDA:**

1. Welcome / Pule
2. Purpose of Meeting
3. EIS/EISPN Overview
4. Scoping Comments (Facilitated)
5. Closing / Pule

Mr. Matsuoka  
please forgive  
my late submitted  
I am working  
dark to dark farming  
and building a rock  
wall - Please hold mtgs  
pm Keene School

Please hold your meeting  
in the district your subject  
matter affects. East Maui



**WILSON OKAMOTO  
CORPORATION**  
REGISTRARS, PLANNERS, ENGINEERS

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>  
Attention: Mr. Earl Matsukawa

**RECEIVED**  
**MAR 27 2017**  
**WILSON OKAMOTO CORPORATION**

**SUBJECT: EISP: PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU,  
KE'ANAE, HONOLULU, AND HUELO LICENSE AREAS -  
SCOPING MEETING, FEBRUARY 22-23, 2017**

*As I expressed at the 2-23-17 meeting in  
Haleiwa, H.C.'S has more than ample water  
for their present needs sitting in 400' underground  
shafts across the Ithama between Haleiwa and  
the West Maui Mountains. There are 14 of  
them if I recall, plus numerous continuous  
flowing waterways, one feeding their hydro-  
electric generator. The local farmers and  
I have in Keanae require continuous water  
to farm our Hilo. Please have H.C.'S  
on N&B as the mill is now discontinued, replace  
the Stephens meter at the partial flume above  
the Keanae Bernards on the spring water flow  
to our Loi patches. The County of Maui needs  
to develop other water sources that are available  
to them on the aquifer in and above the Ithama  
between the West Maui Mountains and Haleiwa.  
"I absolutely reject the issuance of a extended 30  
year or any exclusive lease on the additional water as it is illegal  
under the State Constitution."*

PLEASE PRINT: Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Organization: Dan Clark - Farmer - Keanae

Address: \_\_\_\_\_

Email: \_\_\_\_\_

Please submit comments by March 20, 2017 or email [WILSONOKAMOTO.COM](mailto:WILSONOKAMOTO.COM)

\*Receipt of e-mailed comments will be confirmed via e-mail. If you do not receive a confirmation message, please contact our office  
(see contact information, above).

(Fold on dotted lines and seal with tape or staple)

Postage  
Required

Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
Attention: Mr. Earl Matsukawa

(Fold on dotted lines and seal with tape or staple)

002366





10238-02  
Letter to Mr. Dan Clark  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Mr. Dan Clark  
[Redacted Address]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Clark:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, your oral comments at the February 23, 2017 EIS Scoping Meeting, and your written comments dated March 27, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. The CWRM D&O also describes which streams will be partially or fully restored. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

4. The Draft EIS will include in Chapter 4 an assessment of the impacts of the Proposed Action, including a discussion on the potential impacts of climate change. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an Agricultural and Related Economic Impacts Report (See Appendix I) and an Economic and Fiscal Impact Analysis Report (See Appendix H). The Assessment of Streams and the Ocean Water Chemistry by Sea Engineering, Inc. and Marine Research Consultants, Inc. (See Appendix B) will discuss the existing conditions of streams in the License Area, including current temperatures and overall projected temperature changes resulting from climate change.

Your oral and written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

2/22/2017

Re. Testimony for East Maui streams EIS  
To Wilson Okamoto Consulting  
ATTN: Earl Mutsukawa  
From Darrell Tanaka, Haiku.

I am testifying in concern of what conditions this EIS will take into account as it determines if the permit for A&B is to be approved or not.

The EMI ditches bring water to upcountry residents, which includes farmers. The EIS should include where the water for upcountry residents will come from if not from the EMI ditches, while taking into consideration population growth and expanded farming on former HC&S lands. Also, if wells are to be drilled to obtain the water, how many wells can be made? How many aquifers do we have in the upcountry area? Can they sustain population growth? What is the cost for these wells as well as distribution infrastructure. Can the County of Maui manage all of the wells or would a private company need to manage them and if so, at what cost to the users?

Water is still needed on former HC&S lands in the immediate future for fire suppression should the 36,000 acres become a wild fire.

Some people may claim that since A&B did not put forth a farming plan for its agricultural lands that they don't need the water but that should not be a criteria for whether or not the permit should be approved. Farming is an ongoing and forever fluctuating entity, even if you did come up with a farming plan, there are too many challenging variables to guarantee a farmer could stick to that plan. Variables include climate change, rainfall, pests and diseases, vandalism, rising costs of farm supplies and fuel, shipping costs, crop losses etc, no plan could account for such variables so it is unfair to set a standard that if no plan exists that A&B doesn't need the water...If there is no water on the former cane land, no one will want to start a farm on it. If there are no farms on the former cane land, then the EIS should take into account how the land will be developed and how much water will be needed then as well.

The EIS should take into consideration if the permit is not approved which may result in the dissolving of East Maui Irrigation Co., what will become of the many miles of ditches if the water is returned to the streams? If it is found that the surface water is needed in the future, at what cost would it be to restore all of the ditches to a working level after years of dilapidation? How long would the restoration work take if upcountry residents need the water?

If water is returned to the streams, how much dirt and debris would be forced onto our nearshore reefs? A plan would need to be made to calculate how much water would be released into any one stream as it has been 150 years of dirt and debris accumulating in these stream beds. And if there is a catastrophic flood in these streams, would there be loss of life or structures? Would debris accumulation disrupt stream flow and redirect the water? Do all the streams need to be restored or just certain ones to help taro farmers? How much taro would need to be produced in order to justify the amount of water being restored to the streams? Is it worth it? All these questions should be addressed in the EIS.

Sincerely,  
Darrell Tanaka  
Haiku, Maui resident, 4<sup>th</sup> generation farmer.

*sunshine orchids@gmail.com*  
250-3776

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Darrell Tanaka  
February 22, 2017

Maui Electric Company Community Meeting Room  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. TANAKA: My name is Darrell Tanaka. As far as the EIS goes, I'd like to -- them to include if there -- there's no water coming from EMI, if EMI is to shut down, if the existing wells can handle supplying the Upcountry with water. And in the long term, you know, 10, 15, 20, 30 years from now, can those wells sustain us? I don't think so. As a fisherman, you know, I'd like to see the water returned to the ocean, yes, but I would be wholeheartedly against all the streams being restored, too much has changed in our climate in the past 150 years. Stream flow needs to be constant, more or less. So I support the taro streams being given water, but if the stream is not being used for taro, I cannot see returning water to that stream when we need it in Central Maui. In order for diversified ag. to happen, there has to be water present or no farmer is going to want to invest his time, effort, and money into trying to make a farm when there's no guarantee that there's enough water, especially if there is a drought.

I come from a farming family, I -- ever since my great grandfather came here we raised vegetables in Happy Valley. My grandfather was a farmer up in Kula and I can tell you if there's no water, there is no farm. So the water coming through EMI has to reach Central Maui or we're not going to see diversified ag. But I can tell you one thing is that the only people that have money to drill wells and maintain them are developers and the last crop, in farming termination, is always called a subdivision.

Okay. So bring the water here, keep EMI in place because our county can't even run our parks, our beach parks, they can't even run that properly, how are they gonna run the ditch system? So we need EMI. Thank you.

FACILITATOR SENELLY: Okay, sir. I heard to keep the EMI system and part of it is also that efficiency of the system in terms of what it's doing now and also getting it to agriculture. And you said something in the very beginning about Upcountry and I just --

MR. TANAKA: The wells.

FACILITATOR SENELLY: Yes. Whether or not the wells could sustain needs in the future without this -- the system?

MR. TANAKA: Yeah.

FACILITATOR SENELLY: Okay. So thank you.



10238-02  
September 23, 2019

Mr. Darrell Tanaka

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Tanaka:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, oral comments at the February 22, 2017 EIS Scoping Meeting, and for your written comments received February 22, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
3. The Draft EIS will include in Chapter 4 an assessment of the impacts of the Proposed Action. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an Agricultural and Related Economic Impacts Report (See Appendix I) and an Economic and Fiscal Impact Analysis Report (See Appendix H).
4. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Maui. The Farm Plan is based on the water available of which diversion quantities from the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Darrell Tanaka  
Page 2  
September 23, 2019

Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

5. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral and written comments, and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Mr. Strand:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. The Draft EIS will include in Chapter 4 an assessment of the impacts of the Proposed Action. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an Agricultural and Related Economic Impacts Report (See Appendix I) and an Economic and Fiscal Impact Analysis Report (See Appendix H)

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

Environmental Impact Statement Preparation Notice  
Proposed Water Lease for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas  
Scoping Meeting Comments of

Mr. Darren Strand  
February 22, 2017

Maui Electric Company Community Meeting Room  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. STRAND: Okay. Thank you. I'm Darren Strand. I'm one of the owners and operators of Maui Gold Pineapple Company in a farm of about a thousand acres below Makawao Town and above Halimale. All of our property, the ditch borders -- the upper ditch borders every single acre that we farm and we use absolutely none of the water from the ditch and we haven't since the very first instream flow standard was set and I guess that's been several years.

And, you know, I worry mostly about the farmers at the end of the system that are in Kula Ag. Park. And I see the ditch every day, there's not much water running through it, it's already in a state of disrepair and it needs to be maintained already or we're going to lose the capacity to get water to the last reservoir at the end of that that the farmers in the ag. park use.

I -- before I moved to Maui I was -- I worked at Del Monte Pineapple on Oahu in 2004 and 2005 when the Waiahole Ditch situation was going on and it was -- I was new to Hawaii at that time, I'd just finished at UH, and it was a contentious issue, but they were able to come to an understanding or some kind of agreement, a compromise. And there were -- at that time Del Monte closed and there was Larry Jeff, Saloon Farm, a seed corn company, and no other farmers using the system, but there was a cooperative that maintained it. And if you go to that area now, it's been, you know, maybe 10, 12, 15 years, it's amazing how many farmers are on that land and using that system. And so I'd like to, you know, see us come to a balance, a compromise, and have the foresight to think about what that area might look like in 10 or 15 years and not make a decision that's just based on what we think we want today.

10238-02  
Letter to Mr. Darren Strand  
Page 2  
September 23, 2019

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. David Prais  
February 23, 2017  
Ha'ikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. PRAIS: My name is David Prais. The first thing would be that I understand that this is not for testimony. It's you want to know what's for the EIS. That right there is a flag telling you, here is your box, this is what we offer you, take it or leave it. Mahalo to our kupuna, they have been on this all the way. All the way, you've done it correctly by their standards and their ways, but we are the new generation, the generation right here right now. We are on the rise. I do have one thing I can add to the EIS. The first thing I want to say is there's a strong presence of police here. Very strong. In the 30-plus years, have you ever seen this strong of a presence? And that is because they are afraid. They're afraid of us because we are intelligent, we know how to think, and we can act upon it. There's a lot of people who want to speak. I'm going to make it quick. The one thing that I add to the EIS is do not come back before our people without every concern and demand met.

That's all. Mahalo.





10238-02  
September 23, 2019

Mr. David Prais  
Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Prais:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. David Prais  
Page 2  
September 23, 2019

Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.  
Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**From:** [Wilson Okamoto Corporation](#)  
**To:** "Devika Ghai"  
**Subject:** RE: Comments on EIS scope  
**Date:** Monday, March 6, 2017 10:40:57 AM  
**Attachments:** [Image001.jpg](#)

---

Dear Devika Ghai,

This is to acknowledge that we have received your email comment on the subject EIS Preparation Notice. Your participation is appreciated.

**Jeanine S.H.Y. Morioka**  
Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

**From:** Devika Ghai [<mailto:devika@panna.org>]  
**Sent:** Monday, March 06, 2017 10:09 AM  
**To:** Wilson Okamoto Corporation  
**Subject:** Comments on EIS scope

Dear review committee,  
Please find attached our comments on the scope of the East Maui Water Lease EIS. We respectfully submit these comments on behalf of our organization Pesticide Action Network North America, and our members in Hawai'i.

--  
Devika Ghai, (pronouns: she/her)  
Organizer  
Pesticide Action Network North America  
3438 Snelling Ave | Minneapolis, MN 55406  
Phone: 612-299-1900 | [@DevikaAPAN](mailto:@DevikaAPAN)  
[www.panna.org](http://www.panna.org) | [www.whatsommyfood.org](http://www.whatsommyfood.org) | [www.pesticideinfo.org](http://www.pesticideinfo.org)





Mar 1 2017

To,  
Wilson Okamoto Corporation

**Re: Proposed Environmental Impact Statement for East Maui Water Lease**

Pesticide Action Network North America is a national & international organization with over 2,000 members in Hawai'i. On behalf of our members, we are concerned that this long-term lease would facilitate further long-term intensive cultivation of pesticide-reliant crops (including sugar and genetically engineered test and parent crops) rather than diversified, sustainable agriculture to feed the people of Maui.

We therefore respectfully request that the Environmental Impact Statement on the East Maui Water Lease include the following aspects:

- Impacts on soil, water quality, and public health of pesticide use associated with long-term intensive cultivation of sugar and/or genetically engineered crops.
- Impacts on fisheries, fisherpeople, and marine life, including impacts of pesticide use.
- Potential impacts on taro farmers in the impacted area, including impacts of decreased soil quality
- Potential impacts on cultural practices and Hawaiian way of life in the impacted area

Without these four crucial aspects, we and our members believe that the EIS will be incomplete and thus inaccurate. We therefore respectfully provide this input, knowing that you are committed to conducting a comprehensive and complete EIS. We thank you for your time and consideration.

Pesticide Action Network North America  
1611 Telegraph Ave, #1200  
Oakland CA 94612



10238-02  
September 23, 2019

Ms. Devika Ghai  
Pesticide Action Network  
3438 Snelling Ave.  
Minneapolis, MN 55406  
devika@panna.org

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Ghai:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 6, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

Nevertheless, we offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS discusses impacts of hazardous materials to soils in Section 4.12 of the Draft EIS.
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Divisions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

10238-02  
Letter to Ms. Devika Ghai  
Page 2  
September 23, 2019

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Diane Hakamatsu  
February 22, 2017  
Maui Electric Company Community Meeting Room  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. HAKAMATSU: As a lifelong resident of Maui, a mother of two children, and a member of the Go Maui board, I'm very concerned about the issue of water for the development of future affordable housing because we all know that water is a critical component to providing any future housing. I'd like to emphasize that what I mean by affordable housing are small-scale projects that are sold at truly affordable prices, and I mean all units within the project, so our residents, particularly those in need, can benefit from home ownership opportunities.

FACILITATOR SENELLY: May I ask you, you're talking about areas that are already being served by the water?

MS. HAKAMATSU: That's correct.

FACILITATOR SENELLY: Okay. Thank you.

MS. HAKAMATSU: That's correct. And I'd just like to thank you for your favorable consideration of this request.



10238-02  
September 23, 2019

WILSON OKAMOTO CORPORATION  
INNOVATORS • PLANNERS • ENGINEERS

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Hakamatsu:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. The assessment of the Proposed Action will be based on obtaining a Water Lease from the Board of Land and Natural Resources (BLNR) for the full amount of water estimated to be available after accounting for the IIFS set by the CWRM in the D&O. The amount of water available for the approximately 30,000 acre Central Maui field system (formerly in sugarcane) would be determined after allocations to other domestic and agricultural uses, as discussed in the EIS. Also, as discussed in the EIS, alternatives to the Proposed Action will be assessed, including the No Action Alternative, in which no Water Lease is awarded. Neither the proposed action nor any

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Diane Hakamatsu  
Page 2  
September 23, 2019

alternatives consider using water collected by the EMI aqueduct System on the former sugar cane field system in Central Maui for anything other than diversified agriculture.

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant





10238-02  
September 23, 2019

Shimizu

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Ms. Shimizu:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will assess the socio-economic impacts associated with the Proposed Action in Section 4.7 of the Draft EIS. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an Agricultural and Related Economic Impacts Report (See Appendix I) and an Economic and Fiscal Impact Analysis Report (See Appendix H).
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

Environmental Impact Statement Preparation Notice  
Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas  
Scoping Meeting Comments of

Ms. Dianne Shimizu  
February 22, 2017  
Maui Electric Company Community Meeting Room  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. SHIMIZU: Good-evening. My name is Dianne Shimizu and I'm a concerned citizen and also a member of O Maui, Inc., a nonprofit organization that advocates for affordable workforce housing, water, good-paying jobs, and a healthy economy for Maui County's residents. I've lived on Maui for 66 years. For over 35 years my husband and I and my two boys lived in Upcountry Maui. We were able to build our home and raise our family because we had water for our domestic water needs. The EMI system supplied water for Nāhiku and irrigation water for ag. users at the Kula Ag. Park. The possibility that these users will not continue to have that water is frightening. What will happen to the families, farmers, businesses, and schools in Upcountry Maui and in the Nāhiku if EMI is not allowed to continue to deliver water? EMI needs enough water to continue to meet the domestic and agricultural needs of our Upcountry and Central Maui residents.

I would like to see the EIS assess the impacts on housing and on our families who are struggling to find homes if there's no water, on farmers and ranches in Upcountry and Central Maui who depend on the EMI system for their livelihood, on HC&S's lands without the sugarcane, and on our hopes of food sustainability if the Central Maui lands cannot be cultivated? Please consider these factors in your preparation of a well-balanced EIS.

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



**SUBJECT: EISPN: PROPOSED LEASE (WATER LEASE) FOR THE NAHIKU, KE'ANAE, HONOMANU, AND HUELO LICENSE AREAS – SCOPING MEETING, FEBRUARY 22-23, 2017**

A+B/EMI has taken care, maintained, developed this water system at no cost to state, county or individuals. If water is taken away, who + what will be using it, or will it just flow into ocean? water flows in this system with no use of electricity – compare this to our county system where everything has to be pumped!

PLEASE PRINT: Name: Douglas Sheehan Phone: [REDACTED] (include additional sheets as necessary)

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

Email: [REDACTED]

Please submit comments by March 10, 2017 or email [woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

\*Receipt of e-mailed comments will be confirmed via e-mail. If you do not receive a confirmation message, please contact our office (see contact information, above).



10238-02  
September 23, 2019

Mr. Douglas Sheehan

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Sheehan:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments received February 23, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui. The environmental impacts of the potential Water Lease will be assessed.

2. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Douglas Sheehan  
Page 2  
September 23, 2019

Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



10238-02  
September 23, 2019

Environmental Impact Statement Preparation Notice  
Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas  
Scoping Meeting Comments of

Mr. Dwight Baldwin  
February 23, 2017  
Haʻikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. BALDWIN: So my name is Dwight Baldwin. I want to start with asking that – you guys, thanks for having this meeting. I would like to request EIS to have a thorough analysis to watershed conditions, with the current conditions right now with A & B, the past conditions with diversions running, and future projected conditions, even multiple scenarios. I want to look at the impacts on the East Maui groundwater, including spring formation and tributary streams, and if possible, get your engineers to calibrate the model of the past and future -- I mean calibrate it to the past events an just estimate a model of the groundwater flow and stream conditions with scientific accuracy.

Because I think this is a good opportunity to understand more about what is going on in East Maui in the past and in the future, because there aren't accurate gauges and, you know, it would be good to have reliable, open access to information, and I think this could be a good stepping point for that.

Thank you very much. That's all I need to say.

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻānae, Honomanū  
and Huelo License Areas

Dear Mr. Baldwin:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas and your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Chapter 4 of the Draft EIS discusses the existing environment, impacts of the Proposed Action and mitigation measures. As relevant and appropriate, the discussion of impacts includes those pertaining to conditions before and after the closure of sugar cultivation in 2016. The Draft EIS will also include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

3. Truttia and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action and alternatives on indigenous freshwater species, terrestrial flora and fauna, and invasive mosquitoes. The Draft EIS discusses the impacts of the Proposed Action to freshwater species in Section 4.2.1 and impacts to terrestrial flora and fauna in Sections 4.4.1 and 4.4.2. Both reports are appended to the Draft EIS (See Appendix A and Appendix C).
4. Impacts of the Proposed Action on hydrology, including in East Maui, are discussed in Section 4.2 of the Draft EIS, as well as the reports various technical reports prepared for the Draft EIS, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A) and Assessment of Streams and the Ocean Water Chemistry (See Appendix B).

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Edwin Young

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. YOUNG: Hi. My name is Edwin Young and I agree with that EMI should have some water, but they cannot take all of the water. Because I'm a uni fisherman, yeah, and from 1990 is when EMI started taking all the water from all the ditches. I mean, Makapipi -- I live in Hana. Makapipi was bone-dry for years all the way up until when the sugar cane closed and then they let go a little bit of water. And Honomanu was bone-dry and no akule came inside those bays. Hana Bay, Honomanu, we used to fish all the way, all the way to Kaupo. And when EMI took all the water, then the akule would come inside Hana Bay maybe about once every three months, once every four months. And before that, akule used to come inside Hana Bay every week when all the rivers were flowing prior to 1990. And since they let go of the water, like when EMI -- HC&S closed, when they let go of the water, we would -- right now we're catching akule like pretty much every other week in Hana and Honomanu too. Because I used to fish Honomanu all the way to Kaupo to Nuu.

And I went to Honolulu Institute of Marine Biology for one year as a biologist technician for Makai Pacific, yeah, and wherever the fresh water enters the ocean, it's known as an estuary. These are all estuaries and estuaries are all nurseries for all your baby fishes and all your baby fishes lives on phytoplankton and zooplankton. Phytoplankton is one-cell vegetables and zooplankton is one-cell animal. And that's what the akule like to eat and all your baby fishes, they come inside to eat that. And since EMI started taking all the water, about 90 percent of our fish in Hana has disappeared, 90 percent. And, you know, I can tell you because plenty people in Hana notice this too, I hardly see any uu anymore.

And the HRS -- the HRS on the water code, yeah, the water code for the HRS -- and I asked my cousin, who's a judge in Honolulu, and I said, "What does HRS stand for, Greg?" And he goes, "Hawaii Revised Statute." I said, "Is that law?" He said, "Yeah, that's the law." And I forgot the -- the code for HRS, you know, which law it is, but it says you can take water from the stream, yeah, but you cannot take all the water from the stream, you have to leave water in the stream for hihiki, opae, opou, and stuff like that. But the water commission gave EMI permission to take all the water from Honomanu bone-dry and from Makapipi bone-dry and to me that's -- the law is the law. But the water commission make excuses to bypass that law to give A&B all the water, to me that's totally wrong and how can a big corporation with all the money and everything like that -- well, for one thing, what's her name, Meredith Ching was on the water commission, that's -- and she's an employee.

And then last, but not least, you guys should have this meeting in Hana for people that (inaudible) -- You know, 'cause the Hana people can't come out here and -- you know, I was out here, so I was fortunate to



come over here and talk. And one, the -- you know, your EMI man over there, yeah, first thing he should do is make sure that there is water in all the rivers and, secondly, to help protect our environment, you know. I -- the taro farmers, I agree with all what the taro farmers are doing, but nobody's speaking up for the fishermen. And the people in Hana, we live off the fish, yeah. When we catch akule, we invite everybody to come down and help take the fish out of the net, because I'm not gonna take 5,000, 6,000 fish out of the net, I'll be there for two days. But the people come down and they take the fish out of the net and we give the fish away, we don't sell any fish in Hana, we just give it away to the people. Like you, maybe for a pretty average size catch, you're gonna get eight, your husband gonna get eight, you got two kids, they get half share, they're gonna four each, so that's eight, that's 24 fish you're taking home, that's like about 20 pounds of fish. And when you don't -- when you don't have this, then that's why we -- we don't have our supply of fish, yeah, and we gotta go store. Okay. Anyway, that's all I have to say.

FACILITATOR SENELLY: Okay. No, no, no. So my understanding would be -- What I heard was two -- and you gave a lot, but the two main things I heard that you want to see in the EIS is the impact of the stream diversion on the shoreline, the shoreline environment, and the second thing I heard was you -- how much water is being taken out of the stream. Because you said a couple things and so kind of like having a better idea of how much water is being taken out of each stream or the streams. Is that correct?

MR. YOUNG: They take all the water.

FACILITATOR SENELLY: Okay.

MR. YOUNG: Not leaving any water.

FACILITATOR SENELLY: Okay.

MR. YOUNG: Only when there's rain, it overflows. When the dams overflow, I've seen the dams, that's the only time we have water. But now we have water all the time because -- since HC&S closed, then I guess they opened up some of the dams, yeah.

FACILITATOR SENELLY: Thank you, Mr. Young.

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Edwin Young

February 23, 2017

Ha'ikū Park and Community Center

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. YOUNG: I want to talk about Makapipi going bone dry from 1990 up until they the their sugar cane; and then when they closed the sugar cane, they opened up Makapipi again. But for 27 years, Makapipi never flowed. Because in 1990, East Maui Irrigation took all the water from Makapipi. There's two big dams up there, one called Poke's ditch, and I don't know what that bottom dam was, but it stopped all the water, and everything went into the ditch system to Wailuku. And as for the Environmental Impact Statement, the government that's supposed to overlook the stream flows, there's -- Makapipi is a perennial stream, which means that the thing is supposed to flow all the time, but it wasn't. It was bone dry.

And what happened is that all the springs in Hana all dried up down on the ocean and everything like that, and 90 percent of our fish has disappeared, because 90 percent of the seaweed has disappeared. And the fish live off of the seaweed, and also the baby fish, like the ocean, where the river enters the ocean is known as an estuary. And estuaries are all nurseries for all your baby fishes and crabs and lobsters and everything like that, and they live off of zooplankton and cytoplasm. One's a vegetable, one's an animal, and these -- this is like milk, mother's milk to them. And when a lobster gets a little bit bigger, then they will feed off the bottom, off of solid food. But when they're little, they just float in the water column, and they have to bump into the food, because they cannot swim up to the zooplankton and catch it. They have to just bump into it.

So when there's no fresh water going into the ocean, there's no food to bump into. So all our fish is gone. 90 percent of the fish in Hana has disappeared. 90 percent. Now, as for the environmental or the part that's supposed to watch the environment, they've been doing a real poor job, because I can show you -- you can come into Hana Bay, and I can show you there's no seaweed anymore, no turtles, because no turtles are -- the turtles eat seaweed, and there's no turtles anymore. And there's no (Hawaiian), and that has all disappeared. And I say don't give East Maui Irrigation or A & B that 30-year lease, yeah. Stop it.

Thank you.



10238-02  
September 23, 2019

Young  
[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū,  
and Huelo License Areas

Dear Mr. Young:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 22, 2017 and February 23, 2017 EIS Scoping Meetings. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 206, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
3. The Draft EIS will include in Chapter 4 an assessment of the impacts of the Proposed Action. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an East Maui Irrigation Assessment of Streams and the Ocean Water Chemistry (See Appendix B).
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Edwin Young  
Page 2  
September 23, 2019

Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Elaine Wender  
February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

have frequently encountered there in recent years. EMI has abandoned any responsibility for stewardship of the watershed areas they longer utilize. Even in the areas they still use, banyan trees, pyaemia, and other invasive plants grow unfettered. These conditions must be addressed in the EIS.

FACILITATOR SENELLY: Okay.

MS. WENDER: No. I'd like to finish.

FACILITATOR SENELLY: No, no, no. That's what I was going to ask you and you just said it, so I'm fine. I was going to ask you what of that you wanted in the EIS.

MS. WENDER: Could I please finish my testimony?

FACILITATOR SENELLY: Please.

MS. WENDER: The EIS require rules require, quote, a description of the environmental setting including a description of the environment in the vicinity of the action as it exists before commencement of the action, unquote. Throughout the EISPN the phrase, quote, maintain existing conditions, unquote, is repeated. This cannot be the starting point. We have experienced what EMI's lack of stewardship over these past 35 years while they illegitimately held this land without an EIS and without a valid lease, not to mention the previous decades has gotten us a seriously degraded watershed. There has to be some accountability and discussion of alternative what true restoration would mean which means that the condition of the watershed before these diversions existed has to be considered.

On some streams which EMI no longer uses a continuous mauka-makai flow has still not been reestablished. For instance, at West Wailuaiki, the water is diverted and then put back into the stream so that the flow is directed at the ditch road. None of the massive ugly concrete infrastructure has been removed. In short, the streams and their surroundings have not truly been restored.

The EIS should discuss the alternative solutions. One could be to restore the area to its prediversion landscape without causing additional environmental damage. If that is not feasible, an alternative could be to allow the ditch road to remain and to require that it be maintained and also that means be provided to ensure that the previously diverted water finds its way to the stream.

Since EMI is no longer using the water from the Nāhiku or Kēānae areas and since A&B has more than enough well water and water arising from their own lands to serve their needs, there's no justification to include all of these areas in the new license application; however, the EISPN includes all 388 diversion points. If any new lease is considered, first restoration of the abandoned areas should actually be completed and the lease should contain strict provisions requiring true watershed restoration, not

MS. WENDER: My name is Elaine Wender. My involvement in this issue began over 35 years ago. Figure 1-1 of the EISPN shows in green what are deceptively called EMI lands. In fact, many of these lands have multiple owners. For instance, many people, including myself, have interests in TMK-1-8-11 by in Waiokamilo Stream in Kēānae. These maps should be labeled accurately.

I submitted timely substantive comments for the early consultation phase for the preparation of the EISPN and received a letter from Earl stating, quote, Your comments will be considered and a copy of your comment letter will be appended to the EISPN, unquote. However, they were not appended. I have not even received a reply to my written request made a week ago that an amended EISPN be published including my comments as well as others that were excluded and that my comments immediately be sent to all those from whom you originally solicited comments as well as those who made unsolicited comments. I still have not received a reply. I'm renewing that request. It is not an adequate remedy to include in the draft EIS my comments made in the consultation phase.

It's taken us over 35 years to get here. In November of 1981 residents of Kēānae and Hana through their counsel Isaac Hall first petitioned DLNR to prepare an EIS in this case. For 35 years A&B has fought tooth and nail to defy this legal requirement. It took citizen activism and court action to finally require them to adhere to the law and prepare an EIS. So here we are, 35 years later. In that time we've lost two generations of kupuna who fought for water restoration and our watershed has continued to be degraded by EMI's failure to exercise proper stewardship.

A&B apparently no longer utilizes water from Waiokamilo, but this is not the same as restoration. EMI formerly diverted water not only from the main flume at Kukahiko, but also from numerous tributaries of various sizes which, before the existence of the ditch, eventually found their way into Waiokamilo Stream. This water was collected via over two dozen diversions consisting primarily of concrete catchment basins with pipes. EMI has cut these pipes so that the water no longer goes into the ditch, instead it now drips or flows onto the ditch road, creating a muddy mess and additional habitat for invasive plants. Most of the water never makes its way off the road, much less back into the stream. When they built, the ditch and the ditch road cut into and altered the natural terrain. Nothing has been done to return this terrain to its original condition or to ensure that the water not diverted actually gets into the stream.

In addition, EMI has abandoned and no longer maintains the ditch road in the Waiokamilo area, resulting in its present hazardous condition. They also no longer monitor the area for miconia which I

simply cessation of water diversion at the end of the lease period. There should also be a requirement that a bond be posted in sufficient amount to carry out this work.

I also endorse the comments made by Forestry and Wildlife and Na Ala Hele Divisions of DLNR, the Native Hawaiian Legal Corporation, and the U.S. Fish and Wildlife Service. And I encourage people here to read the EISP and submit written comments. Thank you.

COMMENTS ON EISP FOR PROPOSED WATER LEASE FOR THE NĀHIKU,  
KE'ANAE, HONOMANU, AND HUELO LICENSE AREAS

SUBMITTED BY ELAINE WENDER  
MARCH 9, 2017

I endorse the many excellent recommendations submitted during the consultation phase for the preparation of the EISP by U.S. Fish and Wildlife Service; Forestry and Wildlife, Land, and Na Ala Hele Divisions of DLNR; Native Hawaiian Legal Corporation; and Department of Hawaiian Home Lands. I will attempt to not discuss issues which have already been raised, and am grateful to have this opportunity to at last comment, more than 35 years after the community of Ke'anae-Wailuanui first formally petitioned for the preparation of an EIS.

The EISP repeatedly emphasizes that: "The Proposed Action... would enable A&B to continue operation of the EMI Aqueduct System that has been in operation for over a century. In general, the Proposed Action will maintain existing conditions..." These phrases imply that since A&B has been operating this system for so long, it is somehow natural that it should continue, and that the starting place for considering impacts is today; that by maintaining existing conditions, the devastation that has occurred over more than a century because of this system can somehow be ignored.

This cannot be the framework within which this Proposed Action (PA) is considered. The condition of the watershed before these diversions existed and the cumulative environmental impacts which have already occurred, as well as those which would continue to occur, must be described in detail. If this were a brand new PA, I am confident that no governmental agency would even consider approval. It is only because it has been going on for so long that some have become numb to the impacts. If A&B wants the longevity of its presence to be considered, then it must also disclose all of the impacts which that presence has created.

Some of the issues which must be discussed are the ways in which A&B has complied or not with provisions of previous leases and permits, and the resulting environmental impacts. For instance, the 1956 Ke'anae lease provided that:

water needed for the irrigation of kuleanas was excluded from water which could be diverted;  
destruction or injury to the forest growth be avoided as far as is practicable;  
the aqueduct system be kept "at all times in good order".

The issue of compliance with these requirements should be discussed in light of the evidence of failure to release adequate water for kuleana users, the degradation of the

watershed due to dewatered streams and failure to control invasive species, and the massive leakage from the ditch.

The 2000 revocable permit required that A&B: "Keep the Premises and Improvements in a clean, sanitary and orderly condition...Not make, permit, or suffer, any waste, strip, spoil, nuisance or unlawful, improper, or offensive use of the Premises. At all times with respect to the Premises, use due care for public safety...The Permittee shall have full responsibility for the maintenance of roads used within the water license areas." The issue of compliance with these requirements must be discussed in light of the conditions described below.

The EISPN states that Waiokamilo Stream was "fully restored in 2007", and that several other streams are "planned for full and permanent restoration." There must be extensive discussion of alternative actions that would constitute "restoration", what has been implemented thus far, and what future plans are. The EIS must discuss why all 388 diversions are included in the PA, including those for streams which are "planned for full and permanent restoration."

A&B apparently no longer utilizes water from Waiokamilo. But this is not the same as restoration. EMI formerly diverted water not only from the main flume at Kikokiko, but also from numerous tributaries of various sizes which, before the existence of the ditch, eventually found their way into Waiokamilo Stream. This water was collected via over two dozen diversions consisting primarily of concrete catchment basins with pipes. EMI has cut these pipes so that the water no longer goes into the ditch. Instead, it now drips or flows onto the ditch road, creating a muddy mess and additional habitat for invasive plants. Most of this water never makes its way off of the road, much less back into the stream. When they were built, the ditch and the ditch road cut into and altered the natural terrain. Nothing has been done to return this terrain to its original condition or to ensure that the water not diverted actually gets into the stream.

On some "restored" streams, a continuous mauka/makai flow has still not been reestablished. Water is diverted and then put back into the stream, so that flow is interrupted at the ditch road. The massive, ugly concrete infrastructure is intact.

In addition, EMI has abandoned and no longer maintains the ditch road in the Waiokamilo area, resulting in its present hazardous condition. They also no longer monitor the area for miconia, which I have frequently encountered there in recent years. EMI has abandoned any responsibility for stewardship of the watershed areas they no longer utilize. Even in the areas they still use, banyan trees, clidemia and other invasive plants grow unfettered. These conditions and remedies must be addressed in the EIS.

Alternatives must be considered. These would include actual restoration of the watershed, creating a way for previously diverted water to be returned to the streams and continuing maintenance of the ditch road for public access.

Before any new lease is considered, first true restoration of the abandoned areas should actually be completed, and the lease should contain strict provisions requiring true watershed restoration, not simply cessation of water diversion, at the end of the lease period. Bond should be required in an amount sufficient to carry out this work.

Maps in the EISPN with areas labelled "EMI lands" are deceptive. Some of these lands are hui lands with multiple owners. EMI's claimed percentage interest in each parcel should be noted on the maps.

Thank you for this opportunity to comment.





10238-02  
Letter to Ms. Elaine Wender  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Ms. Elaine Wender

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Wender:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas. During the EISP comment period, you provided oral comments at the February 23, 2017 EIS Scoping Meeting, and written comments dated March 9, 2017. We also appreciate your early consultation comments provided by email dated December 26, 2016. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix J (as to your early consultation comments) and Appendix M (as to your comments at the public scoping meetings and your written comments in response to the EISP).

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui that are now owned by Mahi Pono and planned for diversified agriculture.
2. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

3. CWRM, pursuant to the D&O issued in June 2018, stated that its intention was to allow for the continued use and viability of the EMI Aqueduct System and that it would not require the complete removal of diversions unless complete removal was necessary to achieve the IIFS.
4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. The Chapter 4 of the Draft EIS includes an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). The CWRM D&O considered objectives and management strategies in setting the IIFS. Chapter 1, Section 1.3.3 and Chapter 4 of the Draft EIS discusses diversions and restoration related to Waiokamilo Stream, which was ordered for full restoration by the CWRM D&O.
6. Various technical studies are appended the Draft EIS and provide detailed examinations or resources and potential impacts, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).
7. Chapter 3 of the Draft EIS includes an evaluation of the reasonable alternatives to the Proposed Action.
8. The EMI Aqueduct System Collection Area is shown on Figure 1-1 of the Draft EIS. This figure, which is not to scale, also indicates broadly the lands owned by the State of Hawai'i within the Collection Area and the lands owned by A&B and/or Mahi Pono within and adjacent to the Collection Area.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

10238-02  
Letter to Ms. Elaine Wender  
Page 3  
September 23, 2019



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

Environmental Impact Statement Preparation Notice  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
Scoping Meeting Comments of

Mr. Elden Liu

February 23, 2017

Ha'ikū Park and Community Center

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. LIU: My name is Elden Liu, and I'm here tonight concerning this water issue here. But I'm here to just say my ancestor was an ali'i. His name was Hikio. He was given Kaupakalua and he was given East Kaupakalua, which is Jaws, and he was also given a place in West Makaiwa that has all the A & B lanes coming down with the water. The water comes out of the Kaupakalua. And so I'm just here to say I've spoken to A & B, and I've spoken to their attorney at the same time too, a representative, Mr. Heila, who manages the EMI system. We had a very pleasant conversation. I wanted to let him know that I did have interest.

And I'm the sixth generation from Hikio, who was the original. He was an ali'i. And so I would like to be consulted with on some of these decisions that are going to be made. After all, the royal patent cannot be sold; and if A & B is selling that, they're in big -- hang onto this, please. I want to read real quickly what the law, the federal law says about this.

"A warranty deed cannot stand against a land patent in Hawaii, or a royal patent. A grant of land, made patent, is public law standing on the statute books of the state or nation. It is notice to everybody subsequent purchaser under any conflicting sales made." "Wineman versus Gastrell." "The land patent is permanent and cannot be changed by the government after its issuance. Where the United States has parted with title by a patent legally issued and upon surveys made by itself and approved by the proper department, the title so granted cannot be impaired by any subsequent survey made by the government for its own purposes." "Cage versus Danks." I would like to be considered to sit in meetings discussing things that are happening on my family's royal patent



10238-02  
September 23, 2019

Mr. Elden Liu

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Liu:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Section 1.3 of the Draft EIS provides a historical perspective of the Proposed Action, including the EMI Aqueduct System, stream diversion in East Maui and a chronology of the various associated leases, licenses agreements and permits.
3. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Elden Liu  
Page 2  
September 23, 2019

EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

Thank you.

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**  
Ms. Faith Chase  
February 23, 2017  
Haʻikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. CHASE: Faith Chase. No pun intended. I don't condone this process, but I'm going to give my testimony because I've showed up to make sure that everybody knows that in this process DLNR, Department of Water, the Senate, the House of Representatives, that I'm watching.

I would like the EIS to examine the contract language of the original sale of the Nāhiku and Keanae property that was once bought by Kaupo Ranch -- it's searchable and findable -- at the turn of the century. I haven't seen it, but I'm wondering if there's any language in there that might be salvaged.

I would like the EIS to review the repeated letters and news in the Maui News from the beginning -- the beginning of time, mentioning and reporting the numerous repeated pleading to HC&S and A & B to consider sustainable ag and consider that they haven't considered.

I would like the EIS to include a review of all the meeting minutes that were held at Keanae School from the start to the end. I would like -- from the Maui County Council, to be specific.

I would like the EIS to include the minutes of all Water Resource Committee, Maui County again, where Hana, Keanae, Nāhiku, Waialua and Kailua are on the agenda.

I would like the EIS to include the reporting of the 2016 seed worm breakout group discussions and their findings, which I was at but I've never seen, and I was told I'd get it e-mailed.

I would like you to also include the recent 2017, though limited, seed worm, and though about DHHL, there was a lot of language about this and our sacred rocks at Iao. I want that included.

I would like the EIS to include the review of all testimony of the Hawaii State Legislature 2016 Senate bill 3001 that didn't pass and the resulting House bill HB2501, or better known as the "water theft bill."

I would like the EIS to include the numerous petitioners, the number of petitioners, and all the comments in the Sierra Club petition relating to HB2501.

I would like the EIS to also include the number of petitioners and all the comments in the petition to the governor to veto HB2501.

Lastly, how have these areas been affected. I want a socio-cultural consideration to be made.

**SUBJECT: EISPN: PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS – SCOPING MEETING, FEBRUARY 22-23, 2017**

*I would like the EIS to include:*  
*The original lease contract details from Kapa Ranch purchase of Nāhiku and Keanae properties.*  
*I would like the EIS to include the historical maps showing coverage of requests to A&B to consider sustainable agriculture.*  
*I would like the EIS to include the minutes of all county contract meetings that were held at Kapa Ranch from the first to last.*  
*I would like the EIS to include all 883000 feet/min, all HPS 2500 feet/min.*  
*All Chapman brook at spring water from 2010, all Chapman minutes/transcripts from 2017.*  
*All documents from the Stone Lib. Book 4, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.*

(include additional sheets as necessary)  
 PLEASE PRINT: Name: Ms. Faith Chase Phone: [REDACTED]  
 Organization: Farmers Value Hawaii  
 Address: [REDACTED]  
 Email: [REDACTED]

Please submit comments by March 10, 2017 or email [woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

\*Receipt of e-mailed comments will be confirmed via e-mail. If you do not receive a confirmation message, please contact our office (see contact information, above).

10238-02  
 September 23, 2019

Ms. Faith Chase

Subject: Environmental Impact Statement Preparation Notice  
 Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
 and Hueilo License Areas

Dear Ms. Chase:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Hueilo License Areas, your oral comments at the February 23, 2017 EIS Scoping Meeting, and for your written comments received February 23, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Hueilo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277



10238-02  
Letter to Ms. Faith Chase  
Page 2  
September 23, 2019

in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral and written comments, and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Frank Caprioli

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. CAPRIOLI: Aloha mai kakou. My name is Frank Caprioli. I'll try to keep it pretty simple, but a couple things I think this EIS should definitely address is all the history of Alexander & Baldwin and their connection with the native taro farmers. And I've been fortunate enough to be out in (inaudible) and work in the fields and hear the frustration directly from the farmers and to see it and to see all of these promises that Alexander & Baldwin says that they're going to do and they never, ever do. I think that that's crazy, craziness, you know. I can feel the frustration from them.

I also think the EIS should also address alternative measures to have somebody else maintain that ditch. I mean, God, East Maui Irrigation, how many times are we gonna let these guys get away with what they're doing? You know, they're obviously not good stewards, why give -- why are we gonna give it to them? Why can't the state -- I mean, there needs to be other options that need to be looked into, you know. And again, I completely understand that water is life, everybody needs water. I don't -- I'm pretty sure, I don't think any of the kalo farmers (inaudible) are asking for all of the water. I'm pretty sure that they've made that pretty clear, you know, and so to throw that out there is kind of crazy. I'm pretty positive they're not asking for all the water.

And another thing is the uncle talked about, you know, with the akule and stuff and, you know, the hihiki and that's where all the fish spawn and stuff like that, you know. And I was fortunate enough to go down to the Wailuaiki, it's the bay east of Wailuanui, that one has two rivers that flow inside there, one of them on the far side is diverted, the other one isn't. I mean, it's night and day difference, night and day difference, the one side there has got hihiki, which you rarely see around Maui, all the way up to the shoreline, the other one has got nothing, no reef right in front, nothing on the one. It's common sense, it doesn't take a rocket scientist, you know.

Another thing I'd like to say too, I think there needs to be mediation between East Maui Irrigation and the Hawaiian community, 'cause, again, there is a lot of -- a lot of lies that have been told, a lot of things, a lot of promises that haven't been up kept. And I think in order to be able to move forward, that stuff needs to be sealed up. I mean, it's just -- it's crazy. So I really hope that you guys will look into the history and really go and talk. I know there is some of the East Maui taro farmers in here and go and talk to them because they have a lot of mana'o to share.

So thank you guys for your time.

What I'd like to say too is that there's no -- like who -- who oversees East Maui Irrigation? You know, we -- on the west side where I'm from, we're dealing with some stuff up in streams and it's -- it's incredible to try and talk to somebody.

I mean, so really quickly I want to say there needs to be some oversight. You know, East Maui Irrigation is kind of -- and, you know, one last thing too that kind of blew my mind, sorry, is that the East Maui taro farmers that have gotta get -- they've gotta get permission to go drive up and they only get the key one day of the month, this is (inaudible) and they've been there forever. Like how is East Maui Irrigation able to go up there all the time, but the local people who are from there, they've gotta ask permission and they only got a certain window period to go up there. I think that's ridiculous. I think that is ridiculous.



10238-02  
September 23, 2019

i  
[Redacted]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Caproni:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including potential alternative lessees. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied.
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C). Sea Engineering, Inc. and Marine Research Consultants, Inc. prepared the East Maui Irrigation Assessment of Streams and the Ocean Water Chemistry (See Appendix B) which addresses estuarine function.

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**From:** [Wilson Okamoto Corporation](#)  
**To:** [Earl Matsukawa](#); [Keola Cheng](#); [Rebecca Candilasa](#)  
**Subject:** FW: EIS Preparation Notice Comments for A&B Proposed Water Lease  
**Date:** Friday, March 10, 2017 8:39:43 AM

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

**From:** [REDACTED]  
**Sent:** Friday, March 10, 2017 7:26 AM  
**To:** Wilson Okamoto Corporation  
**Subject:** EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

I'm Gabe Johnson and I live on the island of Lanai. I would like to testify on the stream diversion and the importance of having an unbiased entity create the EIS for Alexander and Baldwins proposal to continue diverting water from the East Maui Watershed.

I'm sure many other testifiers will be speaking on the issue but I would like to bring up a point that needs to be addressed. In my work as an invasive species technician here on Lanai, I work a lot with Incidental Take Permits. I believe that if we look at the water that is being diverted, Alexander and Baldwin should be required to create a Conservation Action Plan that requires some kind of mitigation. There are very specific endangered species that will be adversely effected due to the stream diversions. I have spoken with Jonathan Spague from Fish and Wildlife, who is a federal Biologist who specializes in endangered species and he agreed. In fact he gave me several Damsel flies, who are listed as endangered that could be used to require A&B to apply for a Incidental Take Permit. Two Damsel flies are already listed as endangered, Megalagrion pacificum, Megalagrion nesiotae, and the newly listed (Sept 2016), Megalagrion xanthomelas. Wildlife surveys of the area prove that these endangered species are located within the East Maui watershed, specifically using streams to lay eggs and propagate. Its my firm belief that the actions done by Alexander and Baldwin would require them to obtain a Incidental Take Permit, create a conservation action plan, and begin work on habitat (i.e. stream) restoration.

Mahalo.

Sincerely,  
Gabe Johnson



10238-02  
September 23, 2019

Mr. Gabe Johnson



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Johnson:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

3. Truttia and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

---

**From:** [Wilson Okamoto Corporation](#)  
**To:** [Earl Matsukawa](#); [Keola Cheng](#); [Rebecca Candilasa](#)  
**Subject:** FW: EISPN for Proposed Lease for the Nahiku, Ke'anae, Honomannu, and Huelo License Areas of Public Land, Maui, Hawaii  
**Date:** Monday, March 13, 2017 9:16:42 AM

---

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: Harriet Wirt [REDACTED]  
Sent: Saturday, March 11, 2017 10:38 AM  
To: Wilson Okamoto Corporation  
Subject: Re: EISPN for Proposed Lease for the Nahiku, Ke'anae, Honomannu, and Huelo License Areas of Public Land, Maui, Hawaii

Dear Mr. Okamoto,

Mahalo for the opportunity to provide comments on this Environmental Impact Statement Preparation Notice (EISPN) for the use of water from four license areas consisting of 33,000 acres of public lands and waters in East Maui.

As a resident of Haiku, Maui, I am affected by how our streams and watersheds are managed. Because of my interest, I would like to request that the Draft EIS for this proposed Lease include the following information which is not clearly indicated in the EISPN.

We can lessen the environmental impact with simple changes such as (1) shortening the proposed lease to provide time for assessing impact (2) diverting smaller amounts of water than proposed (3) allow communities to bid on ditch-management leases (4) developing ways for leases to generate funding for management (5) restoring flows to more streams where East Maui people live. Hooliawa, Waipio and Hanawana streams have not been part of the court case that has been going on for 15 years, so no one has ever discussed giving water to the streams used by these neighborhoods.

Mahalo, Harriet [REDACTED]





10238-02  
September 23, 2019

Harriet Witt

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Kē'anae, Honomanū  
and Huelo License Areas

Dear Harriet Witt:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Kē'anae, Honomanū, and Huelo License Areas and for your written comments dated March 11, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Kē'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including discussion of alternative lease terms, duration, volume, and ownership

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

10238-02  
Letter to Harriet Witt  
Page 2  
September 23, 2019

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



**WILSON OKAMOTO CORPORATION**  
REGISTRATION SERVICES, INC.

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>  
Attention: Mr. Earl Matsukawa

**RECEIVED**  
MAR 03 2017  
WILSON OKAMOTO CORPORATION

**SUBJECT: EISP: PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANU, AND HUELO LICENSE AREAS - SCOPING MEETING, FEBRUARY 22-23, 2017**

*I am His-Highness Ki'aloa O Aupuni  
O Ke Hawaii Pae'Ke'e Hawaiian Kingdom Governor,  
I am "Maka'ainana Hin Decedent Agnes  
Clarvete" to the Hawaiian Kingdom and the  
Archipelago of 100 Plus Atolls and Islands  
with eight Islands. I have Constitutional  
Jurisdiction of authority with Paka Paka e salimu  
Royal Pattern land Pattern: I am yet remained  
of the 120 years of an on-going Indigenous  
Genital Conspiracy and Enticement against  
me my People, Country and our Constitution  
that was Drafted By my Tulu man King  
Kean'uli Kahuha with the King! Stop Stealing  
what belong to us Maka'ainana or heir/Descendants  
I am a Political Power holder a/ Political  
In that to this Archipelago of the Territory  
of the Hawaiian Kingdom: my koke/Blood DNA is proof*

(include additional sheets as necessary)

PLEASE PRINT: Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Organization: *Aupuni O Ke Hawaii Pae'Ke'e*

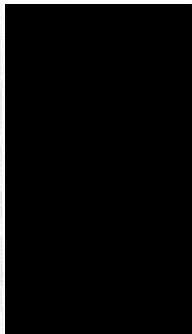
Address: \_\_\_\_\_

Email: \_\_\_\_\_

Please submit comments by March 10, 2017 or email [woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

\*Receipt of e-mailed comments will be confirmed via e-mail. If you do not receive a confirmation message, please contact our office (see contact information, above).

(Fold on dotted lines and seal with tape or staple)



Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
Attention: Mr. Earl Matsukawa

(Fold on dotted lines and seal with tape or staple)

002398



10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻānae, Honomanū  
and Huelo License Areas

Dear Mr. Kialoa:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas and for your written comments received March 3, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

Environmental Impact Statement Preparation Notice  
Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas  
Scoping Meeting Comments of

Mr. Isaac Hall, Esq.  
February 23, 2017

Haʻikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. HALL: I want to thank the East Maui people for letting me speak now. My name is Isaac Hall. I live in Haiku. I'm an attorney, and I've been working on this case for 40 years. The preliminary comments on the EISPN have been submitted. I want to cover some points that may not be addressed by others.

One, the proposed leases of public lands must be disposed of at a public auction. I know this point is being made. The assumption is being made, unfortunately, that the ultimate lessee is going to be A & B. Even though it's been stated by Wilson people that it's not, they're still talking about what we're going to examine in this is the 30,000 acres and that we should address the impacts of those 30,000 acres. That would render this EIS inadequate. You have to address other alternative lessees. Let's, you know, think about who else might be interested in getting this land and address those impacts. Those are alternatives that have to be addressed in this EIS.

Two, when A & B applied for this lease many, many years ago, it was for a fully functioning sugar cane plantation. The plantation closed, the lands are mostly fallow. There's no need for -- there's no current need for anything like 115 million gallons a day. The current application is stale and should be withdrawn and replaced by an up-to-date application.

Three, the lease is for all four license areas. This is an antiquated concept designed to provide all of the water to one prospective lessee, A & B. DLNR is required by law to lease lands in economic units, minimum-sized areas that could be served by the water. That's HRS 171-33.3 in the Big Island Small Ranchers case. The alternative of separate leased license areas. Let's say for the Keanae-Wailua community, carving off an area that could be leased to them alone, for their purposes alone, is an alternative that has to be addressed. The alternative of a separate leased license area for the Huelo area. Carve that off. Let them go in and bid for it. And likewise, a separate leased license area for say the Haiku area. Let the Haiku community go in and bid for a lease. These are smaller units that by the statute that applies to DLNR have to be discussed as alternatives. If they are not, this EIS is going to be inadequate again.

Again, as others have said, No. 4, these are 5(f) lands. They're part of the public lands trust and part of the seed lands trust. Native Hawaiians are the beneficiaries of these trusts. Now there are three aspects of this. One is that the first priority to this water belongs to the native Hawaiian homes. That means the current and future needs of Hawaiian, of people on Hawaiian home lands must be carved out first. That has never been done, it's never been studied, and that has to be done in this EIS or it again is going to be inadequate. Also, 30 percent of the revenues from the leases must go to Hawaiian homes to be spent

February 23, 2017

for the benefit of native Hawaiians. 20 percent of the revenues from the leases must go to OHA to be spent for the benefit of native Hawaiians. That's 50 percent of the revenues from these leases is owed to native Hawaiians. DLNR, BLNR has never paid -- well, they have paid attention to it, but they've paid tiny amounts in lease amount -- in leases, for the leases. BLNR has never appraised the value of the water that it has provided to EMI and HC&S. HRS 17133.5 requires that before any notice of an intended disposition is given, BLNR must determine an upset price for that lease based upon the fair market value of the resource being leased. BLNR has never done that. It's leased everything from way below the fair market value.

So in this EIS, as part of it, a study must be done, studies must be done, and one of those studies must be an appraisal of the fair market value of these lease lands. They cannot possibly satisfy their trust obligations to native Hawaiians unless they do this. This is a point that other people have touched on tangentially. This is 6. Any lease of water rights requires a watershed management plan. That's in their statute 17158-E and F. That's being done to prevent degradation of surface water, prevent degradation of ground water quality. So what has to happen here in an EIS is that the EIS must address the current conditions of the watershed and address steps that are required to restore the condition of the watershed to an adequate level. That's never been done.

As everybody's said, they've essentially had the equivalent of a 30-year lease but they've never done a watershed management plan. And you've heard testimony about what the condition of the watershed is. That has to be addressed in the EIS 1 or it's inadequate.

Number 7, I was disappointed to see the list of water users and that the people with riparian and appurtenant rights were totally left out. Those people downstream of these diversions weren't even mentioned. And I did notice that there was a lot of misinformation that I hope will get corrected later by those that know about the number of streams that are diverted, the number of streams that are in the petition area, the number of streams, that sort of thing. The numbers I heard were wrong.

Finally, No. 8, the alternatives considered were three. I've already mentioned four or five more, but there way many more alternatives need to be considered or else this will be inadequate.

Thank you for the opportunity to speak. And I'll submit more detailed comments by March 10th.

**From:** Wilson Okamoto Corporation  
**To:** Earl Matsukawa; Keola Chen; Rebecca Candliss  
**Subject:** FW: Comments on the EISPN for the EIS Regarding A&B's Application for a 30-Year Lease  
**Date:** Friday, March 10, 2017 2:31:12 PM  
**Attachments:** Let's Look EIS Preplot.pdf  
image001.jpg

**Jeanine S.H.Y. Morioka**

Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

**From:** Isaac Hall [mailto:isahal@maui.net]  
**Sent:** Friday, March 10, 2017 2:27 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** Comments on the EISPN for the EIS Regarding A&B's Application for a 30-Year Lease

Dear Mr. Matsukawa:

Please find attached in pdf format a comment letter on the EISPN in the above-captioned matter. A hard copy is being deposited in the U.S. Mail. Please contact me if you have any questions.

Sincerely,  
Isaac Hall



**ISAAC DAVIS HALL**

ATTORNEY AT LAW  
2087 WELLS STREET  
WAILUKU, MAUI, HAWAII 96793  
(808) 244-9017  
FAX (808) 244-6775

March 10, 2017



Via Email and U.S. Mail  
woc@wilsonokamoto.com  
Mr. Earl Matsukawa  
Project Manager  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Re: Comments on the EISP/N regarding the EIS on the  
Proposed Lease for the Nahiku, Keanae, Honomannu, and Huelo License Areas,  
East, Central and Up-Country Maui, Hawaii

Dear Mr. Matsukawa:

These comments pertain to the EISP/N for the EIS triggered by A&B's May 14, 2001 application to lease approximately 33,000 acres of state land and to divert and transfer all water arising on these lands to its approximately 30,000 acre former sugar plantation in Central Maui. The comments are submitted on behalf of The Coalition to Protect East Maui Water Resources and are intended to help establish the required scope of the EIS.

I live with my family near a diverted East Maui stream. I am an attorney who has been working to restore East Maui Streams for 40 years, since the late 1970s. My experience is not comparable in severity to what was experienced by Native Hawaiians when, over one hundred years ago, EMI first constructed its diversions and ditch systems. These ditch systems and diversions were operated to unilaterally dewater East Maui streams and to prevent downstream users from growing healthy taro and exercising gathering rights. Even now, EMI operates its diversions, not based on the needs of those below, but instead based on the needs of its parent company, A&B, on lands on the dry central isthmus of Maui.

I will cover some points that may not be addressed by others. These relate to the socio-economic impacts of this proposed action, and socio-economic issues that must be addressed within the EIS if it is to be adequate. This proposed action substantially affects the economic welfare, the social welfare, and the cultural practices of the East Maui community, the Maui Community and the State and, therefore, the issues addressed below are within the required scope of this EIS.

In addition, an EIS is meant to assure an early open forum for discussion of adverse effects and available alternatives, and that the **decision-makers will be enlightened to any environmental consequences of the proposed action.** (Emphasis added). HAR §11-200-14. This EIS is intended to "alert decision makers to significant environmental effects which may result from the implementation of certain actions" and to "ensure that environmental concerns are given appropriate consideration in decision making along with economic and technical considerations." HRS §343-1.

The statutory and regulatory framework for dispositions of public lands through leases at public auctions therefore establishes the subject matters that must be addressed in this EIS in order to alert BLNR to the environmental effects and economic and technical impacts of this proposed action in its decision making on A&B's application. See, HRS §§171-1, 2, 3, 6, 7, 10, 14, 16, 17, 18, 29, 33, 34, 35, 36, 39 and 58. Some of these provisions require planning actions prior to any disposition. See, for example, HRS §§171-10. Some of these provisions require actions by BLNR prior to any notice of an intended disposition. See, for example, HRS §§171-33 and 34. These statutory provisions establish subject matters that must be addressed in the EIS to assure that the decision maker is fully informed of the consequences of its proposed action.

**1. Proposed leases of public lands must be disposed of at a public auction. HRS §171-14.**

We cannot presume, as is being done here, that HC&S or A&B is going to be the lessee. The EIS must explore the alternatives that other persons or other entities will be the lessee(s). Studying the impact of delivering water to the 30,000 acres constituting the former HC&S sugar plantation lands, without studying, as vigorously, the options of delivering the water to other potential lessees, will render the EIS inadequate. HAR §11-200-17.

**2. The Application triggering the EIS is stale and provides no current basis for this EIS**

When A&B applied for this thirty-year lease sixteen years ago, on May 14, 2001, it was intended to provide irrigation water for a fully functioning 30,000 acre sugarcane plantation. Agencies shall ensure that statements are prepared at the earliest opportunity in the planning and decision-making process. HAR §11-200-14. This has not occurred because of the delays caused by BLNR, DLNR, A&B, EMI and HC&S, prejudicing the rights of downstream users.

The HC&S plantation has closed. The lands are now mostly fallow. A&B has no current need for anything like 115 mgd of irrigation water. A&B testified that the County of Maui and A&B were currently using 20 mgd of irrigation water on their 30,000 acres. The current application is stale and must be withdrawn. This application must be replaced, if at all, with an up to date application. The May 14, 2001 application provides no basis for the EIS now being prepared.



3. **The Lease is for all Four License Areas.**

The notion of leasing all of the state lands within the Four License Areas is an antiquated concept designed to provide all of the water arising on these lands to one prospective lessee -- A&B. DLNR is required to lease lands in "economic units" in minimum sized areas that could be served by the water. HRS §171-33(3); *Big Island Small Ranchers v. DLNR*, 60 Haw. 228, 588 P.2d 430 (1978).

The alternative of a separate leased "License Area" for Keanae and Waiuanui must be explored as an alternative. The alternative of a separate leased "License Area" for the "Huelo Area" must be explored as an alternative. The alternative of a separate leased "License Area" for the "Haiku Area" must be explored as an alternative. These are all practical alternatives that must be addressed or the EIS will be inadequate. HAR §11-200-17.

4. **Alternative Lease Terms**

DLNR must determine "the minimum tenure necessary" for the lease "to support the intended use" and "the necessity for periodic rent openings in long-term leases to assure the State a fair return." HRS §171-33(7). At the time A&B applied for a thirty-year lease, its subsidiary, HC&S, was operating a fully functioning sugar plantation on 30,000 acres of land on Maui's central isthmus. There has been a significant change in circumstances since then.

The HC&S sugar plantation has closed. The 30,000 acres are now mostly fallow. HC&S has laid off most of its workers. HC&S has auctioned off most of its farm equipment. Under these new circumstances, a thirty-year lease to A&B cannot be justified. If any lease is to be considered to A&B, the tenure must be significantly shortened given the unclear future of these lands and the inability of A&B to demonstrate that any more than a small percentage of these lands are actually being farmed.

Alternative lease terms must be studied in the EIS to address this unclear future as well as the possibility that A&B will not be the lessee.

5. **The Leased Lands are in the Public and Ceded Lands Trusts**

The lands proposed to be leased, approximately 33,000 acres in size, are Section 5(f) of the Admissions Act lands. They are part of the Public Lands Trust and part of the Ceded Lands Trust. Native Hawaiians are the beneficiaries of these Trusts. These trusts must be managed for their benefit. See, Article XII of the Hawaii State Constitution and HRS §171-18.

6. **Native Hawaiians have a long ignored financial interest in these trust lands.**

a. **First Priority in Water to Hawaiian Homesteaders**

The current and future water needs of Hawaiian Homesteaders have first priority. These current and future needs must be studied and delineated in the EIS. The amounts needed currently and in the future by Hawaiian Homesteaders must be supplied first before any other

amounts can be leased to other parties. See, Hawaiian Homes Commission Act, §221 and HRS §171-58(g).

b. **Thirty Percent of Revenues to Hawaiian Homes**

Thirty percent of the revenues from the leases must go the Hawaiian Homes to be spent for the benefit of Native Hawaiian Homesteaders. See, Article XII, Section 1 of the Hawaii State Constitution.

c. **Twenty Percent of Revenues to OHA**

Twenty percent of the revenues from the leases must go OHA to be spent for the benefit of Native Hawaiians. See, Section 5(f) of the Admissions Act. Fully fifty percent of the revenues are owed to Native Hawaiians.

BLNR has never appraised the value of the water that it has provided to EMI and HC&S. HRS §171-33(5) requires that before any notice of an intended disposition is given, BLNR must determine an upset price, based upon the fair market value of the resource being leased. BLNR has never done this. BLNR's leases, revocable permits, and holdover permits have all been issued for much less than fair market value, in breach of the public and ceded lands trusts and in breach of their fiduciary duties to their beneficiaries.

The EIS must address the fair market value of the lands and water resources that it intends to lease as determined by an appraisal, so that it can meet its trust responsibilities to Native Hawaiians and the public. HRS §171-17. An EIS shall involve at a minimum "conducting necessary studies." HAR §11-200-14. The EIS must contain this appraisal, as a required study, or the BLNR will not be alerted to the economic consequences of its proposed action.

7. **Any lease of water rights requires a watershed management plan**

Any lease of water rights requires a watershed management plan preventing degradation of surface water and preventing degradation of ground water quality. HRS §171-58(e) and (f). Any EIS must address the current condition of the entire 33,000 acre watershed and determine the steps that are required to restore this 33,000 acre watershed to an environmentally acceptable level.

8. **Downstream Users Left Out of Those Described as Water Users**

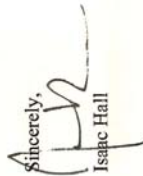
Wilson Okamoto's presentation included a list of users of the water. Oddly, the list failed to include users downstream of the diversions, who have battled for years to have streamflow restored. This is a serious error which, if not corrected, will render the EIS inadequate.

In addition, there are serious errors in Wilson Okamoto's descriptions of all of the streams that are being diverted, all of the petition streams, and restoration efforts to date. Likewise, these are serious errors which, if not corrected, will render the EIS inadequate.

9. Alternatives Considered Too Limited

Wilson Okamoto described approximately three alternatives that would be addressed in the EIS. These three alternatives are far too limited and do not represent the practical and reasonable alternatives that must be addressed in accordance with the applicable statute and regulations. HAR §11-200-17.

Thank you for the opportunity to comment on these issues and for your attention to these important matters.

Sincerely,  
  
Isaac Hall

IH/gr  
Cc: Clients



10238-02  
September 23, 2019

Mr. Isaac Hall  
Attorney at Law  
2087 Wells Street  
Wailuku, HI 96793  
idhall@maui.net

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Hall:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, your oral comments at the February 23, 2017 EIS Scoping Meeting, and your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the DLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.

3. The Proposed Action is described in Chapter 2 of the Draft EIS, including a discussion in Section 2.1.1 regarding The Department of Hawaiian Homelands' water reservation. The Draft EIS also includes in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on estimates of available of surface and ground water. The Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of surface water that can be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
4. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including a Modified Lease Area alternative.
5. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)
6. For the purposes of this Draft EIS, the stream list used was from the CWRM D&O which is discussed in Section 1.3.4.
7. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix B and Appendix C).
8. The Draft EIS considers an appraisal for the Water Lease and is discussed in Chapter 8.

Your oral and written comments, and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

Environmental Impact Statement Preparation Notice  
Proposed Water Lease for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas  
Scoping Meeting Comments of

Mr. James Coon

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. COON: Aloha kakou. My name is Jim Coon and I'm speaking as a concerned citizen. I've lived on Maui for almost 45 years and I've lived in Kula for over three decades. My home's on ag. land and I maintain a small orchard on my land. I believe as time goes on, more and more individuals need to plant edible crops to help Maui be more food sustainable. I do believe that EMI is the best entity to manage the EMI ditch system. In my opinion, it'd be a nightmare to turn this valuable resource over to the county or state.

I also want to see A&B have enough water to ensure that diversified agriculture can be viable on their vast lands. What will happen to Maui if there's no agricultural there? Not enough water means less ag. How can we ever meet our needs of energy and food sustainability if there's not enough water? Will it go to development? What about us Upcountry residents if EMI somehow gets taken out of the picture? How will we get our water? EMI must have a lease from the state that ensures that the rest of us continue to receive the water we need.

As you prepare this EIS, please ensure that all parties that need water have an adequate supply, keep EMI as the managing entity, make sure A&B has enough to continue farming instead of massive development.

February 22, 2017

TESTIMONY OF JAMES E. COON SPEAKING AS A PRIVATE CITIZEN

RE: EIS FOR STATE WATER LEASE TO EMI

To whom it may concern:

My name is James E. Coon. I speak as a concerned citizen. I have lived on Maui for almost 45 years and have lived in Kula for over three decades. My home is on Ag land and I maintain a small orchard on my land. I believe that as time goes on more and more individuals need to plant edible crops to help Maui be more food sustainable.

**I believe that EMI is the best entity to manage the EMI Ditch System and they need a long term lease to do so.** In my opinion it would be a nightmare to turn this valuable resource over to the County or State. I also want to see A&B have enough water to ensure that diversified agriculture can be viable on their vast lands.

What will happen to Maui if there is no agriculture there? Not enough water means less ag. How can we ever meet our needs of energy and food sustainability if there is not enough water? Will it just go to development? What about us upcountry residents if EMI somehow gets taken out of the picture? How will we get our water? EMI must have a lease from the State that ensures that the rest of us continue to receive the water we need.

As you prepare this EIS please ensure that all parties that need water have an adequate supply. Keep EMI as the managing entity. Make sure A&B have enough to continue farming instead of massive development.

Sincerely,

James E. Coon







10238-02  
September 23, 2019

Mr. James Coon

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Mr. Coon:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas, your oral comments at the February 22, 2017 EIS Scoping Meeting, and your written comments received February 22, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Proposed Action and Farm Plan are based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Flow Standards (IFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. James Coon  
Page 2  
September 23, 2019

3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. The Draft EIS will include in Chapter 4 an assessment of the impacts of the Proposed Action. Various technical studies will be appended the Draft EIS and provide detailed examinations, including the Agricultural and Related Economic Impacts Report (See Appendix I), which considers water availability in the Proposed Action and alternatives for agricultural and non-agricultural uses in East, Central, and Upcountry Maui, and an Economic and Fiscal Impact Analysis Report (See Appendix H).

Your oral and written comments, and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



(808)-661-4165 fax

**From:** [Wilson Okamoto Corporation](#)  
**To:** "Kimo Falconer"  
**Subject:** RE: Attached testimony for EIS scoping committee meetings on Maui regarding the EMI ditch system  
**Date:** Monday, March 6, 2017 3:07:22 PM  
**Attachments:** [Image001.jpg](#)

Dear Mr. Falconer,

This is to acknowledge that we have received your email comment on the subject EIS Preparation Notice. Your participation is appreciated.

**Jeanine S.H.Y. Morioka**  
Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

**From:** Kimo Falconer  
**Sent:** Wednesday, February 22, 2017 2:07 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** Attached testimony for EIS scoping committee meetings on Maui regarding the EMI ditch system

Attn: Earl Matsukawa

Please find my attached testimony in support of keeping the EMI ditch for irrigation needs on HC&S lands.

Mahalo,

James 'Kimo' Falconer  
President  
MauIGrown Coffee, Inc.  
MauIGrown Coffee Distributors, LLC  
(808)-661-3158 office

February 20, 2017

To the members of the scoping committee:

### **Support keeping EMI Water transference system**

My Name is Kimo Falconer, President of MauiGrown Coffee, Inc. We are the sole producer of certified MAUI origin coffee on our 400 acre farm in West Maui. Our project is the result of diversification out of sugar production at Pioneer Mill Company in 1992. I was the Vice President of operations of both Sugar and Coffee production when the sugar plantation closed in 1999 and later the coffee operation in 2001. In 2003, I formed MauiGrown Coffee Inc. as its sole proprietor to resurrect that coffee farm. Through much hardship and sweat equity, I am lucky enough to say that today we are the largest individually operated Certified coffee grower in the State of Hawaii.

I am not writing this though to provide you information about myself or my company, nor do I see the need to certify myself qualified as an expert regarding successful agricultural diversification. I do, however, consider myself qualified to speak to the importance, to any future agricultural endeavor, that diverted stream water allows. When these systems were built in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, water starved areas of these Hawaiian Islands were virtual wastelands. The sugar barons of the time only knew that they needed to move water from the wet sides of the islands to satisfy their thirsty sugar cane fields. The more water they could divert, the more cane they could plant. It was a simple profit driven equation.

What they did not realize was that by moving this water they were in a sense creating, by increasing the aquifer recharge ability, a usable reservoir of fresh water underground where before it was simply a brackish lens of infiltrated seawater. After 140 years of this activity the central isthmus of Maui has a healthy aquifer with differing levels of salinity that is not toxic for irrigation use for many crops. But this recharge will stop should the EMI flow stop. This recharge does not happen in those dry areas naturally, otherwise it would have happened centuries ago. As an example, when Pioneer Mill closed, albeit a smaller plantation but one that relied heavily on the recharge aquifer underground for irrigation, the salinity levels climbed instantly after the plantation closure to levels today that would be unsuitable for irrigation.

The HC&S issue is a different animal. At 36,000 acres, satisfying Maui's food needs can be achieved on less than 5% of those. Never mind Pioneer Mill, since 1999 that land has already been cut up by development. The general plan calling for thousands of more homes and urban growth and no one not living on the West side even knows that.

I am the only farmer of decent size on the West Side. My family has been in Lahaina for generations. While I wish to grow more coffee here, the loss of water and urban pressure is forcing me to look elsewhere.

Coffee is a very good crop for expansion throughout Hawaii. I am currently talking with A & B to possibly expand on former HC&S cane lands. For this to be possible there needs to be assurance of water. This holds true for any agricultural plan that is wishing to do the same.

While assessing the EMI situation in terms of water need, don't overlook the power of a healthy underground water system. Just because one can't see it, does not mean it is unimportant. Should you allow the stream diversions to stop, the irony is the future of our water supply can only come from them in the end.

James 'Kimo' Falconer  
President  
MauiGrown Coffee, Inc.  
MauiGrown Coffee Distributors, LLC



10238-02  
September 23, 2019

et  
[Redacted]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Falconer:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated February 22, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui. The environmental impacts of the potential Water Lease will be assessed.
2. The Draft EIS discusses impacts to hydrology associated with the Proposed Action in Section 4.2 of the Draft EIS as well as the reports various technical reports prepared for the Draft EIS, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSheP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); and Terrestrial and Flora and Fauna Report (See Appendix C); and. Agricultural impacts of the Proposed Action and alternatives are discussed in the Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. James Falconer  
Page 2  
September 23, 2019

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case Chair, Department of Land and Natural Resources  
A&B / EMI Applicant

002409

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

**From:** Wilson Okamoto Corporation  
**To:** Earl Matsukawa; Koala Cheng; Rebecca Candillasa  
**Subject:** FW: Comments on the EISPN for the EIS for proposed water leases  
**Date:** Friday, March 10, 2017 2:31:03 PM  
**Attachments:** Image001.jpg

**Jeanine S.H.Y. Mortoka**  
Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

**From:** [REDACTED]  
**Sent:** Friday, March 10, 2017 2:15 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** Comments on the EISPN for the EIS for proposed water leases

[woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)  
Mr. Earl Matsukawa  
Project Manager  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
March 10, 2017

Dear Mr. Matsukawa;

I am writing in response to your request for public comment with regard to the proposed 30 year lease, by your client, of the public trust water resources that would need to be diverted from East Maui to the land they own in the central valley.

Let me say at the outset that I oppose the proposal. I have reviewed and agree with the comments you have already received from The Native Hawaiian Legal Corporation, and the attorney Isaac Hall, whose views I am

fully aligned with.

Rather than repeat what has already been so clearly explained, I wish to offer a few additional recommendations for your consideration.

As hopefully has become clear to you already the further allocation of these vital resources to your client is not supported by the community, and for good reason. Many of us feel that the company has not fulfilled it's trust responsibility for the resources it exploited for the benefit of it's shareholders as defined by the State Constitution. Additionally, as cited in the statement of Isaac Hall, it would be my position that the 30% of the gains to the company during this period, due under State Law to the Native Hawaiian community have not been paid. This represents a significant additional responsibility that your clients will need to address before their application for more water is even considered.

Additionally I am of the firm belief that an inventory of the state of our island's waters would need to be done to properly assess the degree to which they may have been polluted or contaminated by your clients' actions. To me, if such a study were to be done, and chemical contamination of these vital resources found on the land your client has been utilizing, that payment for the full complete remediation of these harms would also need to be addressed before any further allocation of new leases or rights could be considered.

Lastly for the company to begin to address the harms caused to the original inhabitants of these islands and their descendants from the time of the "annexation" of these islands (as recognized by the United States Government, Public Law 103-150), it's time for the company look at giving back (as opposed to taking even more from) the local community.

In this regard I would recommend the low cost transfer of land, with small housing construction subsidies to those who prove Native Hawaiian ancestry, for the purposes of sustainable, traditional Hawaiian farming practices to feed the island's residents. This would be a far, higher, more just and more humane "transition" than what has been requested in the proposed lease.

If any of these proposals would be of interest to you and your client to implement I would be happy to serve as a consultant (along with others I

could recommend) as to how this could all be accomplished.

Sincerely;  
Jeffrey Bronfman  
President of The Aurora Foundation and  
Co-founder of The Haiku Aina Permaculture Initiative  
Haiku-Hawaii

**From:** Jeffreyudv [REDACTED]  
**Sent:** Friday, March 10, 2017 2:15 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** Comments on the EISP for the EIS for proposed water leases

[woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

Mr. Earl Matsukawa  
Project Manager  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
March 10, 2017

Dear Mr. Matsukawa:

I am writing in response to your request for public comment with regard to the proposed 30 year lease, by your client, of the public trust water resources that would need to be diverted from East Maui to the land they own in the central valley.

Let me say at the outset that I oppose the proposal. I have reviewed and agree with the comments you have already received from The Native Hawaiian Legal Corporation, and the attorney Isaac Hall, whose views I am fully aligned with.

Rather than repeat what has already been so clearly explained, I wish to offer a few additional recommendations for your consideration.

As hopefully has become clear to you already the further allocation of these vital resources to your client is not supported by the community, and for good reason. Many of us feel that the company has not fulfilled it's trust responsibility for the resources it exploited for the benefit of it's shareholders as defined by the State Constitution. Additionally, as cited in the statement of Isaac Hall, it would be my position that the 30% of the gains to the company during this period, due under State Law to the Native Hawaiian community have not been paid. This represents a significant additional responsibility that your clients will need to address before their application for more water is even considered.

Additionally I am of the firm belief that an inventory of the state of our island's waters would need to be done to properly assess the degree to which they may have been polluted or contaminated by your clients' actions. To me, if such a study were to be done, and chemical contamination of these vital resources found on the land your client has been utilizing, that payment for



the full complete remediation of these harms would also need to be addressed before any further allocation of new leases or rights could be considered.

Lastly for the company to begin to address the harms caused to the original inhabitants of these islands and their descendants from the time of the "annexation" of these islands (as recognized by the United States Government, Public Law 103-150), it's time for the company look at giving back (as opposed to taking even more from) the local community.

In this regard I would recommend the low cost transfer of land, with small housing construction subsidies to those who prove Native Hawaiian ancestry, for the purposes of sustainable, traditional Hawaiian farming practices to feed the island's residents. This would be a far, higher, more just and more humane "transition" than what has been requested in the proposed lease.

If any of these proposals would be of interest to you and your client to implement I would be happy to serve as a consultant (along with others I could recommend) as to how this could all be accomplished.

Sincerely;  
Jeffrey Bronfman  
President of The Aurora Foundation and  
Co-founder of The Haiku Aina Permaculture Initiative  
Haiku-Hawaii



10238-02  
September 23, 2019

Mr. Jeffrey Bronfman  
President of The Aurora Foundation  
Co-Founder of the Haiku Aina Permaculture Initiative  
Haiku, HI

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Bronfman:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Cultural Impact Assessment (See Appendix F); and Social Impact Assessment (See Appendix G). Section 4.7.3 of the Draft

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Jeffrey Bronfman  
Page 2  
September 23, 2019

EIS will address the amount of past revocable permit proceeds that have been allocated to the Office of Hawaiian Affairs and the Department of Hawaiian Home Lands

3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

Printed on Recycled Paper  
100% Recycled Paper  
100% Recycled Paper  
100% Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper

Printed on Recycled Paper



10238-02  
September 23, 2019

Jette Slater

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Jette Slater:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated March 5, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C). Sea Engineering, Inc. and Marine Research Consultants, Inc. also prepared the East Maui Irrigation Assessment of Streams and Oceans Water Chemistry report (See Appendix B).
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Management's (1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. John Gelert

February 22, 2017

Maui Electric Company Community Meeting Room  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. GELERT: Hello. My name is John Gelert and I'm a resident of Kihei. I've been a Maui resident for seven years. I would like the IIFS to address the needs of Native Hawaiian farmers and also the environmental concerns. So I believe that every stream should allow at least some water to go to the ocean to take care of the needs of these -- so that the environment is healthy and that the Hawaiians have more than enough for taro and other needs. As far as the rest of the water that is diverted, I fully support use for only agriculture with the exception of what is needed already for Upcountry.

And also the court did say that -- that the water is not allowed to be diverted any more, but then A&B and their lobbyist got the legislature to overturn that, so that is -- that is wrong and this water should not be going to A&B. This is the people's water and we need to have more sustainable agriculture here in Hawaii, so I would say whatever amount that is determined by the IIFS, it should be subject to review as more and more farming is actually done, but never to totally divert all of the water from any stream.

FACILITATOR SENELLY: Thank you. And just for clarification, the ES and the IIFS process are parallel processes. So there's things that found in the EIS, the -- actually, the IIFS will be -- that decision is not going to depend on what the EIS is.

Am I correct?

But we also understand the things that you said you want to see studied in the -- we'll just make sure it's in the EIS, that portion of it.

MR. GELERT: Thank you.

**From:** [Wilson Okamoto Corporation](#)  
**To:** [Earl Matsukawa](#); [Kaola Cheng](#); [Rebecca Candlisha](#)  
**Subject:** FW: EIS Preparation Notice Comments for A&B Proposed Water Lease  
**Date:** Friday, March 10, 2017 11:03:32 AM

---

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----  
**From:** [REDACTED]  
**Sent:** Friday, March 10, 2017 10:04 AM  
**To:** Wilson Okamoto Corporation  
**Subject:** EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the Nahiku, Ke'anae, Honomanu, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include

a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
John Gelert  
[REDACTED]





10238-02  
September 23, 2019

Mr. John Gelert  
42 Halelani Place, Apt. D  
Kihikihi, HI 96753-7973

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Kē'anae, Honomanū  
and Huelo License Areas

Dear Mr. Gelert:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Kē'anae, Honomanū, and Huelo License Areas, your oral comments at the February 22, 2017 EIS Scoping Meeting, and your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Kē'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. John Gelert  
Page 2  
September 23, 2019

(HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.

3. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Proposed Action is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
4. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including discussion of alternative lease terms, duration, volume, water sources, and ownership.
5. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
6. For the purposes of this EIS, diversion quantities from the CWRM D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
7. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

10238-02  
Letter to Mr. John Gelett  
Page 3  
September 23, 2019

Your oral and written comments, and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Joycelyn Costa

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. COSTA: Hi. My name is Joycelyn Costa. I'm the moku representative for Hamakualoa, but I'm a descendant of Nāhiku Mokuula on Makapipi. And my father, I'm sure you're going to meet him tomorrow, he's 81, he was from Nāhiku, his mother was born and raised in Nāhiku, her father was born and raised in Nāhiku, his father was born and raised in Nāhiku, he was taken to Kalaupapa.

I would like to see the original lease, I'm talking from the 1800s, if there even is a legitimate lease, before we even move forward. I would like to see critical data not of today, because we've already had too much damage and dewatering of a lot of the streams for you to even begin to measure it. So it needs to be from the beginning, not from the middle, not from the current, but from the beginning so you get accurate data.

I have to disagree a little bit with my good friend Darrell Tanaka that not every stream should be restored because there was a reason in Alexander & Baldwin he found it to be a waste which is why he decided he needed to capture all of this water and send it central. And if you go with the rule of nature, with the law of nature, it is essential when we worry about if we're underground springs and catchments underground that feeds wells are going to be able to hold the carrying capacity for elsewhere, the percolation that will be created through the restoration, you know, has anybody done a study on that? Can we -- can we restore the lands again to a more healthy environment? It's missing.

I find it really ironic that we don't have money, we don't have the resources for something more critical than a rapid transit rail, but we can find billions to put a piece of steel and concrete not even halfway around an island. So we need to reevaluate what is important. Economically, the water restored to the taro patches will be better for the state.

My father equates a bag of rice, a lot of people in here eat a bag of rice, it'll last you maybe -- depending on the size of your family, a week, week and a half, cost you ten bucks. Buy a bowl of poi for the same amount, can't even feed the whole family. So multiply that to feed the family for a week and a half equivalent to that bag of rice, you've got a major economic rally, but nobody talks about it. The fish, the ocean is key if we look at -- 'cause everyone stops at the taro patch, that's okay, but if you go all the way to the end user, then at least you have a more thorough assessment. Nobody talks about that.

And as far as environmentally conscious, you look at endangered species, the state considers a Hawaiian person to be 50 percent. My father is an endangered species, there's not many left, so you guys need to protect him too. That needs to be included in the EIS. I love what this young lady said, you need to put

the people, the sense of place, of the people of this place in that EIS considered, not just -- not just the river, not just the stream, not just the pohaku, not just the trees, not just the birds, but the actual human that cohabitates here.

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Joycelyn Costa

February 23, 2017

Ha'ikū Park and Community Center

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. COSTA: Joycelyn Costa. First of all, I would like to address the purpose of the EISP. The purpose of the EIS process is to disclose to government agencies, the general public, stakeholders and decision-makers the anticipated impacts. I'd like the impacts to be started from the inception. I would like that to be included. I'd like to know the timetable and dates to determine these anticipations. I'd like to know why the kuleanas were omitted from this process. It's not in this process. And I would like to know what will happen if they're -- when they discover all of the irreparable harms that has already been done. I think it would be too incomplete if you started with anticipated impacts. Within the impacts, will you be studying the soil, surface water, cultural resources, and coastal waters measured from inception?

Will the data include significant knowing -- not of outside book knowledge -- to make a determination? Everyone knows who writes the book tells the story, and we have living generations that are of knowing, that have survived the direct historical impacts. Please include them.

As far as page 1-1, the description, description of the purpose, "Background:" Since 1878, A & B or its predecessors and EMI have held various -- blah, blah, blah -- permits. And use of water from the State lands, please correct them. It should reflect that the lease came from the Kingdom of Hawaii. There was no such thing as State land in 1878.

Also I want to propose, in accordance to 1.2 "Approval," meaning the direction of consent, include the consultation of the representatives for all affected areas that will not only provide but receive water included in this EIS. We should be part of the consultation board. We shouldn't be on the outside, speaking into the EIS. We are part of DLNR.

So I think it would assist in your scoping if you were to have each representative be a part of this process. And on 1.3, "Proposed Action." And so I just briefly went over this, but I'm going to be doing more extensive written. Okay. A correction and/or addition to the fourth sentence of your 1.3. "Purpose of developing, diverting and transporting the use of government-owned waters." It should read "kuleana waters" only.

**From:** Wilson Okamoto Corporation  
**To:** Earl Matsukawa; Keola Cheng; Rebecca Candlisha  
**Subject:** FW: Proposed Lease for A&B from Nahiku, Keanae, Honomanu and Huelo  
**Date:** Monday, March 13, 2017 9:15:47 AM  
**Attachments:** Image001.jpg

**Jeanine S.H.Y. Morioka**  
Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

**From:** KC Productions [mailto: [REDACTED]]  
**Sent:** Friday, March 10, 2017 5:32 PM  
**To:** Wilson Okamoto Corporation; kyle.nakanelua@gmail.com; johannakamaunu@gmail.com; Ke'eaumoku Kapu; aha nomura  
**Subject:** Re: Proposed Lease for A&B from Nahiku, Keanae, Honomanu and Huelo

Thank you for confirmation.

If I could I would like to also include:

Data to impact of shoreline life and the impact that may have lead to the decline in fish possibly affecting a bag limit on the Native Hawaiian way of gathering.

Perhaps there could be other ways to share the water as written in the Kanawai also referred in the State Constitution of Hawaii. Instead of looking at the quantity and volume we find a more cohesive way to live with the water. I would suggest "Time". Within the original leases there was an understanding of time for use. Knowing the Kalo required temperature for proper health the water from the rivers and streams ran to the ocean from 4am-4pm. From 4pm-4am the plantation ie ditches could take what it needed.

Thank you for this consideration.

Joyclynn Costa  
Aha Moku Rep  
Hamakualoa

On Fri, Mar 10, 2017 at 9:09 AM, Wilson Okamoto Corporation <[woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)> wrote:

Dear Ms. Costa,

This is to acknowledge that we have received your email comment on the subject EIS Preparation Notice. Your participation is appreciated.

**Jeanine S.H.Y. Morioka**  
Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

**From:** KC Productions [mailto: [REDACTED]]  
**Sent:** Thursday, March 09, 2017 10:32 PM  
**To:** Wilson Okamoto Corporation; [REDACTED] Charla Konohia; aha nomura;  
**Subject:** Proposed Lease for A&B from Nahiku, Keanae, Honomanu and Huelo

Please confirm receipt of this testimony.

Thank you  
Joyclynn Costa  
Hamakualoa Moku Rep



10238-02  
September 23, 2019

Ms. Joyclynn Costa, Hamakualoa Representative  
Aha Moku O Hamakualoa Council Member

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae,  
Honomanū and Huelo License Areas

Dear Ms. Costa:

Thank you for participating in the scoping process for the subject Environmental Impact (EIS) Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas, your oral comments at the February 22 and 23, 2017 EIS Scoping Meetings, and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
3. Section 2.1.5 of the Draft EIS discusses the phasing and timing of the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Joyclynn Costa  
Page 2  
September 23, 2019

4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C);, Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your oral and written comments, and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely

Earl Matsukawa, AICP  
Vice President, Director of Planning

Enclosures

cc: Suzanne Case Chair, Department of Land and Natural Resources  
A&B / EMI Applicant



**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Justin Tombe

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. TOMBE: Justin Tombe. Water is life and when we're talking about it here like a lease and we're making agreements, we're reviewing ones that have been made like it's an economic commodity and that's okay, but that process is incomplete if we don't remember, right, that it's more than that. So this process, I want to invite everybody participating in this process here all the way through to remember to stretch further than just the legal considerations; otherwise, we're failing our responsibility to the generations. Okay? That's how I feel it in my heart.

The vision of how you steward the land and the water together has to be considered in this process. Right? So it's not just water goes to someone for 30 years, they get a sign off and an agreement and a fee. It's like what's the land use that it's going to be used for? Specifically how is that vision articulated? I think 30 years, again to echo, is too long of a process. Five years, one year at a time if that's what it takes to figure it out. And you can't do that without accountability of the past, what has happened. Now someone step away from the awaas in the shape that they're in and now that it's kind of falling apart and they've made their money and they've exported all these crops with the water embodied in it and all that wealth off the island, and now they're gonna step away, no responsibility to take care of what's behind? No. That should be addressed, that should be a part of this as well. Okay? So accountability.

And then for me, like I got a little chance living over in Huelo on the Hoolawa to do a little pilot project, an eco village in an ahupuaa kind of style. Right? And so what that was, what is that, it's a vision of how the land should be organized and used, how to steward the water all the way through. Okay? So if it's going to end up being in a golf course and there's nitrate fertilizers being dumped on there and there's organophosphate pesticides sprayed on it and they're gonna end up in the ocean and the fish, is that -- like if we can't address that here in the use process, then we're not really doing the job.

And so I want to know from A&B what's their 30-year vision, what do they see, where is this going, how is this going to get used much more articulated. And I love hearing -- thank you so much -- like stream-by-stream impact. That's the kind of granularity, that's the kind of attention to detail, that's the kind of responsibility that this EIS process really needs to try and address even though it's beyond its scope a little bit.

FACILITATOR SENELLY: Okay. Future uses, you mentioned, to my -- there is no golf course. I mean, you mentioned that and it's just I kind of want for the record that you know, we're talking about existing uses in the central plains and all that kind of stuff.

Scoping Meeting Comments of Mr. Justin Tombe

Page 2

February 22, 2017

MR. TOMBE: So diversified agriculture.

FACILITATOR SENELLY: And diversified agriculture.

MR. TOMBE: Right. So that's poly-culture, no more mono-crop, monolithic institution. I'd like to see some addressing of what the land use looks like that makes room for small-time agriculture producers. I'd like to echo that again.

FACILITATOR SENELLY: Okay.

MR. TOMBE: For sure. Yep. And put a plug in also, you know, if there is a place for a pilot project for industrial hemp to find its place on Maui here as a medicine, as a food source, as an industrial product, then that's something that really ought to be part of that looking forward too.

FACILITATOR SENELLY: So different types of agriculture, not monolithic. Okay.

MR. TOMBE: Yeah. Absolutely.

FACILITATOR SENELLY: You pau?

MR. TOMBE: Absolutely. Mahalo.



10238-02  
September 23, 2019

Mr. Justin Tombe

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Tombe:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Ma'hi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an Agricultural and Related Economic Impacts Report (See Appendix I) and an Economic and Fiscal Impact Analysis Report (See Appendix H).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Justin Tombe  
Page 2  
September 23, 2019

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning  
cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Kaleikoa Ka'o  
February 23, 2017  
Ha'ikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. KA'EO: Aloha. First of all, I'd like to just say exactly what has already been said, which is I find it strange that this isn't being heard, first of all, in Hana or Keanae, first of all. And that's a clear sign or a sign to the community that we're being set up. So I don't know what the intentions were perhaps, but it's clear to us that the community wasn't looked at first.

So I want to start off by making clear, this I think has to be clear, is that this EIS needs to be careful in making sure it has the correct historical, political, economic and cultural history of Koolau and East Maui, not one that provides a settler, colonial mentality of justifying how we got here. But let's be clear, because there's a lot of great historians out there. So the EIS has always failed to do that, so I want to make sure that you get somebody that knows the history of this area, and that's up front at the very beginning, prior to the taking and stealing of the water from East Maui. So let's not start with when the water was taken. Let's start with how the water was managed for many, many years, and generations, let me just say.

You know, our people has been here for 2,000 years, for many, many generations. So we're not Johnny-come-Latellies into this area. However, when you look at this process, the fact that the EIS is looking on a 30-year lease extension, extension, these are extensions for the continued stealing of this water, that's the starting point, not the starting point says this water belongs to the people of East Maui. That's who it belongs to. And if HC&S, A & B, EMI, whoever they are, want that water, they should bring their plans to the people and prove to the people. This process, it's backwards, it's backwards. We gotta defend ourselves to go prove that that's our water. This is part of the confusion. That's why for me, it's very important we start with that point. And that's why I'm wondering why hasn't it started at that point. I can go straight to the EMI administration and the State process, which wants to continue business as usual. But I'm here with many other Hawaiians, and we say no more. No more we allow this to occur.

So I want to make sure that we have a correct political, economic history that's at the forefront and that we have a true Hawaiian historian involved at the forefront. Secondly, let's make sure -- we talk about this EIS, but it also does a terrible job in explaining -- not the potential impacts, but let's look at already what the impact has already been for over a hundred years. The degradation to the environment. Let's ask how much billions of water has been taken out of East Maui already? Billions. Every year, we talking billions that they take. Well, how much? What is the total?

What have been the effects of the (Hawaiian) already that have been killed off? We're not talking maybe might kill. We're talking already has been wiped out in many of those streams that used to run

every day. That's an environmental crime that has already occurred. For me, it was just a crime, before we talk about continuing crime.

Secondly, let's also look at its effects already. How much fish has already been lost? How much shellfish? What degradation has already happened to the fisheries that depend on their fresh water to go into that stream, to get the smaller fish, to get the bigger fish and the limu. What has already been the destruction that people pretend as if -- see, people believe this is the normal state as is now. This is not the normal. This is the abnormal. This is what happens when corporate mentalities comes in and rapes the land, destroys the land. So let's make sure we tell the right story. Let's tell the true story. And during the course, water has already had many impacts upon the community, the Hawaiian community already, who lost, lost food sources already, who has cultural practices already because associated with those streams, have already been harmed.

In other words, that has already been done. Let's recognize the ea first. We cannot talk about what we gonna do if you don't recognize that So let's start with that and understand what are the crimes that have already been against the native Hawaiian people. Because these are crimes against humanity. And that brings me to the third point. We should also be clear to understand what is going on between the lahui kanaka and native Hawaiian community. We are no longer afraid to speak and say we demand our human rights as human rights, our humanistic rights as an occupied people by the military foreign power that continues to exist and allows these kinds of crimes against humanity to occur.

So I want to make sure in this report we also investigate all of those things. What are our rights as native Hawaiians internationally, our human rights, our humanistic rights? You know, look at things like the UN resolution 1514, look at the Proxmire Act. These are all international covenants that are already there to protect the rights of not some human beings, but which human beings? All human beings. And I therefore would say, you know, Hawaiians, we are human beings. And therefore, we deserve the right of a state agency that will make sure, even on international law, our rights are protected.

Number four, all I'm going to say is remember Maunakea. Maunakea is occurring today because of the failure of the EIS, the EA cultural impact, all those kinds of impacts that was ever done. Even when the people came out and drove, testified against it, didn't matter. No. The State of Hawaii, the University of Hawaii went ahead anyway, anyway. And you saw what happened recently in the past few years. There's an uprising.

So part of this should also address what happens when you say yes, what happens when you say yes to A & B. You guys should be prepared to know that you gotta deal with all these Hawaiians. You guys should understand, you guys should address that question, because you're going to have to deal with us in the courts and every Planning Commission meeting. Anything to do with the taking of our water, our people gonna be there. And so these are some things even outside of the courts we gotta realize, because at some point, we as Hawaiians understand sometimes we need to stand, sometimes we need

to defend. And I believe that's something that the EIS should address by looking at examples, Maunakea and like Haleakala. It's really the same BS that's going on. The rights of developers, settlers, colonizers, investors, land speculators, are treated as if they're some golden child that needs to be protected, and our concerns as the people of this land is thrown to the wayside, our commentary to the side.

See, I understand. I've been coming to this thing for many, many years, and I've seen a whole lot of meetings. But you might even have 99 percent of the people testify against something. And what does the EIS say? Oh, let the project go through. So the point I'm trying to say, we let fools come in here and participate, but we get asking, we get demanding, and we're here also to declare that we will do whatever is necessary for us to protect our resources to return the water back to the community where it starts. If any water should be taken from the community, it's for the community to decide, first of all. So I just want to say mahalo to you guys for coming and giving us the opportunity to share. But at the same time, I would say this to everybody here: Our voices, whether one word or a thousand words, are all important.

Because it's for us, it's for us to decide for ourselves what is this for ourselves. It's not going to be the government, it's not going to be the Board of Land and Natural Resources, it's not going to be land speculators from outside, because in the end, it's going to be us.

So if the EIS doesn't listen to these voices, I blame the EIS for not listening to the voices of our people. Mahalo.



10238-02  
September 23, 2019

Mr. Kaleihoa Ka'eo

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Ka'eo:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Section 1.3.4 of the Draft EIS discusses the Commission on Water Resources Management's (CWRM) Interim Instream Flow Standard (IIFS) Decision and Order (D&O) and the authority of the BLNR to issue a Water Lease for non-instream uses pursuant to Hawai'i Revised Statutes § 171-58, that is subject to the IIFS set by CWRM.
3. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Cultural Surveys Hawai'i, Inc. prepared a Literature Review and Field Inspection report of the License Area (Appendix E) as well as a Cultural Impact Assessment (Appendix F) in support of the Draft EIS. These studies are discussed in the Draft EIS in Section 4.5 Historical and Archaeological Resources and Section 4.6 Cultural Resources.
5. Section 2.1.2 of the Draft EIS discusses the amount of water diverted by the EMI Aqueduct System during sugar cultivation.
6. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action and alternatives on indigenous freshwater species, and terrestrial flora and fauna, respectively. The Draft EIS discusses the impacts of the Proposed Action to freshwater species in Section 4.2.1 and impacts to terrestrial flora and fauna in Sections 4.4.1 and 4.4.2. Both reports are appended to the Draft EIS (See Appendix A and Appendix C).
7. Sea Engineering, Inc. and Marine Research Consultants, Inc. prepared an assessment of streams and the ocean water chemistry in support of the Draft EIS. The Draft EIS summarizes this assessment in Section 4.2.3. The report is also appended in the Draft EIS (Appendix A).
8. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**

**Scoping Meeting Comments of**

Ms. Kamalani Pahukoa

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. PAHUKOA: My name is Kamalani Pahukoa. Mahalo for everyone for coming and I respect everyone's comments from our country farmers to, you know, our residents and commercial users and everybody. I'm from East Maui, I'm from Keanae. I mainly come here today to give specifics on what I think the EIS should address, so I'll get to it. So East Maui streams holds one of the world's most diverse ecosystems and native species, mollusks to arthropods and vertebra. I ask that you honor the recommendations of our state biologists, scientists, Hawaiian practitioners, and Maui community. It is crucial that habitat mapping would be incorporated into the environmental study.

I'd like to see the estimated amount of water that is wasted from the diversions. The leakage of the water from diversions have proven to contribute to landslides in some areas of the Hana Highway. Without these studies it's hard to explain to our highways engineer the detrimental effects of waste water from these diversion pipes, the effects it can cause to erosion and landslides and whatnot. The erosions of some areas along the Hana Highway are from natural material like water; however, they are caused by unnatural waterways also known as EMI's diversions. Maintaining the natural patterns of water flow and streams is the single most important requirement for protection of native Hawaiian stream animals. So I guess what I'm saying is I'd like you to be very specific and broad in your habitat mapping for the EIS. I'd like --

FACILITATOR SENELLY: What do you mean, "specific and broad"?

MS. PAHUKOA: Everything.

FACILITATOR SENELLY: Okay.

MS. PAHUKOA: I'd like to see that -- I know there's random -- it's called random --

FACILITATOR SENELLY: Sampling?

MS. PAHUKOA: -- sampling, yeah, and random insect monitoring and whatnot, but I'd also like you to consider our ecosystems, the forests, oopu, hihiki, and everything that flows upstream. I'd like you to conduct the EIS not just below the water diversions, but above.

FACILITATOR SENELLY: Okay.

Scoping Meeting Comments of Ms. Kamalani Pahukoa

Page 2

February 22, 2017

MS. PAHUKOA: And so to wrap it up, I hope that everyone can come out to tomorrow's meeting because I know there's a lot more East Maui residents that will be able to attend tomorrow's meeting as opposed to today, 'cause it's kind of far and (inaudible) and whatnot.

But I ask that all records of the EIS and data collection regarding East Maui streams be made public and updated weekly as important data collection become available. So if that's something that can be done, I'd like that to be done, you know, as soon as that data becomes available, as soon as possible. Other than that, I just wanted to state that I don't support EMI obtaining this lease. I think that the county has the resources to manage these diversions on our own. I think that the community has the power to manage the diversions on our own. And for people to be relying on A&B and EMI is kind of a -- you know, we should just have more -- we should have more -- we should more respect to those who have been managing these ahupuaas since -- for several generations. I mean, sustainability has been out there since the beginning and in these streams from Koolau, from Hana to Haiku and Huelo. So for people to say that we have to only rely on A&B is kind of -- it's not right, yeah, because Hawaiians have been managing our water resources since the beginning.

So I just wanted to say that and thank you guys for your time. Thank you, everyone, for coming.



10238-02  
September 23, 2019

Ms. Kamalani Pahukoa

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Pahukoa:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
3. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-01  
Letter to Ms. Kamalani Pahukoa  
Page 2  
September 23, 2019

Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Kamalu Kaho Okele

February 23, 2017

Haʻikū Park and Community Center

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. KAHU'OKELE: I would like to start by reading something that disturbed me very much. This is a proposed action from A & B. The proposed action constitutes the issuance of one long term of 30 years, water lease from the DL BLNR for the continued right -- now follow me, my people -- the continued right, privilege and authority to enter and go upon the Nāhiku, Keānae, Honomanu and Huelo licensed areas for the purpose, for the purpose of developing, diverting, transporting, and using government-owned waters. The water is owned by God. Excuse me.

Through the existing EMI is Maui irrigation aqueduct system, which supplies water to domestic and agriculture water users. I just thought I'd share that. And by the way, (Hawaiian name), founder and president for the past 11-plus years for the Lower Nāhiku Community Association. why was this information not sent, e-mailed, mailed, to the Nāhiku Community Association or the residents of Lower Nāhiku, informing them on the proposed application, EISPN, for A & B's 30-year water lease. Mahalo to Dick Mayer, Alliance of Community Associations, for sending this information to us or we would not have known of this matter earlier on.

Why was the Hana District not included in these public meetings involving East Maui streams? Speaking on behalf of my ahupuaa of Lower Nāhiku, and for our streams and diversions from (Hawaiian), remember what I just said. The true name of Makapipi is (Hawaiian), better known today to everyone as Makapipi River. Kopiliula and Hanawi, of which currently flows from the Koolau, down through our (Hawaiian). You don't hear that no more, because today they call it the landing, the Lower Nāhiku landing. This is where these streams (Hawaiian.) There should be no more diversions, people. All waters should be returned to each and every ahupuaa, for it is their streams; it is their livelihood; it is their battle of survival; it is their (Hawaiian) of healing.

Requesting a 30-year long-term lease would be very damaging to our community. We all know that since the closing of the sugar cane plantation, no firm decisions have been released or open for public review on their so-called diversified ag. There was talk about in the absence of sugar. Just talk? Instead they are selling sugar cane land to developers from anywhere. For what, I ask.

As I review the EIS information -- here, hold this; you need a podium, honey -- provided by the County of Maui Water Supply could become promised and that the 30-year lease will enable A & B to continue to maintain the aqueduct systems that is currently maintained by EMI. The County should maintain it to provide domestic water to Nāhiku and not have a third party dictate the control of this water source for our community of Nāhiku. Remove all metal gates -- which I know what they look like, I've been up

there, walked the road -- and have all streams returning to its full capacity. Also cap, close, remove all diversion systems that moves water from Makapipi to Hanawi and so on. The County Water Supply should lease or maintain the aqueduct that supplies water to the County, water tanks that currently supply Lower Nāhiku with domestic water, farming water, (Hawaiian) animals, yeah. They gotta drink water too, not only from the rain.

In closing, A & B, the applicant, needs to be fully transparent on their intent, their needs, their wants, and not smoke-screen and quietly do things to further divide the communities as they did with HC&S, I believe that our kupuna (Hawaiian) will guide our pathway, to be sure that our precious resource isn't solicited for their money gain, while our entire livelihood and quality of life is jeopardized. We must protect, preserve and perpetuate for the future generations to come. Our voices now and forever will be heard, as we cannot sit here no longer and watch our island become more overly developed, culturally desecrated, and our lahui is left behind, and not have a voice to our island. We will stand for what is right, and the right thing is to maintain truth and not deception. Just to add, it's not just the water that is life; it's the mana that the (Hawaiian) hold from the days of our not ali'i, (Hawaiian), for it holds that strong (Hawaiian) of our ancestors. I close by saying much of our (Hawaiian) throughout East Maui is (Hawaiian) with debris, fallen trees and not maintained for proper flow from mountain to sea. What are we going to do about that? Is it only about power, money, and greed?

Let us think about it. Mahalo.



March 1, 2017

RE: **PROPOSED EISP/N WATER LEASE FOR NAHIKU, KEANAE, HONOMANU, AND HUELO LICENSE AREA FOR A ONE TIME 30 YEAR EAST MAUI WATER LEASE.**

APPLICANT:  
ALEXANDER AND BALDWIN INC/EAST MAUI IRRIGATION LIMITED

CONTACT: Daniel Y. Yasui

Email: [dyasui@abprop.com](mailto:dyasui@abprop.com)

Phone: 808-525-8449

Address: A & B-822 Bishop Street, Honolulu, Hawaii 96813

EIS Consultant for A&B:

Wilson Okamoto Corporation

Mr. Earl Matsukawa AICP.

Email: [ematsukawa@wilsonokamoto.com](mailto:ematsukawa@wilsonokamoto.com)

Phone: 808-946-2277

Address: WOC-1907 S Beretania street, Suite 400 Honolulu, Hawaii 96826

APPROVING AGENCY State of Hawaii

Board of Land & Natural Resources

CONTACT: IAN HIROKAWA

Email: [ian.e.hirokawa@hawaii.gov](mailto:ian.e.hirokawa@hawaii.gov)

Phone: 808-587-0400

Address: Board of Land and Natural Resources-1151 Punchbowl St., Honolulu, Hawaii 96813

To Whom It May Concern:

We the Nahiku Community Association Strongly OPPOSE this applicants request for a 30 year water lease of East Maui Land and Water Lease and that the State of Hawaii (BLNR) should deny this applicants request till matters that has been brought forward by testimony in the last 2 meetings held on Maui is clarified and that Alexander & Baldwin is transparent and has fully disclosed the affirmed use of the sugar cane land that is now not in use and not just a proposed use map that has been issued and distributed which really does not affirm the confirmed use. It's quite clear that the intent of A&B while the last plantation was being closed that 339 acres of sugar cane land was sold in Paia, Maui, and now a new shopping center in their Kahului Industrial Park is quite the obvious that as they develop and or sell off these lands water will be in higher demands to accommodate the land use and the question is when the proposed diversified agriculture rolls in to play more water will be diverted to cover all aspects of their intentions.

It's concerning to us on how the notification of this EISP/N was NOT distributed either by mail or other written notification to the residents of Lower Nahiku and was not even included or notified of this request earlier on as others had the opportunity to have and early consultation process.

1

Also, We would like to have comment by CWRM on the current status of the IIFS standards as we were advised earlier on the Makapipi and Hanawi streams will have a mountain to ocean flow all year round and how would this lease impact the status of the rivers on the their decisions increase or decrease the current flow release for the next 30 years

We have requested that Hana District of East Maui have the opportunity to meet on this applicant's request and should not have been excluded from this process.

#### ALTERNATIVES:

Allowing the County of Maui DWS have the opportunity to take on the Aqueducts that supplies 3 main water tanks to continue the domestic water for the Nahiku Community and to maintain it for that purpose only and remove these two rivers from the applicants request for lease. So we the community of Nahiku can continue to gather and to avoid the damaging ecological impacts that this lease can cause to endanger to wildlife and cultural quality of life for the people of Nahiku as it did for generations. Our rivers should not ever go DRY because of excessive development use and a full-continued full flow all year round. As A&B has a current year to year lease with the STATE OF HAWAII for the next 3 years it should remain as such to maintain the current use and a more formalized confirmation on the use of all that sugar cane land that they have submitted just a proposed plan and no confirmation on if diversified AG will ever happen.

We believe that the water is the source of life and should not be controlled by A corporation for their long-term benefits but for the people of Maui and the future generations. We have so many concerns on its current use and how we can better distribute water during drought periods that really have not been addressed and the ongoing current concerns on water meter issuance on the COUNTY level, We cannot have further back logs on the current needs to be fixed NOW then to give A & B that control on the WATER SOURCE for further control or more unwanted development of Maui Island and for any one else for that matter until the current situations are addressed.

We would appreciate a continued notification on developments on this measure and if the recommendation we have listed will be addressed at a EAST MAUI HANA MEETING and or further discussions on applicants request for lease, and or when further actions are taken on the applicants proposed permit application as it goes under review by BLNR.

Sincerely,

Kamalu Kaho'okele, Founder/President

Nahiku Community Association

HC 1 540 Lower Nahiku Road

Haku, Hawaii 96708

Manu Kekahuna, Vice Chairman

CC EMAIL: NCA Board Of Directors-Lihau Kekahuna, Cheryl Kekahuna, Secretary Louise Alina,

Treasurer Corinna Kekahuna,

Members of the Nahiku Community

Senator Kalani English

Representative Lynn DeCoite

Governor Ige

Mayor Arakawa

Maui County Council Members

Dave Taylor-DWS

2



10238-02  
September 23, 2019

Ms. Kamalu Kaho'okele, Founder/President  
Nāhiku Community Association  
HC 1 340 Lower Nāhiku Road  
Hāiku, HI 96708

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū,  
and Huelo License Areas

Dear Ms. Kaho'okele:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, your oral comments at the February 23, 2017 EIS Scoping Meeting, and your written comments dated March 1, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Kamalu Kaho'okele  
Page 2  
September 23, 2019

be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

5. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).

6. The Office of Environmental Quality Control, State of Hawai'i, Department of Health (OEQC) is responsible for the processing and publication of Environmental Assessment and Environmental Impact Statement documents. Pursuant to the requirements of Chapter 343, HRS, the subject EISPN document was made available for public review and comment. Similarly, the forthcoming Draft EIS will also be made available for public review and comment.

Your oral and written comments, and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



#37

Testimony by Kathy Pang  
February 23, 2017

My family has been in Hawaii since the 1890's and we were finally able to call ourselves landowners on Maui, when my grandparents were able to move out of McGerrow Camp around 1940. We don't have such a long history, but we do call this home, in every meaning of the word.

As residents of West Maui, we finally reached the end of about 7 years of testimony and hearings to get surface water rights in the Na Wai Eha contested case process. The Richardson School of Law Ka Huli Ao provided legal assistance. In the end, people who were granted rights to surface water were those who had the strongest legal claim to water, either historical, with ownership or continued farming dating back to the Mahele. In our case, we have no legal claim because Wailuku Water has a clause, slipped into our deed that extinguished our claim to water, even with 'auwai running through the middle of our land.

Should it come to this in East Maui, be warned the fair distribution of water, even to existing users is never to be taken for granted.

Governor Ige has set a goal to double our food sustainability by 2020. We need to dedicate water for this, not just "put it out there" and hope it will happen. How does his state Department of Agriculture have 122 job vacancies unfilled, and pretend that we support agriculture? We need to have true action by our government

Back on topic, I believe that the proposed EIS should include:

KSP 1 of 2

1. Information about exactly how much water there is in the East Maui system, prior to, and after removal of diversions. We seem to have a lot now because HC&S has quit operations. Maybe this is a false sense of plenty, and there is not that much left for diversified agriculture.
2. Information regarding how open ditch systems are to be maintained (in addition to who will carry this out). What chemicals, and how much needs to be applied to A: keep the edges clear and 2B: how often flow has to be stopped to apply the aquatic formulation of Roundup or something similar, to keep the vegetation under control?
3. An evaluation of the required amounts for different uses of water. It is known that Ag uses a lot of water, far more than for a mall or housing. Big use may just mean bigger payoffs.
4. Consideration that water dedicated, in advance, towards our goal of sustainable, diversified agriculture should be part of the EIS. What will the be overall and long-term benefits to the environment (including jobs, tax revenue, energy efficiency, water and resource management, health and well-being of the beneficiaries of these practices)?

Respectfully Submitted  
Kathy Pang

KSP 2 of 2



10238-02  
Letter to Ms. Kathy Pang  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Ms. Kathy Pang  
[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻānae, Honomanū  
and Huelo License Areas

Dear Ms. Pang:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas and for your written comments dated February 23, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

quantities from the CWRM D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area.

4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an Agricultural and Related Economic Impacts Report (See Appendix I), an Economic and Fiscal Impact Analysis Report (See Appendix H), Social Impact Assessment (See Appendix G), and an Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A).
5. The Draft EIS will assess the long-term productivity of the Proposed Action in Chapter 7.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

002433

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Kawika Stoner  
February 23, 2017  
Haʻikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. STONER: Hi, how's it going? My name is Kawika Stoner. I am from Lower Nahiku. And I know you guys only want to hear about the EIS and what it should address. But, you know, first off, I think there's kind of an agenda behind the EIS and just the way you guys got it, step one, step two, step three.

And maybe next time you guys should hold the meeting or you should maybe hold another meeting out in Hana side, because most of the people -- if you look on the list of places, Haiku is not on that list, and most of the people affected by these decisions actually live out there. Some of them is Kupuna. They can't just go and drive this long road. Some people have babies, kids, they can't just drive this long road, like I said. They gotta work, all this kind of stuff.

But also I see that you guys -- I see that you guys are on top -- if I can go to the slide show real fast, I see you guys mentioned -- there's some things you guys mentioned in here. Where is it? Okay. Right here. "General description on the proposed action," you guys put "economic, social, cultural and environmental" characteristics on there. But what you guys gotta understand is economic -- if we're talking about Hawaiian and Hawaiian culture, you put "cultural" on there. Hawaiians, economics is cultural. If you think about it, the mauka to makai, that's from the mountains to the ocean, that's just the way things go.

But you guys', EIS, it's based off of -- you guys said that it has to meet the laws, right, of the State; it has to meet certain requirements of the law. But that's the law of the state, but there's also the law of nature, which doesn't really get mentioned. Even though you guys mentioned cultural and environmental, it's a contradiction, because economic is what? Money, right? But in the ancient days, the Hawaiians, they never used money. So if you think about that for a second, the Hawaiians used to trade. The people who lived by the ocean, makai, they would trade food with those who live in the mountain, according to what they have. Like if you're by the ocean, you have fish; people by the mountain, they have other things that isn't right next to the ocean. So they would trade, and they would -- that's how -- that's our economics, as Hawaiians. So you can take that "economic" out of there because that's a contradiction, because cultural -- how you guys gonna talk about cultural when economics and all that is in there?

And then how the EIS is supposedly -- this is just a prep, right, like a preparation for you guys' main decision. This is just like -- this isn't for us to testify, but where do we testify? Where do we testify?

Scoping Meeting Comments of Mr. Kawika Stoner  
Page 2  
February 23, 2017

MR. MATSUKAWA: The decision is by the -- for the permit, there will be proceedings, I imagine. So again, I'm not the attorney, I don't know the exact process, but I would think there should be.

MR. STONE: Well, if it was me -- I'm not trying to -- but if I was the one running this meeting, you know, I would definitely know everything that's going on, especially what's going on in the future. Okay. Where's the other page, though?

MR. MATSUKAWA: We should clarify that. We are doing the EIS. You know, I'm still -- in order to do the EIS, I have to learn things. I don't know all of the legal -- this thing has had a long history. I got into this not that long.

MR. STONE: I'm not saying you personally.

MR. MATSUKAWA: I don't know everything. That's why I don't answer some of the questions. I don't know.

MR. STONE: Okay. You know, I'm not -- you know, it's not a personal thing

MODERATOR SENELLY: Can I say one thing?

MR. STONE: It's not a personal thing or anything like that.

MODERATOR SENELLY: By the time the EIS is pau, we will know. Okay? But coming out here, part of it is when you, people like you --

MR. STONE: Yeah, you guys are hearing our testimony.

MODERATOR SENELLY: Yeah.

MR. STONE: You guys are hearing us speak.

MODERATOR SENELLY: What you guys are saying. And so that helps --

MR. STONE: That helps you make the decision.

MODERATOR SENELLY: Right. That helps us put what's going to be in it.

MR. STONE: I understand your process.

MODERATOR SENELLY: So that by the time we're pau, we're gonna get.



10238-02  
September 23, 2019

MR. STONE: Okay. I understand you guys' process and stuff like that, but like I said, you guys might need to remake a whole new PowerPoint, just by -- whoever made it, that's cool. But just think about where you're at, Hawaii. Who are the people? who's native to this place? Hawaiians. So when you talk about the actions of anything, you guys should base it off of that first. And also when you talk about culture, people get religions and this and that. Hawaiians' religion is our culture. So if I was to bring up another religion, people's ears would perk up. But they don't see Hawaiian as a religion, but Hawaiian is a religion. It's not a religion, but it is because you know what I mean.

MODERATOR SENNELLY: Kawika, we're going to move on, okay? You know, I have two more people from East Maui.

MR. STONE: I'm going to wrap it up with what you guys should address in the EIS.

MODERATOR SENNELLY: Okay.

MR. STONE: You guys should address the area, think about the areas that you're talking about, think about the people, and maybe you should -- oh, yeah, address the gatherers and the providers, which are the same thing. Okay. So if I can't go out to the other side to get food or anything like that -- some people go to the store, that's how they get their food. Some people rely on nature, things around them to get their food and to provide for their family. So you guys should address, mainly on the gatherers and the culture -- you guys put the word in there, "cultural." And "environmental." That's the two big words right there. Social and all that can go right now. And cultural and environmental, that should be you guys' main basis, but, you know, it's -- this is words and these are documents and stuff like that.

But when it comes down to it, it's not words and documents and signatures that will determine how the river is going to flow, because that's nature. So when it comes to nature -- oh, yeah. When you talk about meeting the laws of the State, just think about meeting the laws of nature before anything.

Mr. Kawika Stoner

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Stoner:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Cultural Surveys Hawai'i, Inc. prepared a Literature Review and Field Inspection report of the License Area (Appendix E) as well as a Cultural Impact Assessment (Appendix F) in support of the Draft EIS. These studies are discussed in the Draft EIS in Section 4.5 Historical and Archaeological Resources and Section 4.6 Cultural Resources.
3. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277



10238-02  
Letter to Mr. Kawika Stoner  
Page 2  
September 23, 2019

- EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.1.2).
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

RECEIVED  
MAR 10 2017  
WILSON OKAMOTO CORPORATION



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

Attention: Mr. Earl Matsukawa

SUBJECT: EISP: PROPOSED LEASE (WATER LEASE) FOR THE NAHIKU,  
KE'ANAE, HONOLULU, AND HUELO LICENSE AREAS -  
SCOPING MEETING, FEBRUARY 22-23, 2017

Aloha, I am a resident of Nāhāhā, Maui & was born & raised here. I want to express that I don't support A&B renewing their lease for East Maui because they haven't been good stewards to this precious public resource. They have neglected to fix damaged ditches resulting in a lot of wasted water. In the EIS I would like to see alternative options that could reduce harm to the ecosystem & environment. Some alternatives would be: leave 60% of the water in the stream, that way the aquatic life can begin to replenish and heal itself including our reefs & inshore fish. Letting the water flow make it to Nāhāhā would be healthy for our streams, oceans, and kalo farmers. I would like to see water access be given to kalo farmers and other small farmers so we can start to feed our island again. I would like the EIS to include the impact of diverting water from East Maui Stream on native plants, ecosystems, and the impact diverting the stream has on aiding the growth of invasive species including the mosquito breeding grounds. If the lease is renewed I would like to see a much shorter lease term such as 5 years. This would be much easier for the public to see. If you are not interested in the water (include additional sheets as necessary)

PLEASE PRINT: Name: Konarekamatina de la Nux Phone: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

Email: \_\_\_\_\_

Please submit comments by March 10, 2017 or email [woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

\*Receipt of e-mailed comments will be confirmed via e-mail. If you do not receive a confirmation message, please contact our office (see contact information, above).

002436





10238-02  
September 23, 2019

Konaneakamahina de la Nux

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Konaneakamahina de la Nux:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 8, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including discussion of alternative lease terms, duration, and volume.
3. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

(Fold on dotted lines and seal with tape or staple)

HONOLULU HI 968

08 MAR 2017 PM 1 L

Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
Attention: Mr. Earl Matsukawa

96826-130100

(Fold on dotted lines and seal with tape or staple)

002437

10238-02

Letter to  
Konanekamahina de la Nux

Page 2

September 23, 2019

designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

EM

23 February 2017

Mr. Earl Matsukawa  
Wilson Okimoto Co.  
1907 S. Beretania St., Suite 400  
Honolulu, HI 96826

Subject: Stream restoration at Honopou, Maui.

Dear Mr. Matsukawa;

I read with interest the document prepared to discuss the EMI, Inc. bid to renew the lease on the East Maui Watershed.

As a resident of Honopou for more than four decades I was drawn to the issues that surround me and may affect me as a land owner.

On page 1-12, Table 1-2 License Area, the Honopou Stream is cited as "planned for full restoration".

On page 3-19, Item 3-12 Secondary and Cumulative Impacts, "none are reported".

If the Honopou Stream were to receive "full and permanent restoration" we can expect to live with stream flows that were typical of over 125 years ago! In the intervening century, with stream flows reduced by EMI exports of water, local families have improved and built on their land in areas that may soon be inundated. Access into Honopou Valley requires passing over an old iron bridge, located on State Land, that will surely fail if stream flows return to their pre-1900 levels. The iron portions of the bridge are reasonably sound. At risk are the head walls which are a combination of dry stacked rock with some mortar and concrete. Seasonally heavy rainfalls cause violent swirling of stream water as it forced to turn and narrow it's path as it flows under the bridge. Frequently stream water floods to a level that it flows over the bridge!

There will be un-intended consequences of restoring Honopou Stream to full flow. The Honopou Bridge and the few downstream properties with improvements near the stream bed need to be surveyed and accounted for. I for one feel that there will be "Secondary and Cumulative Impacts".

On page 6-2, Other: Consulted with..... Your list of consulted parties must include the Honopou Road Association. We are a non-profit 501-3C, organized to maintain the road, which is held privately by prescriptive easement. We have the access interests of our landowners, tenants, guests and service providers to worry about. The loss of the bridge or the flooding of homes and properties could easily displace upwards of 100 people. The president of the Honopou Road Association, Ms. Lynn Scott, can be reached at 808 280-2359.


002438

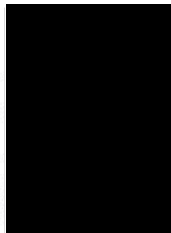
Page 2,

If someone from your staff would like a guided tour of the impacted area I would be willing offer my time to conduct the tour. Your staff can park at my home and we can take my 4wd truck into the valley. We can examine all of the critical impact points between the Hana Highway and where the Honopou Stream enters the ocean. Sending someone familiar with civil engineering issues would be wise since getting a grip on the bridge soundness should be a very high priority.

We will attend the community meeting this afternoon at the Haiku Community Center. Besides this mailing I will hand carry a copy for your staff.

Sincerely,

  
Lafayette Young



Addendum to the above letter, 24 February 2017.

There will be unintended consequences when and if EMI is allowed to restore certain streams to their full potential. The EIS must address these unintended consequences. A minimum condition that must be imposed on EMI and addressed in the EIS would be EMI's accepting and assuming and indemnifying the risks to down stream property owners from stream inundation and any damage or loss of access to their land and homes. Restoring certain stream flows to 120 year old levels will, in certain low lying areas, re-define the stream bed. Added to this new paradigm will be the impact of storms and freshets on improvements in the low lying areas of the affected valleys. Certain non-governmental civil works likes bridges and their approaches may also be at risk too. EMI should not be allowed to walk away from these potential problems without indemnifying the affected land owners and users from loss and enjoyment of their properties.

9 March 2017

Mr. Earl Matsukawa  
Wilson Okimoto Co.  
1907 S. Beretania St., Suite 400  
Honolulu, HI 96826

RECEIVED  
MAR 13 2017  
WILSON OKIMOTO CORPORATION

Subject: Stream restoration at Honopou, Maui. EIS

Dear Mr. Matsukawa;

The Hana Hwy. in its present alignment at Honopou was constructed in the early 1940's.

The Federal Aid Project map is FAP 32AC1.

The highway essentially dams Honopou valley with the exception of the natural flow of the Honopou Stream.

There is a single concrete conduit built-in to the Highway base to accommodate stream flow and freshet volumes. I would imagine that the design engineers used stream flow data provided by EMI. Co.

The basic assumptions may be flawed since EMI's data would not have accounted for all the water that they were with drawing upstream. If the Honopou Stream is restored to it's full natural flow rates the conduit may be overwhelmed during peak flows. We have seen this occur multiple time when limbs and trees flow downstream and partially block the conduit. Several upstream properties are at risk!

I believe that the EIS should address this issue.

Once the water flows under the Highway there are still the un-intended consequences to the bridge and downstream properties. These too should be accounted for.

Sincerely,

  
Lafayette Young





10238-02  
September 23, 2019

Mr. Lani Young  
[Redacted]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Mr. Young:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated February 23 and March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS assesses flood hazard impacts associated with the Proposed Action in Section 4.3.3 of the Draft EIS.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process

Sincerely,

  
Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

Environmental Impact Statement Preparation Notice  
Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas  
Scoping Meeting Comments of

Mr. Lani Young

February 23, 2017

Ha'ikū Park and Community Center

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. YOUNG: Well, this one, it comes from knowledge. (Hawaiian.) As we help others, we will find help for ourselves. Hawaiians lived in two distinctive areas of the islands: Those who lived near the shoreline, those who lived in the uplands. Goods traded with one another, those goods only available in their own area, this system created a mutually beneficial relationship that supported sustenance, living.

This one comes from the heart. Like the veins that flow your blood through the human body and feeds the limbs is the water that flows through the valleys and feeds life among us. You stop the blood flow, the arm, the leg, the brain goes dead. You stop the streams from their natural flow, life around us suffers. The only native (Hawaiian) will diminish. The only true native opai will be sacrificed. For what? The river mouths, or (Hawaiian), as it is called, is a place of birth. Like the wound, you stop the flow to the wound, you stop the beginning of life for many, many species, species that bigger species depend on for survival. Species like us. But who cares about all this when you can have money in the bank? Is this right? Is this pono?

I oppose redirecting 150 million gallons of water per day from East Maui. By the mile marker 10, Waikane Bay once had a water fountain that was an underground spring. You and the other money-hungry corporations took that for your profit. Everybody who drives on that, everybody that lives on the island and the visitors use that water to sustain their life. The County and State government, they all fall in the same corporation. So the reason why they wanted to destroy it is because the road needed to be more wide, and also for their profit. Give back what the corporations stole from the community. So I say no to the 30-year lease. We don't need development and added progress, nor diverting or transporting of our water. It's not the government's water. It's ours.

Aloha. Thank you.





10238-02  
Letter to Mr. Lany Young  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Mr. Lany Young  
Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Young:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Section 1.3.4 of the Draft EIS discusses the Commission on Water Resources Management's (CWRM) Interim Instream Flow Standard (IIFS) Decision and Order (D&O) and the authority of the BLNR to issue a Water Lease for non-instream uses pursuant to Hawai'i Revised Statutes (HRS) § 171-58, that is subject to the IIFS set by CWRM.
3. For the purposes of this EIS, diversion quantities from the CWRM D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area.
4. Cultural Surveys Hawai'i, Inc. prepared a Literature Review and Field Inspection report of the License Area (Appendix E) as well as a Cultural Impact Assessment (Appendix F) in support of the Draft EIS. These studies are discussed in the Draft EIS in Section 4.5 Historical and Archaeological Resources and Section 4.6 Cultural Resources.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

5. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).
6. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action and alternatives on indigenous freshwater species, and terrestrial flora and fauna, respectively. The Draft EIS discusses the impacts of the Proposed Action to freshwater species in Section 4.2.1 and impacts to terrestrial flora and fauna in Sections 4.4.1 and 4.4.2. Both reports are appended to the Draft EIS (See Appendix A and Appendix C).

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Larry Koss

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. KOSS: Thank you for doing this and for the manner which you're doing it. It's very supportive. My name is Larry Koss. I live in Wailuku. I'm a member of the Maui Farmers Union -- the Hawaii Farmers Union, although I'm not a big farmer. I'm a backyard bachelor farmer. My -- I don't have all the details, the specifics that some of the people here have, but I would like to draw a distinction between a couple of things that I think would be helpful in the process. One is a distinction between systematic remediation and shifting of context.

FACILITATOR SENELLY: Say that again.

MR. KOSS: Systematic remediation, which we're doing here --

FACILITATOR SENELLY: Right.

MR. KOSS: -- dealing with water. Right? And addressing the underlying context that's driving this in the first place.

FACILITATOR SENELLY: Okay.

MR. KOSS: Because we could be -- we could be addressing this issue now in February 2017, if we don't deal with the underlying context, we could be addressing it again and again and again on the diversions. Right? The other is the notion of sustainability. And when that concept first came out, I was on Orcas Island in '96 and I published a journal, a 60-page journal that we delivered to the entire San Juan Islands of 14,000 people and it draws a distinction between -- I don't use the word sustainability anymore.

Most people don't know what it means, it's been manipulated and abused, and truth is: Who gets to be sustainable? Is it the top 1 percent of 1 percent? And do sustain all the people that are -- all the people that are homeless or without food, does that number sustain itself and keep on going? So the term that I use is whole community well-being.

FACILITATOR SENELLY: Whole?

MR. KOSS: Whole community well-being.

FACILITATOR SENELLY: Thank you.

Scoping Meeting Comments of Mr. Larry Koss

Page 2

February 22, 2017

MR. KOSS: There's no wiggle room with that. Either everybody is cared for and it's all in the funnel, or it's not. So I have -- there's a couple of things that come to mind for me. Number one, I think water and electricity ought to be public trust, period, that handles a lot of issues. I think that's a good thing.

And the other is -- this may sound really outrageous, but I -- and I might get choked up doing it. But I have an invitation for A&B that I would like to have it step up to or be compelled to, to step up to, and that is given its history and given what it's done, it's time to clean up its karma and I would like to see that 36,000 acres dedicated to public trust for the local farming, organic farming, and for affordable housing. And that may sound too wild and crazy, but I just need to think that we do one more -- you know, a whole continuing series of these kinds of things across a number of issues 'cause we're not dealing with the underlying context that drives it, so --

FACILITATOR SENELLY: What do you want to see in the EIS?

MR. KOSS: Pardon?

FACILITATOR SENELLY: What do you want to see addressed in the EIS of all the things you said?

MR. KOSS: Well, I don't know if -- any way that that could fit in there, you know.

FACILITATOR SENELLY: Okay. I appreciate --

MR. KOSS: I just throw it out as a possibility.

FACILITATOR SENELLY: Thank you.

MR. KOSS: Thank you very much.



10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Koss:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D);

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Larry Koss  
Page 2  
September 23, 2019

Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**From:** [Wilson Okamoto Corporation](#)  
**To:** [Earl Matsukawa](#); [Kaola Chesny](#); [Rebecca Candillasa](#)  
**Subject:** FW: EISPN: Proposed Lease (Water Lease) for Nahiku, Ke'anae, Honomanu and Huelo License Areas  
**Date:** Friday, March 10, 2017 11:03:43 AM  
**Attachments:** [image001.jpg](#)

**Jeanine S.H.Y. Mortoka**

Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

**From:** Lehua Simon [mailto:[adventuresoffele@gmail.com](mailto:adventuresoffele@gmail.com)]  
**Sent:** Friday, March 10, 2017 10:09 AM  
**To:** Wilson Okamoto Corporation  
**Subject:** EISPN: Proposed Lease (Water Lease) for Nahiku, Ke'anae, Honomanu and Huelo License Areas

Name: Lehua Simon  
Phone: [REDACTED]  
Address: [REDACTED]  
Email: [REDACTED]

Dear Wilson Okamoto Corporation - Attention: Mr. Earl Matsukawa

A&B or any related corporation or other business entities (such as a co-op or a business in partnership)

SHOULD NOT BE ALLOWED TO LEASE WATER

Until the residents of the license areas

(Nahiku, Ke'anae, Honomanu and Huelo)

Are fully provided for in their needs for water.

These residents are not being sufficiently provided for NOW

and they have not been for years that A&B or other related business entities linked to A&B (which have been used to make short term leases adding up to a long term lease) have been obtaining the water using subversive business tactics.

YOU MUST STOP ALL LEASING ACTIVITIES

until the people of this land are compensated and provided for in reimbursement for the incredible detriment that A&B and related entities have caused upon this land for decades.

Furthermore, this EISPN should not be conducted by a corporation that is HIRED BY the corporation that wishes to obtain a lease!!! This is a conflict of interest and it can impact the EISPN process in favor of the corporation. This is not the right way to do this.

THIS IS NOT PONO.

THIS IS NOT PONO.

THIS IS NOT PONO.

AND NOW IT WILL STOP .

THIS IS THE TIME FOR ALL THIS KIND OF ACTIVITY TO STOP .

The Wilson Okamoto Corporation  
MUST SUPPORT THE COMMUNITY OF MAUI  
by stopping the leasing process NOW.

And I will tell you on behalf of all the ancestors that have lived upon this land, that if Wilson Okamoto Corporation does NOT do what is PONO, Wilson Okamoto Corporation will fail to exist upon these islands. It is the only way for spiritual justice now.

SO DO WHAT IS PONO.

DO WHAT IS PONO.

DO WHAT IS PONO.

And all of us will be safe and provided for.

All of us will have the prosperity that we seek.

But if you do not serve what is truly PONO.

The islands will have their way with you.

Because now is the time for justice.

NOW IS THE TIME FOR HO'OPONOPONO

The only thing for you to do for your client in this EISPN process is to bring A&B to HO'OPONOPONO with the communities

Nahiku, Ke'anae, Honomanu and Huelo

THAT IS YOUR TASK

mark my words

if you do not do THIS

you and your corporation will fail

your client's corporation will fail

MAUI and all the islands of HAWAII! NEI

will have their justice.

Mahalo for your attention.  
Lehua



10238-02  
September 23, 2019

Simon  
[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū,  
and Huelo License Areas

Dear Ms. Simon:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSheP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

3. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the DLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.

4. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

#### Leslie Kuloloio Scoping Meeting Comments

February 23, 2017

MR. KULOLOIO: Aloha everybody. We are all related to all the people all the way around the island, and the same water, I'm here to talk about what the EIS should not do. The last time I see an EIS performed was by the United States Navy for the island of Kahoolawe. And when we went inside there, we thought that we had to bring all the people together to bring back what you call Kana'loa, is a sacred place, a sacred place. And when the EIS was done, they did not clean up the island of the ordinance. This will not clean up, the (Hawaiian) of Alexander & Baldwin, who is the Roman empire.

The Roman empire is the guys that came here from the pilgrims, called Americans, came over here and put their feet down at the Sea of Kulolua, which now they are calling Honolulu Harbor. And guess what? We just had a settlement agreement of Alexander & Baldwin who owned and make the molasses, who gave it to Matson, who is on EIS, who is a subsidiary of water, like EMI, done by consulting companies.

I'm going to respect Okamoto. And guess what, they killed all the fishes in Honolulu Harbor by the sugar cane plantation molasses. Let's think big now, let's think big. So did Lahaina Pioneer Inn. So did Wailuku Sugar. All of the missionary families from Connecticut, and Pennsylvania, Rhode Island. You know what Aloha Tower is? Just like the Statute of Liberty: Come, come, come immigrants, come into my land on the Sea of Kulolua, now called Honolulu Harbor. Who fought the war for the Pauwela Lighthouse? Yours truly. And guess what the first used to run. The EMI, EMI is part of the Spreckelsville Beach that haole bought from Waiehu, the grant, the grant, 3343, all the way to Pauwela. That's the railroad. That's the fight land.

So let's talk bigger than that. It is the ending of A & B, on the plantation product of many generations. But A & B pau. Go home, go home. You folks had the aina for a long time. Give back the water. And water should be free for the homeless family in Kahului. The Hawaiians who are homeless, they're all on Alahama Street, down the harbor, they're all over the place. We're all related. We're all ohana, we all ohana. You know what freedom of religion is? Then you'd better know so that your culture impact will affect what you should address.

Why don't you have -- you folks have a cultural person tonight, sir? Well, you'd better. You said you don't have the experience. If you don't have the experience, you don't deserve to be here tonight...

MR. KULOLOIO: And so all I'm saying is that native rights gotta be protected. We had enough. We had enough. Our ditches -- I want the Kuiaha ditch to run again. That was the first one they took over to run the cannery, the pineapple industries. Are you listening? And Pauela ditch came all the way down to the lighthouse. Look at the maps. Show me the maps. You know what you don't have? You don't have the map of Maui. All our families are affected. No treat us kanakas (Hawaiian). We food of abundance, we navigators. Make sure you're listening. Put it down in your notes. We navigators, we farmers, we gatherers, like all you said, and we protectors, and we are really just people. That observatory on top there need to come down, in Halekala. You know why? It get Inouye's name on top there.





10238-02  
September 23, 2019

Mr. Leslie Kuloloio

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Kuloloio:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, on indigenous freshwater species, and terrestrial flora and fauna, respectively. The Draft EIS discusses the impacts of the Proposed Action to freshwater species in Section 4.2.1 and impacts to terrestrial flora and fauna in Sections 4.4.1 and 4.4.2. Both reports are appended to the Draft EIS (See Appendix A and Appendix C).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

You folks listening? And one mayor said the rocks are not sacred. What? Then the water is not sacred. In the name of the Father, Son, I baptize you in the name of the Father, Son and Holy Ghost. So let's do a cultural impact. Let's talk Hawaiian religion. Have Hawaiian religion here, it's about time. And the fishermen are Hawaiian religion, yeah. They treated us like the teepees. They took away all our abundant places. Everybody say: (Hawaiian.) That's the gill of the fish that travel. We are related to the fishes of the world. The fish go around the world. We don't stay in swimming pools, we don't stay in those aquariums. Our family go around the world. Okay?

And guess what, say: (Hawaiian.) We seek knowledge from the gills of the fish. That's who we are, (Hawaiian). And the ocean is part of us. We navigators, we gatherers, we know what is the reefs. We don't need one haole tell us guys how to protect the reef. But you know what, thank you folks for listening. I'm kind of P-ed off. You know why? This process is one insult.

Thanks. Mahalo.

10238-02  
Letter to Mr. Leslie Kuloio  
Page 2  
September 23, 2019

4. Cultural Surveys Hawai'i and Earthplan prepared reports in support of the Draft EIS assessing the cultural and social impacts of the Proposed Action, respectively (See Appendix F and Appendix G). The impacts of the Proposed Action to traditional cultural resources and practices is discussed in Section 4.6 of the Draft EIS while impacts to the social environment can be found in Section 4.7.

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

---

**From:** [Wilson Okamoto Corporation](#)  
**To:** [Earl Matsukawa](#); [Ksida, Cheryl](#); [Rebecca Candillasa](#)  
**Subject:** FW: EISPN: Proposed Lease (Water Lease) for the Nahiku, Ke'anae, Honomanu, and Huelo License Areas  
**Date:** Monday, March 13, 2017 9:16:27 AM  
**Attachments:** [Image001.jpg](#)

---

**Jeanine S.H.Y. Morioka**

Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

**From:** Lipoa Kahaleluahi  
**Sent:** Friday, March 10, 2017 9:24 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** RE: EISPN: Proposed Lease (Water Lease) for the Nahiku, Ke'anae, Honomanu, and Huelo License Areas

Aloha kakou,

My name is Lipoa Kahaleluahi. I write this brief email as a child of the next generation remembering the ongoing fight for water to be restored in the above mentioned streams since I was a little girl. My family hails from the other side of the Hana district, from Koali, Kipahulu and Kaupo, yet as a moku, a district, we know when and how to unite as one community. And at this time, this issue of a proposed water lease of 30 years is such a time.

My concern is that an EIS on these streams within our ahupua'a will not be thorough nor substantial enough to paint a clear picture of the needs within our community. Don't misunderstand my message; I am not entirely against the sharing of our resources to the communities that are now developed and live off of this water (Upcountry in particular). I write to express that these waters must be better accounted for, so that our communities on the east end suffer no longer. I am with the kalo farmers, as I am a part of restoration projects in Wailua Nui. It's not just about streams being restored; it's about being able to monitor and "control" the auwai or water systems into lo'i so that kalo survives. It cannot just come and go as someone else pleases. Please, come to Wailua Nui, to Ke'anae and see. Please, go up mauka to the forests and take data of how our native forests, birds, and natural habitats are affected by

002448

the inconsistent flow of our streams. Past experiences and years of inconsistency and organizations left unaccountable for their actions is unacceptable.

We are island communities. We cannot survive without water. Yet, our water is a finite source and it is being treated - A&B and EMI are treating it - like it is an infinite source. This EIS cannot be a mere checking of the boxes. It must contain stories, quotes, cultural, ecological, and scientific data from Ke'anae to Kaupo. It must state how concerned our island community is of the development of the once sugarcane lands. Add these concerns to the EIS and you will find that a 30 year lease is absurd. It will not lend the amount of accountability necessary to ensure the security and sustainability of our 'aina.

With sincerity and deeply rooted concern,  
Lipoa



10238-02  
September 23, 2019

Ms. Lipoa Kahaleuahi  
[Redacted]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Kahaleuahi:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including discussion of alternative lease terms.
3. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
4. For the purposes of this Draft EIS, the stream list used was from the Commission on Water Resource Management's (CWRM) June 20th, 2018 Interim Instream Flow Standards (IIFS) 1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

Findings of Fact, Conclusions of Law, & Decision and Order (D&O) which is discussed in Section 1.3.4. The D&O IFS were also used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area.

5. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

  
Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



**SUBJECT: EISPN: PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS – SCOPING MEETING, FEBRUARY 22-23, 2017**

Aloha KāKōni,  
I am submitting written testimony concerning the diversion of water. I have several questions regarding the proposed water lease: what are the intentions for the diversion? We have all seen how big diversified ag on O'ahu has lasted after the release of Waiahole River... it quickly turned into housing developments. How long are we planning to lease for diversified ag? I believe that the attempt to secure the lease, it is not for diversified ag, but a ploy to secure the water for development. Until last year's legislative session the permit that EMI was operating under was 'ILLEGAL'. It is time for the govt to stop catering to corporate interests and fulfill the needs of the community you are mandated to serve.

(include additional sheets as necessary)

PLEASE PRINT: Name: Lisa Ann Touchi Phone: [REDACTED]  
Organization: HOOKANE, HONTAKO 'OHANA  
Address: [REDACTED]  
Email: [REDACTED]

Please submit comments by March 10, 2017 or email [woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

\*Receipt of e-mailed comments will be confirmed via e-mail. If you do not receive a confirmation message, please contact our office (see contact information, above).



10238-02  
September 23, 2019

Paahi  
[Redacted]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Ms. Pauahi:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated February 23, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process  
Sincerely,

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Lisa Ann Pauahi  
Page 2  
September 23, 2019

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Lloyd Fischel  
February 22, 2017

Maui Electric Company Community Meeting Room  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. FISCHEL: And I think it should address what is happening to the water today? From the time that the farming of sugar cane stopped to today, what is happening to that water? Is it being dumped? In a world where water – people die for water, is it being dumped? We should know.

MR. FISCHEL: Thank you, ma'am. Just a few, a few things I'd like to see the EIS address. Of course, I'm a farmer and we all have to recognize that most of the food that we eat, maybe even more than 90 percent is imported. And being where we are, given the problems in the world today, given what could happen to the cost of petroleum, of oil, of energy, this decision must reflect an understanding of the importance of small farms growing food for Maui.

It's insanity to think of giving all that water to one company, one company that has not been a good partner with small farmers over the years, one company that has spewed lots and lots of chemicals into the air, into the ground. One company that's in partnership with who? Monsanto. It's insanity to think that they would get this water and that we would call it the people's water, that we would think that the water then would be used for growing crops. As Mr. Balthazar said, it's so important that this water must be used for agriculture and not developments.

And the second thing I want to mention is in the -- in the documents that have been put forward up to this point, as in the screen presentation earlier, the word "state owned land" was used. The EIS should address: What does that mean, state owned land? Who is the state? And where are the Hawaiian rights within that concept of state owned land? And any of you working on this EIS that can talk about having Hawaiian friends and loving Hawaiian people and loving Hawaiian culture that don't then address this issue, it's really a (inaudible).

And the second thing is in this -- words that have been used here in these papers and in the screen as well, "government owned waters." It said government owned waters. I'd like the EIS to define what does that mean, government owned waters? Thank you.

FACILITATOR SENELLY: Okay. You had two things. The first one was -- the first one was make sure that the -- you want the EIS to address having the water go to small farmers or, you know, like diversified and small farmers and not just industrial type; right? And the second thing is define what state owned lands means and also define what state owned water means. Okay.

MR. FISCHEL: I'd like to add one more thing to that, please.

FACILITATOR SENELLY: Okay.



10238-02  
September 23, 2019

Mr. Lloyd Fischel

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Kē'anae, Honomanū  
and Huelo License Areas

Dear Mr. Fischel:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Kē'anae, Honomanū, and Huelo License Areas and your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Kē'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an Agricultural and Related Economic Impacts Report (See Appendix I), an Economic and Fiscal Impact Analysis Report (See Appendix H), and an Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A).

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Lloyd Fischel  
Page 2  
September 23, 2019

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas**

**Scoping Meeting Comments of**

Mr. Lorrin Pang

February 23, 2017

Ha'ikū Park and Community Center

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

**MODERATOR SENNELLY:** All right. First speaker, Dr. Pang.

**DR. PANG:** Thank you. There's nothing special about speaking first. I was -- there was a glitch. I wasn't speaking last night. Not their fault, not my fault. So I'm really last from last night, I'm not first from tonight.

**MODERATOR SENNELLY:** It actually was my fault.

**DR. PANG:** Okay. That's all right. The EIS, you know, I think they should address some real, how shall we say, radical things, things that we think are impossible, for a couple reasons that really are good and they're a little bit far out. But we shouldn't just look at what we do now and say, well, you know, these ten guys, let's give more to him, he'll be happier, he'll be mad, and throw a bone to the fighting dogs. You shouldn't look at your status quo and argue about the money and the water right now. And to put this in perspective, you know, I have to give you my background. I'm not from this side. I'm not fighting for East water. I fought for the Na Wai 'Eha water. So this -- I have no conflict of interest in here. So sometimes people will say, well, then shut up, you're not a stakeholder. Sometimes the best people are those who have no conflict of interest and are interested enough to give a fair assessment.

You don't think that's true? I have reports from Big Island people, Kauai people, who look at this and say, we have no stake in this game, so let us give an opinion. My background opinion is, already last night, they said "share the water," "share the water," "share the water." You want to know what share is? Really? To the Big Island people, the Kauai people and the Na Wai 'Eha impacted people, they said here's what share is, somebody took our water for 120 years, they took 95 percent at some cheap cost. So that's your time. Now it's time to share. The East Maui guys get it for 120 years, and then when it's 120 versus 120, let's --

(Audience clapping.)

**DR. PANG:** Stop that clapping, because people who don't get clapped for feel bad. So now when it's 120 versus 120, then we talk about sharing. But with that in the background, let me give something kind of practical, some far-out things which you think are impossible because we haven't done them for so long, it must be impossible. First of all, can we feed ourselves? And I don't mean ag, ag, I mean food, food, food. Now if you want to say Maui, Maui. If you want to say can we kind of feed Oahu, ship some stuff over there, fine. But Hawaii has to be food self-sufficient. Okay? That means chemical --

(Incomprehensible due to clapping.)

**DR. PANG:** The minute we say, oh, look, I made so much, I shipped it out, and I'm on the world market; and then the world market gets undercut, then all the macadamia nuts get buried, et cetera, Et cetera. So feed ourselves first. Now I know you're going to go through the details, and, oh, that's so expensive. Well, food security, security costs a little more money. Okay. So that's what I wanted to address. Next thing -- there's only three things. Next thing I want to say is when we feed ourselves, can we do it based on smaller farmers, startup, diversified, no spray. And if you say, well, gee, I just saw the report where that's just unfeasible, well, I'm sorry, I've prepared a report, I'll give it to you 2011, I visited the Big Island guys called Wild Tomatoes. That was just a practice to show that homestead land guys had a terrific operation. It was published in the on-flight magazine. And that was just a test to show they could do tomatoes. They're going to convert to taro, high-fiber carbs. The guy's wife is off insulin because she helps a little bit in the garden. They can do it. The financial is sound. They're hiring their own family to distribute on Oahu. It can be done. The technical part is in the report, four pages. So look at that. Don't just say, well, we're going to feed ourselves and the big corporate guys say we can't do it, so we can't do it.

There are alternatives. We used to. We used to do this. And the final thing is -- I really have to say this. And here's something, you say, well, that's impossible, we never did that before, here's one we never did before. But outside of Hawaii, water, fresh water, potable water, water for ag, is like gold, it's like liquid gold. And people look at Hawaii, and they say, oh, look, every time it rains here, the muddy water chokes the reef, the muddy water chokes the reef. Why don't you guys catch it. So the Na Wai 'Eha -- that's the other side, right. The Na Wai 'Eha report said you catch the 17 rainiest day of Wai 'Eha -- I'm not talking about just the water on the east side -- you put it in a big -- I call it the dam, and my wife said call it the reservoirs. You put it in three big reservoirs. You don't let the water dirty the reef. I checked this with the Sierra Club. Maybe we should go natural. The water is so muddy and dirty, it's hurting the reef. Hold it, and that's more than enough water for everything you can imagine for the near future. But you have the 800-pound gorilla. You got that much water? There's no fighting? I'm going to move in. I cannot solve the 800-pound gorilla, but this has some beautiful concepts to it. Locate the reservoirs where you want, near the ocean, so when they break, like, you know, the California dams, you don't flood out people. Put it low, pump up the water with solar energy. No battery. Just pump it. When the sun shines, you pump it up. And you control the damage to our reef. And what happens to this? How we talking about the east side water? Technically, now it comes into play. Now to share your chance to get it, I feel bad about diverting clear water. Clear water should flow in the streams when it's driest and needed. But if your side here generates dirty water -- say Haiku is developing, every time they flood, wow, look at that, look at what we did to the reef in Haiku. Divert that. Maintain enough EMI system so that all the dirty waters about to choke the reefs, whatever, goes into these holding reservoirs, settle it, pump the water high to the Kula when you need it.

Now all this stuff is like, yeah, great pie in the sky. But, you know, that's how things get started. I'm not asking for tomorrow, where the Kula guys say, well, no water. Give them the status quo. But I want to

see some progress moving to some things that are worthwhile. For 35 years, all we do is fighting and, oh, that's your stream, that's your stream, and we never move at all. I can guarantee you to fund the reservoirs, I think there's \$350 million per billion-gallon reservoir. You can float a bond. If you can float a bond for the Super Whale that's never going to be self-supporting, you can surely float a bond out of state, because fresh water that's potable, that's usable for ag, is like gold. But I only like this if your EIS says long-range plan. I want to see every three years, we're moving forward, moving forward a little bit more towards the idea that we choose. Otherwise, it's so frustrating. And I'm a patient guy, but I like to see a little progress, sincere progress.

Thank you.

MODERATOR SENELLY: Thank you, Dr. Pang.

Trip Report to WOWFarms, Waimea Hawaii  
2 November 2011  
From: Lorrin Pang representing Maui CPPW

I visited Trisha and Mike Hodson of WOWfarms ([WWW.wowfarms.com](http://WWW.wowfarms.com)) in Waimea (Big Island of Hawaii) the afternoon of 28 Oct 2011. The article in the Oct/Nov of Hanahou Hawaiian Airlines magazine talks about their achievement but barely touches the surface of the obstacles they had to overcome to get there. The purpose of my visit was to determine their "business model" used to become successful. We queried key Maui CPPW members for questions which are answered in the text below. If I forgot to address any please call me and we can discuss.

This farm project is really the brain-child of Mike, who has no formal education beyond high school where his main focus was on football. He had no mentors who taught him farming at anytime in his life. In fact he had obstacles discouraging his proposed organic techniques. After high school he worked about 25 years with the police as a crime/narcotics investigator. Throughout this time he coached high school football. Five years ago near the end of his career he felt "burned out" and began gardening to relieve his stress. He built one 20' X 100' "greenhouse" on their 5 acre homestead property and began to raise tomatoes. The UH College of Tropical Agriculture and Human Resources (CTAHR) held a \$250,000/year contract with Hawaiian Homestead Lands to get homesteaders to farm (only 3 of the estimated few hundred in Waimea actually farm) and they told him he absolutely needed pesticides (spraying) to grow tomatoes. Mike was also helping his relatives spray pesticides on their tomato farm and despite full protective suiting had his feet burned repeatedly from the pesticides. From his football and anti-narcotics experience Mike likes a challenge and decided to show CTAHR and his relatives that he could grow organic tomatoes in the soils (as opposed to aquaponics) of Waimea.

Only five years ago Mike and Trisha started with one greenhouse to grow tomatoes in the soil, studied and solved problems on his own using information on the internet, "trial and error", and a good deal of observation. My note; this is an important, often forgotten discipline called empirical science which depends upon statistics (biostatistics for biological systems)

as the academic cornerstone. He had no grant money but started on a relatively small scale. He initially sold tomatoes at farmer's markets and as word spread demand picked up to restaurants. He reinvested to two to four then to eight green houses each time doubling his production. During this phase he had disastrous crop losses three times. Often Trisha wanted to quit – but each time Mike tinkered with the conditions and moved forward with modifications which proved successful. He now has about 36 green houses and will go to 54 soon. He now ships overnight by barge to Honolulu and produces about 8000 pounds of tomatoes per week. He has a several family members working with him, including those in Honolulu to handle receiving and distribution of his tomatoes. He says the current demand is more than double of what he could produce. He is “organic” but avoids “certification” since that process would take 1% of the profits. While retailers need certification for “organic labeling”, Mike says that restaurants don't. But chefs do come on his property to see what he does. Mike sees a more long term negative effect of pesticides – they poison the soil (good as well as bad microbes) and his children will forever be obliged/addicted to use them. He currently sprays when absolutely necessary with three things: Sulfur compound, Neem, and something else I cannot recall. As far as soil preparation – his soil was never used by plantations but pasture for grazing cattle. He does occasionally bring in composted material from Waikoloa, which has a large composting program as part of their green waste disposal. In addition he tries to compost at his farm, but decomposition is slow due to the cool climate. He feels that composting is not really essential for nutrients but it does help “loosen” the soil.

An example of Mike's meticulous “scientific” approach is the decision to go to wider greenhouses (20 to 30 feet width) to increase the air circulation, which in turn affects temperatures and reduces crowding of the plants. This modification is a large undertaking and will be done first to a few green houses with the effects carefully studied. All his practices, from the tilling of the soil, composting, density of covering screens, etc have been learned from trial and error (empirically). Ideas might have originated from the internet but whether they have value under his unique conditions can only be learned from observation.

He grows other crops, English cucumbers, Kalo and native sweet potatoes (uala) on a smaller scale for use by his extended family. Between two covered green houses we came upon a massive jumbled, impenetrable patch of very healthy dry land Kalo with stalks several feet tall! Mike said this

was all kinds of white (kea) varieties and was to be harvested soon by his extended family. I have never seen anything like this. Next he took us to an unprotected, seemingly abandoned plot (maybe 400 square feet) where he had planted and was harvesting 24 native varieties of uala (excluding the Okinawan type). Mike's goal with this plot was to share with potential farmers that even with minimal care uala could grow (that there is no excuse not to farm something). Mike's next five year plan is to grow so much Kalo on homestead land that it becomes as cheap as rice. We talked about the health value of high fibre carbohydrates (kalo, banana, ulu and uala) versus low(er) fibre carbs (white rice, bread, potatoes, etc). Mike says that commercial kalo farmers may worry about the low price if homesteaders undercut the market – but in the name of culture and health he would press on.

Trisha's diabetes responds well to high fibre carbs and sugar reductions (technically carbs are sugars linked together and released slower than the big blast of a sugar sweetened beverage) – and she has gone on a diet with Uala as her carbohydrate. She and Mike say that pounded uala was a Hawaiian staple equal or more common than kalo/poi. Hence the uala patch described above. He said that Kalo master Jerry Konanui will soon be studying/working on the native uala varieties to grow and promote their plantings.

CTAHR is trying to return to Mike's place now to study how/why he was so successful. Mike questions the status of their contract with Hawaiian Homestead lands given the low farming rate and their reservations about alternative approaches, till shown to be successful.

In summary, what the Hodsons have done in such a short amount of time is nothing short of miraculous, both scientifically and from a human perseverance point of view. That they had to do this against a backdrop of negative advice from “seniors” is unfortunate. They seem to have the spirit of teenagers but the wisdom of elders. But most inspiring is that their hearts are in the right place and they will be doing the right thing with the best intentions. Under these circumstances we can be honest and straightforward in our communications. We should be honored to work with them and look forward to future collaborations.





10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū and Huelo License Areas

Dear Mr. Pang:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas, your oral comments at the February 23, 2017 EIS Scoping Meeting, and your written comments dated February 22, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Lorrin Pang  
Page 2  
September 23, 2019

be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your oral and written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

Enclosures

cc: Suzanne Case Chair, Department of Land and Natural Resources  
A&B / EMI Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Lucienne de Naie  
February 23, 2017  
Haʻikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. DE NAIE: Mahalo. My name is Lucienne de Naie. I've lived in Huelo for 30 years. Me and my neighbors are the ones that kind of started this process, along with the folks in Nāhiku and Kēānae and Wailuanui, and we've been waiting for more than 20 years for this EIS. So I'm going to speak to what I think should be in the EIS exclusively.

First of all, this is not about taro farmers and rural residents versus upcountry farmers and residents. So the EIS should be very clear that there may be alternate ways for folks upcountry to get the water they need. And we all support the ranchers and farmers having water, the ag parks, the Department of Hawaiian Homelands, and even folks that want to farm in Central Maui. The thing is how. And this EIS needs to look at real alternatives of how. We need to see if there should be crops that would use less water. We need to see if improving our soil would mean that all crops need less water. We need to take a hard look at the stuff that would affect how much water we use.

We need to look not at the status quo, as many people have said, but the existing conditions and impacts, and there are many. And we need to address the impacts of our overgrown streams. We see this in Huelo. Just letting the water out is not going to solve the problem. Someone needs to take care of those streams. The EIS also needs to have better maps. The maps, you know, they don't meet the standards that you're going to need to have information. First of all, there are not 39 streams. The decision and order of the hearings officer has named 43 streams in the lease area. And there are more if you count the tributaries. But these main 43, I suggest you look at his decision and order. It's being used by everybody. There are not five streams being proposed to be restored. There are eight streams, and they are by name. And I'm not going to take time to name them, but if I turn in written stuff, you'll get their names. The EIS needs to look at alternative management plans, like several other people have said, and look at the economic side of it. So what else could be done. Could we have these smaller leased areas? Could we have partnerships in leasing the land? Does it just have to be the one, you know, big banana there, A & B? You really need to take a look at that. The three alternatives are not enough. The EIS needs to look at alternatives for managing the watershed lands.

Let me tell you, boys and girls, we're not going to keep having water unless we take care of the lands. It's like in 30 years, I've seen them go so downhill. They're not going to produce the same amount of water. So we'll be fighting over less and less. We need to grow water and grow our care. And that needs to be examined in the EIS, what the strategies for that would be, how much it would cost, because it's part of awarding any leases, the kuleana part.

The EIS needs to have specific stream-by-stream information, both historic use and proposed diversion. We have no idea what's being taken out of these streams. That needs to be in the EIS. There also needs to be specific info on how much water is derived from the streams that are outside the lease area. And those, you know, we can list those, too, but there's dozens of streams that are not in the lease area that all go to A & B right now and are part of their, you know, potential water source. But we don't know how much that is. So they're asking for 115 billion on top of all those? That's just like double dipping.

I'm getting to the end. The last thing we really need to look at is the upcountry water system the county has. This water system is being very inaccurately portrayed in the draft prep notice.

First of all, there's no map that shows that the County's two-pipe system was supplied. Half the water, they use in the upcountry system. So all the farmers and ranchers that want water, the Hawaiian homeowners, that's the water that's sent to them. The Kula pipeline, the lower one and the upper one, they are not on your maps. They do not go in the lease area. They go to streams, they go to five streams, four streams in East Maui. They do not go in the lease area. So half the County's water is not even affected by this lease. The EIS should make that very clear, and it should analyze what the wells of the County produce. They're barely using their wells. Half a million gallons a day for that Dowling well. I read the well reports. I don't see any information like that, you know, even proposed to be discussed. It should be in there, and I will write some comments.

And I'm going to conclude by saying that if you put all this information together correctly, you will understand what really needs to be taken from East Maui streams, and that number is going to drop a lot lower, and then we can talk about how long the lease should be. But 30 years, I think should – there should be alternatives, like fish and wildlife and others that have suggested. 30 years is not the only number that should be discussed. And public access to the lands needs to be discussed, too, as has been brought up by many others.

Thank you.



10238-02  
September 23, 2019

Ms. Lucienne de Naie

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Ms. Naie:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS will assess anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.3, a description of the Upcountry Maui Water System. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Lucienne de Naie  
Page 2  
September 23, 2019

3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including a discussion on alternative water sources, lease area, and ownership.
4. For the purposes of this Draft EIS, the stream list used was from the D&O which is discussed in Section 1.3.4.
5. The Draft EIS will include in Chapter 4 an assessment of the impacts of the Proposed Action. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
6. For the purposes of this EIS, diversion quantities from the D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area.
7. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

---

**From:** [Wilson Okamoto Corporation](#)  
**To:** [Earl Matsukawa](#); [Ksola Cheng](#); [Rebecca Candillasa](#)  
**Subject:** FW: EISPN East Maui  
**Date:** Friday, March 10, 2017 3:06:57 PM  
**Attachments:** [Image001.jpg](#)

---

**Jeanine S.H.Y. Morioka**

Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

---

**From:** [REDACTED]  
**Sent:** Friday, March 10, 2017 2:49 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** EISPN East Maui

Aloha Mr Matsukawa,

My name is Lurlyn Scott. I am a taro farmer in Honopou, Maui. I am also a plaintiff in the East Maui water case, previous to me in this very long case was my mother Marjorie Wallett. She passed in 2010 waiting for some kind of settlement.

Please excuse my late admittance of my suggestions. I appreciate you coming to Haiku to face the crowd, Mahalo Nui.

I would like to say I agree with comments made by our Attorneys at NHL, Summer Sylva and Camille Kalama: the Dept. of Fish and Wildlife. The impact on taro farmers and their families, stream degradation, silt at our favorite fishing grounds, the loss of o'opu without the natural flow of our streams.

East Maui Irrigation has finally admitted to dumping water that they cannot or have no use for into Honopou Stream. This has caused the inability for our family to utilize for swimming and gathering and to maintain the stream.

My family was not able to farm due to the lack of water especially during the summer months. Taro would rot or not grow sufficiently. This was a financial and nutritional loss to

our families. That to me is an impact.

When hiking in the forest we have noticed o'opu that were stuck in the closed ditches with out much water. We need to take this into account, please.

Because we have been found by the internet we have been bombarded by tourist when the weather is good. They trespass onto private property up stream and leave their rubbish and who knows want else and some end up in our auwai. So the impact of tourism is a concern of mine.

We were once told by the BLNR to work together with East Maui Irrigation and kind of get along, I would like to see more of that happen.

Hogs have been a problem so I guess that's part of invasive species.

Mahalo for your time.

Lurlyn Scott

Honopou



10238-02

September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Lurlyn Scott:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C);, Historical Structure Assessment (See Appendix D);

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277



10238-02  
Letter to Lurlyn Scott  
Page 2  
September 23, 2019

Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

3. Truttia and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
4. The Draft EIS discusses impacts to hydrology associated with the Proposed Action in Section 4.2 of the Draft EIS as well as the reports various technical reports prepared for the Draft EIS, including: Assessment of Streams and the Ocean Water Chemistry (See Appendix A); Terrestrial and Flora and Fauna Report (See Appendix B); and Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix C).
5. Cultural Surveys Hawai'i, Inc. prepared a Cultural Impact Assessment for the Draft EIS which assesses the potential impacts of the Proposed Action on native Hawaiian traditional and customary resources and practices. (See Appendix F). Impacts to agriculture, including traditional agriculture, are discussed in Chapter 4 of the Draft EIS and the Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**From:** [Wilson Okamoto Corporation](#)  
**To:** Earl Matsukawa; Keola Cheng; Rebecca Cundliffe  
**Subject:** FW: Testimony. Water diversion.  
**Date:** Tuesday, March 14, 2017 8:06:28 AM

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: madeline migenes  
Sent: Monday, March 13, 2017 5:05 PM  
To: Wilson Okamoto Corporation  
Subject: Testimony. Water diversion.

Madeline Migenes

Aloha,

I am writing to urge you to respect the water rights of the Hawaiian and original residents of Huelo, Nahiolo, Kipahulu and Hana.

Alexander & Baldwin (A & B) must

Cease to withhold water from these residents and farmers. It has not been pono or right action to favor corporation over the collective for water use and diversion.

I agree with the position of the Sierra Club and Together for Maui.

Mahalo.

Madeline Migenes, MFA

002462



10238-02  
September 23, 2019

10238-02  
Letter to Ms. Madeleine Migennes  
Page 2  
September 23, 2019

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

Migennes

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'e'anae, Honomanū  
and Huelo License Areas

Dear Ms. Migennes:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'e'anae, Honomanū, and Huelo License Areas and for your written comments dated March 13, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Ke'e'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Diversion quantities from License Area are based on the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). The D&O used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning  
1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

002463



10238-02  
September 23, 2019

ple

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Kanakaole:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated February 25, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

From: [Wilson Okamoto Corporation](#)  
To: "Madelynn"  
Subject: RE: A&B request for Water Lease from East Maui  
Date: Monday, March 6, 2017 9:05:50 AM  
Attachments: [Image001.jpg](#)

Dear Ms. Kanakaole,

This is to acknowledge that we have received your email comment on the subject EIS Preparation Notice. Your participation is appreciated.

**Jeanine S.H.Y. Morioka**  
Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

From: Madelynn  
Sent: Saturday, February 25, 2017 4:46 PM  
To: Wilson Okamoto Corporation  
Subject: A&B request for Water Lease from East Maui

I am one of 325 people who signed affidavits proving who I am as a native kanaka maoli. Affidavits have been sent to county, state, federal and congress levels of law on my behalf by my grandfather Eric Kanakaole. In the early 90s my grandfather and his cousin Edward Kaiwi exercised their mineral rights and shut down a portion of E.M.I's water contraption. The act made local news on KGM 9. Point is 10,000 acres of East Maui land has been returned to my family and 30 other family heirs of Queen Emma. The water A&B is requesting for continues to be stolen by A&B themselves. Part of the stolen water comes from the 10,000 acres I mentioned before which means EMI and A&B are stealing from my Ohana. To this day we know A&B has only 32% stake of the water. So that means from all the decades A&B have been mishandling their stake there is still 68% unaccounted for. 68% of money over decades of thievery not accounted for which is owed to Kanaka Maoli, more specifically, to the 325 signees on affidavit. So no. No is my response for A&B's request for water from East Maui. And I will continue to defend my land and mineral rights by paper already on record.

002464

Scoping Meeting Comments of Ms. Mahealani Wendt  
Page 2  
February 23, 2017

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Mahealani Wendt  
February 23, 2017  
Haʻikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

My name is Mahealani Wendt. I'm a board member, I'm also a board member of Na Moku Aupuni 'O Ko'olau Hui. As a founder and executive director of the Native Hawaiian Legal Corporation for 32 years, I filed the petitions to set interim instream flow standards for all the streams within Koolau on behalf of Na Moku. This was in 2001. In a free and Democratic society, we should all have a reasonable expectation that the rule of law will apply and result in a fair and -- fair outcome, a fair and just outcome for all disputants. This is how we have been taught things operate in a free and Democratic society. A & B's last long-term lease expired in 1986.

From 1986 until 2016, when the legislation passed, when the legislation passed the so-called permit, A & B operated outside the law for 31 years. From 1986 until 2016, it had no valid permit. And you know, it's, you know, kind of an outrage. But more than that, I think when things like that happen, as people, as citizens, we lose respect for the law. They lose heart. They feel like they cannot trust. So, you know, as yourself, as consultants and other decision-makers go through this process, please consider this. Because, you know, honestly, I feel like we're being herded into another process with a predetermined outcome. A lot of us feel that way. You know, you tell us that, you know, it's going to open bid and all of that, but there is every appearance, especially given the history, that, you know, A & B is going to get the lease and that the politicians and the people at DLNR Board are inclined to push it through, the same way they did at the legislature. So this is kind of like editorializing a little bit, but I think these are things that we're all feeling.

Nevertheless, operating outside the law, A & B siphoned every drop of water from the East Maui watershed, while A & B, HC&S, upcountry and other county users enjoyed water, our families went without. You have no idea. We never did not want to share. We always wanted to share. Nobody shared with us. And it was really, really, really, really hurtful, because the origin was right there. We could look at the water, we could look up mauka and see the water, but we couldn't use it. It wasn't for us. And so, you know, it was really, really hurtful. And we went through these processes, and we would hear, you know, the other people who have access to this water accuse us of being selfish and not wanting to share. That was not the case. We didn't have anything. So, you know, so this was the situation and, you know, we were for so many generations, the taro from -- you know, generationally, traditional taro farming went out. There was no water to farm taro. The fishing grounds were depleted. The doctor probably knows, Dr. Lorrin Pang probably knows that in our area, the empty streambeds were nesting places for mosquitoes. It was a very unhealthy situation that we lived with every day.

Several speakers from East Maui did know that the EMI ratcheting up is a diversion. So that you took everything in 1990, just happened to coincide with a water conference that was held at Kēānae around the same time. And it seemed like on EMI's part, it was maybe perhaps a preemptive move or something to send a signal to the people over there don't try anything. You know, the water conference was attended by a lot of attorneys from both sides. The attorneys who were sympathetic to the East Maui farmers were saying you have rights, you really do have rights. They don't have a right to come in here and take everything. And these are what your rights are. And I think it came to a shock and surprise to some of the EMI operatives on the ground who were accustomed to behaving in the old way, you know, where, you know, like an Imperial, somebody from outside that comes in and tells you: This is how it's going to come down, and you have nothing to say about it. This is how they treated the people, very disrespectful, very condescending.

So the EMI process should actually have started a long time ago. A lawsuit was filed. And in 2005, EMI and A & B were ordered to do an EIS, and they did not. They fiddle-farted around, you know. And actually, in the interim 30 years since they -- since the other long-term lease expired, they have what amount to a de-facto long-term lease, because it's been 30 years, and they have had continuing access to the water. That's exactly what happened. So there is this -- I mean, I know you're only interested in knowing what's supposed to go into the EIS, but this is a really important historical framework for people to understand. So I actually do have some comments on the Environmental Impact Statement, but I just have another point about that, that all of this would not have been possible but for the collusion of DLNR.

The DLNR attorneys with the A & B attorneys were working together and came up with these wonderful legal strategies to issue these so-called temporary interim leases, I mean temporary permits, which did not exist, which were false, and which were finally declared to be illegal. So given that framework, it's really hard to trust that this process is going to go, you know, in any other way but in A & B's direction. But here are some comments for the EIS.

The degraded watershed, which has resulted from decades of A & B's unlawful occupation, should not be the standard. You know, that point was made last night, that they have, you know, all of these many, many, many decades to go out there and wreck the watershed. And that is not the starting point or, you know, the standard toward which we should aspire in terms of the EIS. Never again must aina be transformed into killed areas, disturbed so severely that the people are deprived of their constitutional rights and human rights to live the subsistence traditions of their kupuna, including growing taro, fishing and gathering from the streams and shoreline areas nourished by fresh water. These also include rights of access to these areas.

We have had to humble ourselves and beg and go through a monthly permitting process just to be able to go up mauka and clean the streams so that the water can flow. Streams must flow continuously and uninterrupted from the mountain to the ocean shores so that aquatic animals can live. Gauges to collect

accurate water, transfer and collect, collection data are critical. Regulatory oversight and enforcement are also critical. Without enforcement, EMI has run roughshod over the people, you know. The public can say whatever they want, but EMI really does whatever they want. You know, they think whatever they want, we go up there, we say, hey, you know, we're supposed to be getting water, but you've completely closed, you know, closed your gate and nothing is coming to us. And they say, oh, well, you know, take it up with our attorney. And then their attorney calls our attorney, and their attorney says, oh, well, my client is in full compliance. And that's the kind of BS our people have been going through for decades. I have one last point. DLNR should seriously consider alternatives to awarding A & B a 30-year lease. I'm totally opposed to A & B receiving the 30-year lease.



10238-02  
September 23, 2019

Ms. Mahealani Wendt  
Mahealani Wendt o Ko'olau Hui

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease for the Nāhiku, Ke'ānae, Honomanū,  
and Huelo License Areas

Dear Ms. Wendt:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Section 1.4 of the Draft EIS explains that in 2016, the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277



4. Truttia and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, on indigenous freshwater species, and terrestrial flora and fauna, respectively. The DEIS discusses the impacts of the Proposed Action to freshwater species in Section 4.2.1 and impacts to terrestrial flora and fauna in Sections 4.4.1 and 4.4.2. Both reports are appended to the Draft EIS (See Appendix A and Appendix C).
5. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).
6. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including a discussion of alternative lease duration.

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Edward Wendt

February 23, 2017

Ha'ikū Park and Community Center

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. WENDT: Aloha.

MODERATOR SENELLY: Aloha.

MR. WENDT: My name is Ed Wendt. I am president of Na Moku. Our community has been involved with this water contested case for many years. In these years, DLNR and (inaudible) have never displayed their leadership in enforcing the laws, protecting our native rights and the public trust doctrine, which are our constitutional rights. Who will enforce these laws? Each stream and river that is diverted has a major impact on our environment and our constitutional rights, when we have never had accurate measurements of the volume of water that is being transferred out of the watershed. We need gauges in the ditch systems and regular intervals to determine how much water is actually being diverted. We are also concerned about invasive species, such as Miconia, Gardenia, and African tulips, which are overtaking the watershed and claiming our native plants. From Maikiko to Honopou, which are outside the permitting areas, streams and rivers are diverted by East Maui Irrigation for free. The State has allowed them to take this water also. This should be accounted for. It is in the public trusts interests.

Well water. A & B has 15 wells on its property. The amount of water available to A & B from these wells needs to be accountable. Gray water. We need to know if gray water from the treatment plant can be used for Alexander & Baldwin Irrigation needs. USGS studies were done on the streams and rivers, it took three years to do this, specifically for East Maui watershed. Their recommendations should be considered. Water needs to flow uninterrupted into the ocean. It is critical for our health, a healthy environment. Based on USGS studies, we have noticed since the recent release of water that our native species, such as the Koloa bird, Hawaiian stilt and species of the dragonfly, found only in East Maui and Halawa Valley, are returning. OHA should have a say in the wording of the 30-year lease. Honomanu, Keanae, Nāhiku are on so-called ceded lands. We'd also like to know how much water Hawaiian Homes is entitled to.

My last comment for the people of upcountry, Kula Farms and Alexander & Baldwin, you have enjoyed the privilege of receiving water from these four areas. As Father Tomoso stated, water is for life and water is for everybody. And we agree. While you all were enjoying this privilege, we in the four areas went dry. Dewatered completely. This does not match (Hawaiian). This is called sacrifice and culture genocide.

Mahalo.

*Na Moku Aupuni o Ko'olau Hui*  
*P.O. Box 961*  
*Ha'ikū, Hawai'i 96708*

March 10, 2017

Earm Matsukawa, Project Manager  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawai'i 96826

**SUBJECT:** Early Consultation for the Preparation of an Environmental Impact Statement  
Preparation Notice; Proposed Lease for Nāhiku, Ke'ānae, Honomanū, and  
Huelo License Areas, East, Central and Upcountry Maui, Hawai'i

Dear Mr. Matsukawa:

Thank you for this opportunity to comment. Na Moku Aupuni o Ko'olau Hui ("Na Moku") is a 501(c)(3) non-profit organization whose members include lineal descendants of the original settlers of the adjacent ahupua'a of Wailuanui and Ke'ānae, Ko'olau Moku, current tenants and their spouses.

Na Moku was organized for the following purposes:

- A. to promote the general welfare of the tenants and descendants residing in the Ahupua'a of Keanae-Wailuanui and elsewhere in social, spiritual, cultural, educational and economic affairs;
- B. to preserve and protect, and enhance the quality of the existing life of the people within the Keanae-Wailuanui Ahupua'a;
- C. to provide and improve communication and mutual understanding among the tenants and descendants of Keanae-Wailuanui Ahupua'a themselves and with other community associations concerning their mutual welfare;
- D. to provide a formal voice and organization through which the residents of the community can participate fully and more meaningfully in the determination and development of policies and decisions affecting their destiny.

Accordingly, Na Moku respectfully submits the following comments.

**Conflict of interest.** We respectfully question the appropriateness of Alexander & Baldwin (A&B) preparing this EIS, rather than the state Board of Land & Natural Resources, which shall award the lease, inasmuch as A&B has always had exclusive control of the proposed subject

license area, there has never been another lessee/licensee for over a century, and this arrangement not only gives a strong appearance of a conflict of interest, but also suggests the successful awardee is a foregone conclusion notwithstanding a public bidding process.

**Environmental harms, 1986-2016.** Because of A&B's monopoly, its exclusive use and control of public trust resources for over a century, the EIS should include an assessment, at the very least, of environmental damage which has occurred during the 30-year period since its long-term 25-year license expired in 1986 up to the legislature's enactment of House Bill 2501, the temporary holdover permit legislation which legalized a theretofore illegal practice; i.e., issuance of "temporary" short-term revocable permits. The EIS should include an assessment of damage and steps A&B/EMI will take to repair that damage. There was no interruption of A&B/EMI's massive diversions during the 30-year period 1986-2016, when A&B/EMI held no long-term lease/license. The state DLNR allowed A&B/EMI to continue its up to 450 mgd per day diversions without any accountability for the environmental, social, economic, health, etc. consequences caused by its actions and in contravention of existing environmental laws which were circumvented but which should have applied. Some of the environmental impacts include 100% kill of all aquatic life within completely dewatered streams below A&B/EMI diversions; devastating economic, social and cultural impacts Native Hawaiian taro farmers, gatherers, fishermen and cultural practitioner communities that had historically relied on these streams; proliferation of invasive species and the choking off of natural waterways within the 33,000 license/lease area, causing catastrophic flood events, among other impacts;

The EIS should also include:

- Full disclosure of every single diversion along the East Maui Irrigation system;
- Full disclosure of how much water it diverts from every stream;
- Full disclosure of all maintenance and access roads for the diversion system, including identification of all access points at public roads and highways;
- Maps identifying the entirety of every single stream and tributary that would be affected by this lease;
- Alternative proposed sources of water, including ones that involve no diversions from the East Maui proposed license areas;
- Full disclosure of the amount of water proposed to be taken from each stream daily (average, minimum and maximum);
- Full disclosure of the amount of water proposed to be taken from each license area daily (average, minimum and maximum);
- Impacts of diverting water from every East Maui Stream within the proposed license areas on traditional and customary Hawaiian practices (including kalo farming, gathering of native stream flora and fauna for food, and recreation);
- Impacts of diverting water from East Maui Streams on aquatic life;
- Impacts of diverting water from East Maui Streams on estuaries, including aquatic plants and animals, spawning grounds for fisheries;
- Impacts of diverting water from East Maui Streams on native plant and animal species;

- Impacts of diverting water from East Maui Streams on invasive species, including the creation of mosquito breeding grounds, proliferation of invasive plants within dewatered streambeds and surrounding areas;
- Impacts of diverting water from East Maui Streams on outdoor recreational activities, the maintenance of ecosystems and aesthetic values such as waterfalls and scenic waterways.

**Customary and Traditional Practitioner Input:** Na Moku respectfully requests that every effort be made to contact and gather information from our traditional practitioner family members, attestations as to likely impacts of the proposed lease upon their taro farming, gathering of traditional foods from the streams, fishing practices which depend on healthy estuaries, and related cultural traditional and customary practices.

Thank you for this opportunity to comment.

Sincerely,  


Edward Wendt  
President



10238-02  
September 23, 2019

Mr. Edward Wendt  
President, Na Moku Aupuni o Ko'olau Hui  
P.O. Box 961  
Ha'iku, HI 96708

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease for the Nāhiku, Ke'anae, Honomanū,  
and Huelo License Areas

Dear Mr. Wendt:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, your oral comments at the February 23, 2017 EIS Scoping Meeting, and your letter dated March 10, 2017. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. For the purposes of this EIS, diversion quantities from the D&O were used to estimate the total amount of water to be diverted by the EMI Aqueduct System from the License Area, a description of the EMI Aqueduct System and its operation is included within the DEIS (refer to Sections 2.2.1 and 2.1.2).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Edward Wendt  
Page 2  
September 23, 2019

4. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, on indigenous freshwater species, and terrestrial flora and fauna, respectively. The DEIS discusses the impacts of the Proposed Action to freshwater species in Section 4.2.1 and impacts to terrestrial flora and fauna in Sections 4.4.1 and 4.4.2. Both reports are appended to the Draft EIS (See Appendix A and Appendix C).
5. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).
6. Cultural Surveys Hawai'i, Inc. prepared a Cultural Impact Assessment for the Draft EIS which assesses the potential impacts of the Proposed Action on native Hawaiian traditional and customary resources and practices. (See Appendix F).
7. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including a discussion of alternative water sources.
8. Section 2.1.1 discusses the Department of Hawaiian Home Lands' water reservation.

Your oral and written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Maluhia Stoner  
February 23, 2017  
Haʻikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. STONER: My name is Maluhia Stoner, and I've lived in Lower Nahiku all of my life. Now before I begin, I would like to inform you that this is specifically for the East Maui Irrigation Company and A & B and does not portray my opinion of the council before me. This is a Hawaiian proverb handed down for generations: When the earth is ill, what is its medicine? Rain. Because when the heavens cry, the earth is healed.

By this saying, it is easy to understand the Hawaiian connection of water and health. The rain that falls from the heavens causes the waters to flow; and they, in turn, gives life to the earth. The earth in turn sustains the people. The waters of life which flow from the mountains and which will sustain our generation and future generations are of great importance to me and people who love and care for the land and culture. The initial development of the ditch system was authorized as a part of the Hawaiian Kingdom's program to promote prosperity for all the people of the Kingdom. Of importance to the native Hawaiian families of the land, each of the water licenses issued under the Kingdom included clauses which protected the water rights of native tenants of the respective lands through which the ditch system was developed.

The original license stated: The continuance of the right here before granted is upon this condition, that existing rights of present tenants of said lands or occupiers along said streams shall in no wise be affected injuriously by reason of anything herein before granted or covenanted.

Now before I continue, I would like to point out that during the time of February 2015, during the drought on the other side of the island, you cut off not only the rivers but the aqueduct that supplies Lower Nahiku with water. May I inform you that we had children under the age of three at the time, and this threatened not only our health but the health of the land, the native plants and animals, and the native fish, both fresh water and salt water. It took having the County workers of our community go all the way to the water blockage and turn it back on. This is a clear violation of the license issued under the Kingdom of Hawaii and is ineligible to pass in court. But regardless of the laws and regulations stated above, you don't only break the laws of the state but the laws that nature itself has set for every man, woman and child who sets foot on these sacred lands; and you are in no position to determine what is and isn't sacred. You're making us pay for our water that you take too much of; and you don't even have the courtesy of doing it within the legal boundaries of the laws you agreed upon years ago.

You take 450 million gallons of water a day and waste a huge percentage on releasing it on the ground. When will you realize there's no more cane fields to feed and that the industrial progression which you

support is the very reason why you feel you must take that much water. You are the reason that there's no water in certain sections of the island. Nature has taken the waters of life from you because you had the nerve to abuse such a sacred element. You have already deprived our culture of the once abundant source of life, and you dare take more. I testify that the East Maui Irrigation Company and A & B is guilty for the theft of our culture, the endangerment of native and indigenous species, the choice to ignore the claims of the Hawaiian people, the people of this island, and the destruction of the home in which we will always and have always resided in.

Thank you very much.





1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>  
Attention: Mr. Earl Matsukawa

SUBJECT: EISP: PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU,  
KE'ANAE, HONOLULU, AND HUELO LICENSE AREAS -  
SCOPING MEETING, FEBRUARY 22-23, 2017

I DO NOT APPROVE THE  
ONLY thing I approve is the removal  
of all the waste, you call Brockadey  
and pipes, and that justice be  
served... BE AT IT!!!

(include additional sheets as necessary)

PLEASE PRINT: Name: Maluhia Stones Phone: [REDACTED]

Organization: The Hawaiian People

Address: [REDACTED]

Email: [REDACTED]

Please submit comments by March 10, 2017 or email [woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

\*Receipt of e-mailed comments will be confirmed via e-mail. If you do not receive a confirmation message, please contact our office  
(see contact information, above).

Name: Maluhia K. Stones

Email: [REDACTED]

\*the contacts I would like to have are:

- CEO's of EMI and A+B

- their attorneys and lawyer

- anyone with potential power in A+B

- the email addresses of all of these people.

\*I want copies of the video taken today, and  
a copy of the information spoken (word-for-word)

\*I want updates on:

- any meetings regarding EMI + A+B 1 month prior  
to the event.

- Please provide me this information and I will  
be very grateful.

~~~~~

Now before I begin I would like to inform you that this is specifically for the East Maui Irrigation co. and does not portray my opinion of the council before me. Here is a hawaiian proverb handed down through generations-When the earth is 'Ili, what is it's medicine... rain, because when the heavens cry, the earth is healed. By this saying, it is easy to understand the Hawaiian connection of water and health — The rain that falls from the heavens causes the waters to flow, and they in turn, give life to the earth; the earth in turn, sustains the people. the waters of life which flow from the mountains, and which will sustain our generation and future generations, are of great importance to me and those who love and care for the land and culture. While testimonies in some public hearings have expressed the sentiment that 'the waters were taken without permission', the initial development of the ditch system was authorized as a part of the Hawaiian Kingdom's program to promote prosperity for all the people of the Kingdom. Of importance to the native Hawaiian families of the land, each of the Water Licenses issued under the Kingdom included clauses which protected the water rights of native tenants of the respective lands through which the ditch system was developed. The original license stated: and the continuance of the right herebefore granted is upon this condition...that existing rights or present tenants of said lands or occupiers along said streams shall in no wise be lessened or affected injuriously by reason of anything hereinbefore granted or covenanted... now before I continue I would like to point out that during the time of feb 2015, during a drought on the other side of the island, you cut off, not only the rivers, but the aqueduct that supplies Lower Nahiku with water. May I inform you that we had children under the age of three at the time, and that this threatened not only our health, but the health of the land, the native plants and animals, and the native fish, both freshwater and saltwater, it took having the county workers of our community to go all the way to the water blockage and turn it back on. this is a clear violation of the license issued under the kingdom of hawaii, and is eligible to pass in court, but I am nowhere near done. According to chapter 174, part 9 of the state water code, native hawaiian water rights state that Traditional and customary rights of ahupua'a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778 shall not be abridged or denied by this chapter. Such traditional and customary rights shall include, but not be limited to, the cultivation or propagation of taro on one's own kuleana and the gathering of hihwai, opae, o'opu, limu, thatch, ti leaf, aho cord, and medicinal plants for subsistence, cultural, and religious purposes. The appurtenant water rights of kuleana and taro lands, along with those traditional and customary rights assured in this section, shall not be diminished or extinguished by a failure to apply for or to receive a permit under this chapter, which states that if we must travel upstream in search of hihwai, opae, o'opu, or other

native plants or animals that cannot be acquired in our vicinity due to the East Maui Irrigation co. taking too much water, then we have all the right to pass on to your lands to do so with or without your permission. According to chapter 174, section 71, part 6, instream uses of water, The commission shall establish and administer a statewide instream use protection program. In carrying out this part, the commission shall cooperate with the United States government or any of its agencies, other state agencies, and the county governments and any of their agencies. In the performance of its duties the commission shall:

- (A) Establish instream flow standards on a stream-by-stream basis whenever necessary to protect the public interest in waters of the State;
- (B) In acting upon the establishment of instream flow standards, the commission shall set forth in writing its conclusion that the public interest does or does not require, as is appropriate, an instream flow standard to be set for the stream, the reasons therefor, and the findings supporting the reasons;
- (C) Each instream flow standard shall describe the flows necessary to protect the public interest in the particular stream. Flows shall be expressed in terms of variable flows of water necessary to protect adequately fishery, wildlife, recreational, aesthetic, scenic, or other beneficial instream uses in the stream in light of existing and potential water developments including the economic impact of restriction of such use;
- (E) After giving notice of its intention to set an instream flow standard, the commission or other agencies in participation with the commission shall investigate the stream. During the process of this investigation, the commission shall consult with and consider the recommendations of the department of health, the aquatic biologist of the department of land and natural resources, the natural area reserves system commission, the University of Hawaii cooperative fishery unit, the United States Fish and Wildlife Service, the mayor of the county in which the stream is located, and other agencies having interest in or information on the stream, and may consult with and consider the recommendations of persons having interest in or information on the stream. In formulating the proposed standard, the commission shall weigh the importance of the present or potential instream values with the importance of the present or potential uses of water from the stream for non instream purposes, including the economic impact of restriction of such uses. In order to avoid or minimize the impact on existing uses of preserving, enhancing, or restoring instream values, the commission shall consider physical solutions, including water exchanges, modifications of project operations, changes in points of diversion, changes in time and rate of diversion, uses of water from alternative sources, or any other solution;



10238-02  
September 23, 2019

Maluhia Stoner

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Maluhia Stoner:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated February 23, 2017, and oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The forthcoming Draft EIS will assess anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

(F) Before adoption of an instream flow standard or modification of an established instream flow standard, the commission shall give notice and hold a hearing on its proposed standard or modification.

According to my knowledge, the public is not satisfied with the current instream flow standards and/or the stream-by-stream basis in which the commission has set, and the public is not only entitled to a new instream flow standard, but the ability to build the foundation for a new one. Now regardless of the laws and regulations stated above, you don't only break the laws of the state, but the laws that nature itself has set for every man, woman and child who sets foot in these sacred lands, and you are in no position to determine what is and isn't sacred. You're making us pay for our water that you take too much of and you don't even have the courtesy to do it within the legal boundaries of the laws that you agreed upon years ago. You take 450 million gallons of water a day, and waste a huge percentage on releasing it on the ground, which if I must remind you, kills many native reefs, and destroys the homes of native fish. When will you realize there is no more cane fields to feed, and that the industrial progression which you support, is the very reason why you must take that much water. You are the reason that there is no water on certain sections of the island, nature has taken the waters of life from you because you had the nerve to abuse such a sacred element. You have already deprived our culture of the once abundant source of life, and you dare take more? I testify that the East Maui Irrigation co. and A&B are guilty for the theft of our culture, the endangerment of indigenous species, the choice to ignore the claims of the Hawaiian people, the people of this land, and the destruction of the home in which we will always and have always resided in, thank you very much.

- M. Stoner  
Maluhia Kapena Stoner

Lower Nāhiku, Maui, Hawai'i

in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

4. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).

Your oral and written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Mapu Kekahuna

February 23, 2017

Ha'ikū Park and Community Center

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. KEKAHUNA: Mahalo to all our kupuna for being here. Thank you for being here. Today I'm very disappointed as -- I'm going to (inaudible) the vice chair tonight of the community association. And I'm insulted that A & B, your organization, to bypass Hana and involve East Maui, all of East Maui, from Kaupo, Kipahulu, Hana, Nāhiku, and everybody else. This is big geographics, yeah. And not have them participate in this EIS, whatever you want to call this. Okay? It's not pono. You know, people, our people here in Maui are seeing the desecration. We see it every day. Gradually we have to keep our Maui, all of us in this room. People, wake up. Because Maui will be gone. It will protect this island.

Seven generations, my family -- I'm a seventh-generation from Nāhiku. You know, like you guys said, that EIS, you guys, I was reading through it, that you could probably compromise our domestic drinking water if A & B don't get this 30-year lease. That's what I was reading. Is that a threat?

You know, for me, as a kanaka, I feel like, wow, if A & B don't get what they want, we don't get drinking water, my kupuna have to go to the river and haul water from the river, as they did when they were growing up? Is that what the answer is? I think the County of Maui has a fiduciary responsibility. We have three County water tanks in Makapipi. Like the lawyer said before, carve it out, take Hanawi, Kapaula, Makapipi, carve it out, take out that diversion, let the County of Maui take care of their aqueduct that feeds the county to provide us domestic water, which is our right too, yeah. And then take us out of your palapala. Take the word "Nāhiku" out. Take it out, take it out. We don't want it.

You know, our people of Maui can see this, right, plain as day. I drive to Paia every day, Monday through Friday, going back to Nāhiku. The traffic is nasty. Selling land quietly, use the term "quietly," they sell it to a businessman in California to supplement that development. People, we're not stupid. We're not stupid. The sooner A & B realizes all the illegal actions -- and I thank the na moku aupuni people that started this battle. It shouldn't be a battle. Not for the kanaka, not for the people of Maui, born and raised, bred, to have to sit in a meeting when we have to work, work, to come listen to this nonsense.

It's expensive to live here in Maui, in our homeland, our one hanau. Expensive to live here, but we have to take that -- our passion for our island is important to all of us. Even for you malehinis that moved here to Maui, you guys can see the desecration going on. Keep Maui Maui. Oahu is already messed up. Leave Maui alone. Take Nāhiku out of that equation. That's my recommendation. Cut it out, like the attorney said, cut it out. Take the diversion, feed on the other county tanks, that's it, and let our rivers, rivers flow.



10238-02  
September 23, 2019

Mr. Mapu Kekahuna

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Kekahuna:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Section 1.3.4 of the Draft EIS discusses the Commission on Water Resources Management's (CWRM) Interim Instream Flow Standard (IIFS) Decision and Order (D&O) and the authority of the BLNR to issue a Water Lease for non-instream uses pursuant to HRS § 171-58, that is subject to the IIFS set by CWRM.
3. For purposes of this Draft EIS, the list of streams assessed as part of the License Area is taken from the CWRM D&O.
4. Section 2.3.1 of the Draft EIS discusses the Maui Department of Water Supply (MDWS) system, including water sourced from the EMI Aqueduct System. Figure 2-4 depicts the MDWS surface water supply system.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Mapu Kekahuna  
Page 2  
September 23, 2019

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



Mark H. Kijima

February 22, 2017

Wilson Okamoto Corporation  
Attention: Earl Matsukawa  
1907 South Beretania St. Suite 400  
Honolulu, Hawaii 96826

RE: EISPN East Maui Water Lease 2017-02-08-MA-5E Testimony

My name is Mark Kijima. I support EMI's application for a long-term lease to divert and convey water from East Maui to Central and Upcountry Maui.

I live in Kula so I benefit from water being diverted from East Maui to Upcountry Maui.

I work for BEI Hawaii. Our company sold products that supported agricultural and industrial operations at HC&S. In late 2014 we had 10 employees here on Maui before HC&S announced their closing. We will be down to five employees by the end of this year. There is little prospect that things will improve in our base business without seeing agricultural operations resume in Central Maui.

It is in the public's interest that water continues to be diverted from East Maui to the highly productive, though arid agricultural land in Central and Upcountry Maui whether it is used for organic farms, diversified agriculture or energy crops. These lands would be valuable in helping realize Governor Ige's goal of doubling local food production by 2020 that cannot be met without an adequate, reliable supply of fresh water.

EMI has infrastructure in place to efficiently divert and transport the water from East Maui. It would be a tremendous waste of resources to see this valuable infrastructure fall into a state of disrepair because of a lack of use and maintenance. The costs of restoring an abandoned water conveyance system would be cost prohibitive for the state and county.

Thank you for the opportunity to offer this testimony.

Sincerely,

  
Mark H. Kijima



10238-02  
September 23, 2019

ma  
[Redacted]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Kijima:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated February 22, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The social impacts from modification or removal of diversion structures in streams designated for full restoration are discussed in the Social Impact Assessment by Earthplan (See Appendix G). The agricultural and economic impacts are assessed in the Agricultural and Related Economic Impacts Report done by Plascch Econ Pacific, LLC (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

002477

10238-02  
Letter to Mr. Mark Kijima  
Page 2  
September 23, 2019

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

---

**From:** [Wilson Okamoto Corporation](#)  
**To:** Earl Matsukawa; Ksida Cheng; Rebecca Candliasa  
**Subject:** FW: Comments on EISPN Proposed E. Maui Water Leases  
**Date:** Tuesday, March 7, 2017 10:25:35 AM  
**Attachments:** [Image001.jpg](#)

**Jeanine S.H.Y. Morioka**  
Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

**From:** [REDACTED] **On Behalf Of** Mark Sheehan  
**Sent:** Sunday, March 05, 2017 9:24 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** Comments on EISPN Proposed E. Maui Water Leases

Dear Mr. Okamoto:

Mahalo for the opportunity to comment on EISPN for the use of water from four license areas consisting of 33,000 acres of public lands and water in East Maui.

I have been a Haiku resident for over forty years, own 10.5 acres of land through which flows the dewatered Kuiaha stream. My farm operations which are extensive have been directly impacted by diversions.

The comments from Native Hawaii Legal Corporation need to be addressed in the Draft EIS. The information they request should be included.

The Draft EIS needs to consider a wider range of management alternatives. I do not think that EMI has been a good steward of the lands. Because they have been gifted public waters at a bargain rate, EMI has allowed the ditch system to deteriorate with unacceptable losses as high as 30mgd. Nor have they worked to protect the watershed. I don't believe Maui county or the state of Hawaii would do much better, so I favor a trust type of watershed partnership to manage the resource with first priority to be repair of the system along with work to control invasive species that are degrading the watershed.

002478

I look forward to the publication of the EISPN as soon as possible.

Respectfully,

Mark Sheehan



10238-02  
September 23, 2019

Mr. Mark Sheehan

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Sheehan:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 7, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an Agricultural and Related Economic Impacts Report (See Appendix I) and an Assessment of the Environmental Impact of Stream

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A).

5. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Martha Martin

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. MARTIN: Thank you. I appreciate all of the work that is being done on the EIS. I think it's going to be a very interesting document. And some of my comments that I have I think go -- should be directed to the Department of Land and Natural Resources, not to the EIS.

I have -- I've lived on Maui for 50 years and I see that agriculture is changing on Maui. We're not going to have a big mono crop cultivation of sugar that we -- and pineapple that we used to have. And so what I would like added to the EIS is for the EIS to address the condition of the ditches and the amount of water leases that exists today. It may be in there, but in my hurried look at it on the computer, I didn't see anything that reported that, the condition of the ditches and the amount of leakage in the ditches.

Also I would like the EIS to recognize what the priority is for water use. To me, that land that they're drawing water from is watershed and the primary use of the water should first be watershed and stream protection and forest preserve.

And the -- for me, the second priority should be the farmer taro users of the streams and restoring flow of the water in the streams which maintains animal and reef life in the ocean.

And then I think the third user that should have priority should be the county.

And then No. 4, I think the small farmers, both old and new, should get priority because we don't produce enough of our food locally. And when sugar and pineapple were grown, they didn't support our state with enough diversity.

And then No. 5, the last bidder allow -- the last bidders allowed to bid I think should be corporations and I think they should get only short-term leases, not -- not 30-year leases.

And I think bidders who are working to make Hawaii more self-sustaining in food and energy should be given priority over private profit. And so thank you for this chance to speak and I hope we're going to make a good decision on this.



10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Martin:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including discussion of alternative lease terms.
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Martha Martin  
Page 2  
September 23, 2019

Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**  
Mr. Albert Perez  
February 22, 2017  
Maui Electric Company Community Meeting Room  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

Do you want stop me?

FACILITATOR SENELLY: I'm going to -- you said that you were going to turn something in?

MR. PEREZ: I am.

FACILITATOR SENELLY: Because it's still gonna be on record. Is that okay?

MR. PEREZ: That's fine.

FACILITATOR SENELLY: All right. And here's what I'm saying, here's what I'm saying, we do have limited time and --

MR. PEREZ: I'm almost pau.

FACILITATOR SENELLY: Okay.

MR. PEREZ: I think it would be very important that we get actual stream flow data. We just participated in the --

FACILITATOR SENELLY: No, no. I'm acknowledging that.

MR. PEREZ: Okay. I'm just watching that finger. (Laughter.)

FACILITATOR SENELLY: No, no. Because I -- we've heard that and I'm just acknowledging.

MR. PEREZ: Okay. We don't have stream flow data for each stream that's proposed to be diverted and we should have. We should explore alternatives and shorter lease terms, an alternative of just leasing the ditches and roads instead of the entire 30,000 acres. What about the possibility of state acquisition and repair and maintenance of the diversion system and charging of market rates for water to generate enough money for that repair and maintenance?

And then it can be administered in accordance with the public trust instead of -- I mean, let's face it, the county relying on a private corporation for its Upcountry water system is really, really risky. What if they change their minds, what are we going to do Upcountry?

And then, finally, I'd like to ask about if the EIS could analyze -- and I don't know if this is appropriate or not because A&B is applying for a lease, DLNR is evaluating the impact of that lease to them, but what about the possibility of having other bidders for a lease on these waters?

MR. PEREZ: I have a lot of comments and I'm not going to read them all because I'm going to submit written testimony, but I did want to talk about what I consider to be a major flaw in the initial premise of the EIS preparation notice. So there are many places where it says the proposed action will maintain existing conditions subject to the pending stream flow decision and those significant impacts are anticipated for various topic areas of like geology and things like that. To me, that is a flawed premise, you are -- sorry.

Currently HC&S is using very little water and it may be years before they use much more. In terms of the environmental impacts of the proposed action, it does not matter what their stated future intent is, we have to evaluate from the existing situation, which is that opae and other stream life are currently using habitat that currently exists. The proposed action will reduce or eliminate this habitat and that is an impact that must be analyzed. Kalo farmers currently have water available that will be reduced or eliminated by the proposed action and this is an impact that must be analyzed. So your -- I think if you -- if you go ahead on this basis, that the entire EIS will be flawed.

I also wanted to say that no one is talking about either/or, you know, it's not either Central Maui gets water or East Maui gets water, it could be both. There's plenty of water, but it should be used wisely. I'm hopeful that some of the people here today will share what positive impacts they've already seen from the increased water flow, and we have heard some of that. We need to insist that this EIS has real information about real impacts and not just gloss over what has happened in the past, because we can learn from that and incorporate that into the EIS. And then I'm not going to go into detail about what should be discussed, I'm going to leave that out, but I did want to talk about some alternative actions that could reduce harm to the environment and to cultural users such as: Leaving more water in the streams than A&B has requested, using other water sources like wells or streams that A&B already diverts outside of this lease area. Maybe they have enough already, maybe they don't need this, this lease. Making sure that the water is used for agriculture. A&B does not have clear plans for agriculture. They keep changing it and the land is being sold, so what assurance do we have that leasing this thing for 30 years, that the water is going to be used?

How about growing crops that are appropriate for the environment out there in Central Maui that -- I mean, you don't have to grow mangos in the middle of the arid part of the island. Using less thirsty crops that would use less water. Currently 42 million gallons per day is lost from the ditch system and the reservoirs. How about the alternative of reducing ditch system and reservoir losses? How about allowing more access to public lands so that we can see what's actually going on there?

February 22, 2017

FACILITATOR SENELLY: There -- actually, that is going to be happen.

MR. PEREZ: Okay, Good. And I'll wrap up here. There's also a problem with the analysis in the EIS preparation notice. It says that the -- the no action alternative says that no entity, including A&B, would have the right to use waters derived from state lands if they don't get the lease, but this is not true. Downstream riparian and appurtenant users would have that right. The water's gonna flow and people can use it; so it's incorrect to say that nobody would have the right to use that water. The other thing that I found odd was that the preparation notice raises the possibility that continued maintenance of the ditch system outside of the leased areas might not be economically feasible. I don't understand why that would be true outside, but not inside the leased area.

FACILITATOR SENELLY: Okay. I'm going to -- and we'll make -- we have your oral and you're going to turn in your written and I -- is that okay?

MR. PEREZ: I am actually done.

Maui Tomorrow Foundation  
55 North Church St, Suite A-4  
Wailuku, HI 96793

Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
woc@wilsonokamoto.com

March 10, 2017

Attention: Mr. Earl Matsukawa, Project Manager

Re: Environmental Impact Statement Notice: Proposed Lease for the Nāhiku, Ke`ānae,  
Honomanū, and Huelo License Areas of Public Land, Maui, Hawaii

Dear Mr. Matsukawa:

Maui Tomorrow Foundation (MTF) is grateful for this opportunity to provide comments on the Environmental Impact Statement Preparation Notice (EISP/N) for the use of water from four license areas consisting of 33,000 acres of public lands and waters in East Maui. We have been part of a coalition that has long requested environmental review for the removal of such large quantities of water - which is a public trust resource held in trust for all the peoples of Maui - from public lands.

Following, please find our comments on the type of information that must be included in the Draft EIS to comply with the content requirements established by Hawai'i Administrative Rules (HAR) Sections 11-200-16 and 11-200-17. Without this information, the document will not disclose enough information to government agencies, the general public, stakeholders, and decision-makers about the anticipated impacts of the project, alternatives to the proposed action and feasible measures that might be taken to mitigate potential impacts, sufficient to allow informed decision making.

Scope of the Draft EIS:

We do not concur with the EISP/N statement:

*"The Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable A&B to continue operation of the EMI Aqueduct System that has been in operation for over a century. In general, the Proposed Action will maintain existing conditions, subject to the pending IIFS decision and any reservations in favor of DHHL."*

The DEIS document needs to acknowledge that "existing conditions" and operations of the East Maui Irrigation (EMI) system for over a century already have multiple impacts on streams, stream life, aquifers, watershed health, local subsistence agriculture, traditional farming and gathering and economic viability of rural families...these current conditions need to be

discussed, and viable alternatives to the status quo presented, in the alternatives section of the DEIS. The scope of alternatives discussed in the EISPN is too narrow to comply with the standards set out in HAR 11-200.

The EISPN states in many places that the Proposed Action will maintain existing conditions, and that no significant impacts are anticipated. This is a seriously flawed statement that will invalidate the entire EIS if it remains unchanged. Currently, Alexander and Baldwin/East Maui Irrigation/Hawaiian Commercial & Sugar (A&B) is using a lower amount of water than they were prior to the end of sugar operations; it may be years before they use much more. In terms of environmental impacts of the Proposed Action, it does not matter what their stated future intent is. Opaie and other stream life currently have access to habitat that currently exists. The Proposed Action will reduce or eliminate this existing habitat. The impacts of the proposed action that must be analyzed in the current context.

Similarly, kalo farmers currently have water available for kalo that will be reduced or eliminated by the Proposed Action. The reduction in available water, as compared to existing conditions, is an impact that must be analyzed.

Many people at the EISPN hearings on February 22nd and 23rd, 2017 testified regarding positive impacts that they have already seen from increased stream flow resulting from the cessation of sugar operations. The EIS must discuss the following:

1. information about known impacts that occurred in the past, which are likely to occur again if water is diverted as it was in the past
2. present impacts that are continuing (such as watershed degradation as a result of invasive species having gained a foothold as a result of low stream flows)

Maps Need More Clarity:

Fig 1-1 ditch system map does not very clearly delineate the EMI ditch systems. The colors used to indicate abandoned or active ditch sections are not very distinguishable. The dotted lines used to indicate ditch tunnel sections make the relationship of the various ditches hard to determine. Using a contrasting color to mark tunnel sections would make more sense.

Fig 1-3 shows the Alexander and Baldwin (A&B) use area for diverted water but does not indicate:

- the County of Maui Department of Water Supply (MDWS) use area that depends upon the EMI diversions
- the location of the MDWS aqueduct systems (Upper and lower Kula Pipelines) which occur almost entirely outside the lease area and are not dependent upon continued water diversion by EMI.
- the area containing streams outside the lease area that are diverted by EMI and provided to the A&B use area regardless of the outcome of the License agreements

All of these are important parts of the information the Board of Land and Natural Resources (BLNR) needs in order to understand what the EMI system does. If these items are not included on this map, new maps should be created to clearly include this information.

## Section 1.2

The BLNR instructed that the scope of work should distinguish between those matters that can be undertaken prior to the (Commission on Water Resources Management (CWRM) decision on the petitions to amend the Interim Instream Flow Standards (IIFS), and those matters that require the final CWRM IIFS decision. The EIS needs to follow the advice of the U.S. Fish and Wildlife Service (USFWS) and provide analyses based upon different ranges of IIFS restoration, not wait until IIFS is resolved.

## Sec 1.3

The description of the Proposed Action states that the Lease agreement “will also allow the continued provision of water to approximately 30,000 acres of agricultural lands (formerly in sugarcane) in Central Maui owned by A&B (See Figure 1-3).”

The recent maps and charts provided for the East Maui Stream IIFS Contested Case (A&B Exhibit C-156-A) refer to 3,954 acres of that 30,000 acres being used for “unirrigated pasture” and a total of 26,996 acres that will need some form of irrigation from A&B water sources in the EMI system. The DEIS should be consistent with these figures.

Section 1.3 also states: “The Water Lease will not allow the lessee to use more water than the amount that will be available for diversion after CWRM issues a decision on the pending IIFS matters.” The Draft EIS needs to clearly indicate how much diverted surface water will be available to meet A&B’s diversified ag needs from streams outside the lease area that are also heavily diverted by the EMI system. Specific information should be provided about these streams and their output to the EMI system.

There should also be specific delineation of provision for water needs for Department of Hawaiian Home Lands (DHHL) lands, within East Maui and the upcountry MDWS service area, as noted in the DHHL comments.

## Section 1.4

The EISPN states that, “Settlements along Hāna Highway from west to east, toward Hāna, include Huelo and Kailua makai of the Huelo License Area, Ke’ānae and Wailua makai of the Ke’ānae License Area and Nāhiku makai of the Nāhiku License Area.”

This description should add the communities of Honopou, Hanawana and Hoolawa to the Huelo Lease area. These communities have no public water systems, and the DEIS needs to specifically discuss mitigation plans to restore sufficient flows to Puniawa, Hoolawa, Mokupapa, Honokala,

Waipio, East Waipio, Waipio Iki and Hanawana streams to provide domestic water to hundreds of families who live in these communities. Their streams are not part of the 2001 IFS petition for the East Maui Lease areas, yet the continued diverted conditions of their streams impact their daily lives and their rights to have sufficient water for their domestic needs.

#### Section 1.5 Purpose and Need

Section 1.5 states: "The "need" for the Water Lease is due to the lack of existing adequate alternative sources of water and infrastructure to meet these demands."

This section should clearly define the amount of A&B acreage actually needing irrigation and additional EMI sources of stream water outside the lease area, or reclaimed water from the Kahului treatment plant, to provide that irrigation. It should also note that a portion (around half) of the Upcountry MDWS system comes from diversions outside the proposed lease area, or from fresh water wells, and is not dependent on the EMI system. It should also discuss new upcountry wells being planned by the MDWS and DHHL as potential "alternative sources"

#### Section 1.6 Environmental Characteristics

Section 1.6 states: "There are 39 identified streams within the four License Areas (See Figure 1-4), several of which are the subject of the pending IIFS decision before CWRM (See Table 1-2). Some have identified Waikani as a stream, but it is a waterfall on the Wailuanui stream, and not a stream itself."

IIFS hearings Officer, Dr. Lawrence Milke identified 43 streams in the Lease area in his 2016 Findings of Facts/ Conclusions of Law (FOF/COL) and Decision and Order. This information should be reflected in the DEIS.

Fig 1-4 "License streams" is incorrect - a number of stream names are left out.

Table 1-2 is also incorrect. For example: Hanehoi and Puolua and Huelo stream are all separately diverted streams. Honokala stream and Waipio Iki stream are left off. East and west Wailua Iki are separate streams that are each diverted. This Table should list all 43 streams found in Dr. Milke's 2016 Findings of Facts/ Conclusions of Law (FOF/COL) and Decision and Order.

#### Section 1.7 EMI Service Area

Section 1.7 states: "While DWS has worked diligently in recent years to bring additional sources of water online for Upcountry users, the County's dependence on water received through the EMI Aqueduct system cannot be overstated." "Three DWS water treatment facilities rely on water from the EMI Aqueduct System."

The DEIS needs to clarify that two DWS water treatment facilities only rely on the EMI system during the driest portion of the year.

The DEIS needs to clarify that DWS has around 4 mgd in existing well capacity for its upcountry system and usually uses about 25% of that due to expense of pumping the wells. The EMI water, under current conditions, is not the only water available to DWS; it is the cheapest water. That should be made clear. If renewable technologies were available to pump the wells, as A&B has done for many years to operate some of their wells, additional water could possibly be feasible for the upcountry system.

Section 1.7 refers to the current "Memorandum of Understanding" (MOU) executed between the two parties." It should also refer to the section of the MOU where both A&B and DWS agree to work on plans to restore stream flows if agricultural needs change (which they have!!) The DEIS should specify those plans for stream restoration that have been discussed by A&B and DWS.

Section 1.7 states: "The Kamole-Weir Water Treatment Facility relies on water from the Wailoa Ditch, which receives water from diversions of several streams: Honopou, Hanehoi, Puolua, Alo, Waikamoi, Puohokamoa, (West, Middle and East Branches), Ha'ipua'ena, Kōlea (East and Punala'u), Honomanū, Nua'a'lua, Pī'ina'au, Wai'aka, Kapā'ula, Hanawī, and Makapipi (East and West). The average daily production at this facility is 3.6 MGD, but it can process up to 6 MGD at maximum capacity."

This list leaves off the following streams that are diverted by the Wailoa-Ko'olau Ditch: East & West Wailua Iki, and East & West Wailua Nui, Waipio, Hoalua, Ho'olawa, Na'ilili haele, Kailua, Waiohūe, Kopili'ula, Wahinepe'e, Waiokamilo, Puakea, Puakā'a and Palauhulu. The DEIS should have an accurate list.

Section 1.7 states: "The EMI Aqueduct System continues to serve a critical role in providing Upcountry Maui with water, and should the delivery of water from the EMI Aqueduct System to DWS be curtailed, Upcountry Maui and the Nāhiku community would be left without a reliable source of water."

The DEIS should clearly state what level of "curtailed" delivery of water from EMI would begin to effect the DWS Upcountry system, since a very small portion (3 to 10 mgd) of the EMI system capacity goes to DWS, and around half of that amount travels thru their own systems, which are not currently pictured on EISPN maps.

Section 1.7 states: "Agricultural Users: Upcountry Maui was once the center of vegetable production in the State, but over recent decades, many of the large farms changed ownership leaving the KAP as the only large continuous farmland in the region."

Details must be provided to support this claim. According to CWRM reports used in the IIFS proceedings, the upcountry system supplies around 40% of its water to commercial farmers.

Section 1.7 states: “When under sugar cultivation, the full needs of the 30,000 acres of Central Maui fields could not be met by stream waters diverted by the EMI Aqueduct System at all times of the year. Every month, HC&S would be required to utilize its brackish wells to supplement available surface water supplies to meet the demands of its sugar cultivation operations in Central Maui.”

Given this fact, the Alternative’s section of the DEIS needs to discuss crops and growing methodologies that will use significantly less water than the 115 mgd currently discussed in the EISP. The Maui Tomorrow Foundation’s report “Mālama ‘Āina: A Conversation About Maui’s Farming Future” provides information on these proven methods. HC&S historically used their brackish wells for up to 40% of their water needs up to 2002. They are part of a reliable system. A&B also reported being short of water 10 months out of the year, even though they had unrestricted access to all of the water they could divert from East Maui, and 25 mgd from Na Wai Eha and their system of 15 wells.

#### Section 1.8 Project Setting

Section 1.8 states: “Immediately upon acquiring HC&S, the partners started construction on the Lowrie Ditch, which started in the rainforests of Kailua in the Makawao District of Maui. The ditch had two sources, the first was a reservoir at Papaaea that was fed by two five- to six-mile ditches, and the second was Kailua Stream where a diversion intercepted the source of the older Ha ‘ikū Ditch and ran parallel to that ditch.”

This description of the Lowrie ditch diversions is incorrect. Lowrie also intercepts and diverts dozens of other streams along its route. A complete chart of all the ditches and diversion points in the lease area should be provided in the DEIS, as has been requested by Native Hawaiian Legal Corp in their comments.

This section also has no mention of construction of the New Hamakua ditch, Manuel Luis and Center ditches, and no mention of construction of county upper and lower Kula pipelines. These pipelines traverse EMI lands and are serviced by intakes on the upper reaches of around five streams that flow through the East Maui lease area. The intakes, mostly above the East Maui lease area, are maintained by EMI, which charges the county for “water delivery” that arrives at the DWS reservoirs through the Kula pipelines. It is important that the DEIS clearly explains the workings of this system.

#### Section 1.8 states:

“In 1938, the Territory of Hawai‘i and EMI entered into an agreement intended to set the stage for competitive bidding when the existing water licenses expired. The 1938 agreement provides for the joint use of the EMI Aqueduct System. “In the agreement, both parties granted easements to each other for portions of the aqueduct facilities that crossed land owned by each respective party,”

The DEIS should discuss the alternative of the system being managed as a public irrigation district, being managed by a partnership of agencies and stakeholders, and other possible management scenarios. Maui DWS also referred to a need to have the DEIS discuss these options in their comments. EMI/A&B would then be one user of the system. The DEIS should also discuss the option of individual lease areas being awarded to the residents of the area who depend upon the streams.

Section 1.8 states: “Another aspect of the agreement set forth the manner in which the Territory was to charge for water collected. The amount charged was to be in inverse relation to the distance between the source and the delivery point. Thus, the government received less for Nāhiku water, which had to travel the greatest distance to Central Maui fields, than it did for water taken from the Huelo license area, which was closer to the Central Maui fields.”

The Nāhiku lease, according to EMI, delivers much more water than the lease areas further west. The lower flat fee based upon distance does not account for this windfall. The alternatives section should discuss a variety of updated fee schedules and a funding structure that creates enough revenue to actually actively manage the lease lands for watershed productivity.

Section 1.8 states: “Over the course of the 20th Century, A&B retained the rights to the use of water from the License Area by being the successful bidder for water leases, the last of which expired in 1986, issued by the State of Hawai‘i Board of Land and Natural Resources (BLNR).”

The DEIS should clearly explain that no one else bid on the leases and A&B/EMI had a defacto monopoly on their use.

Section 1.8 states: “The industrialization of agriculture served as a catalyst for radical social, cultural, and economic change that the islands experienced over the course of the latter half of the 19th century, and much of the 20th century.”

The DEIS also needs to discuss that this industrialization and dewatering of streams has left lasting and continuing impacts on the watersheds and the communities who dwell there as well as native Hawaiian cultural practices. The EIS should acknowledge those impacts and address the following mitigations:

- 1) restore watershed health and productivity in lease areas
- 2) Restore native stream life and viable stream flows for traditional agriculture
- 3) restore soil health and productivity and reduce water demand in central Maui

Section 1.8 states: “While the sugar industry on Maui has steadily declined and all but disappeared (prompted largely by the decline in relative value of sugar as a commodity and the steady increase in production costs), the aqueduct systems that enabled the mass cultivation of previously arid, non-arable lands remain in place and may continue to service the community in



support of Maui's rich agricultural tradition and history, and may serve as an asset to ensuring the sustainability of Maui's economy moving forward."

The DEIS must discuss the relative benefits of regenerative agricultural methods in future plans for the irrigated former sugar lands. Examples would be: rotational grazing; extensive cover cropping; contour plowing and water collection swales (see MTF "Mālama `Āina report referenced earlier). The DEIS cannot conclude that "sustainability" will be achieved by using the same outmoded methods that lead to past chronic water shortages.

## Section 2. ALTERNATIVES CONSIDERED

Section 2 states: "The Draft EIS, in addition to the No Action alternative, however, will identify alternative(s) that contemplate a lease that permits less than the IIFS-enabled diversions, and will evaluate environmental impacts, benefits, costs, and risks of such alternative(s)."

Alternatives should include:

- shorter lease terms
- high, medium and low IIFS levels set by CWRM
- A&B use of only diverted waters outside of Lease area and County use of some lease area waters
- creation of additional large capacity storage, and A&B use of high flow waters to fill these new and existing reservoirs
- measures that can reduce the 22.7% system water losses and deliver more water with less diversion
- alternative management systems for the ditch system and watersheds, including:
  - o State acquisition, repair and maintenance of the diversion system
  - o Operation of the irrigation system by a nonprofit water system operator, providing water to multiple users in a manner consistent with the public trust,
  - o Charging market rates for water to generate sufficient funds for repair and maintenance of the system.
- alternative fee structure for the water leases
- alternative size of lease area, freeing public lands for more recreational use.
- elimination of whole lease areas from the proposed license agreement to allow for streamlife habitat
- restoration of stream flows to communities with no public water supply in the Huelo license Area who are not part of the East Maui IIFS Contested case petition
- using other water sources like wells, or streams that A&B already diverts outside the lease areas.
- making sure the water is used for agriculture. A&B does not have clear plans for agriculture, and their agricultural land is continuing to be sold.
- growing less thirsty crops
- allowing more access to public lands

- postponing action until actual streamflow data is gathered for each stream proposed to be diverted, including an evaluation of the benefits that would accrue by having real information on which to make decisions.
- just leasing the ditches and roads, instead of the entire 30,000 acres mentioned in the EISPN
- Leasing of a smaller area than is included in the four license areas.

o  
*[Note that per HAR 11-200, the discussion of alternatives shall include, where relevant, those alternatives not within the existing authority of the agency.]*

## 2.1 No Action Alternative

Section 2.1 concludes that: "As a consequence of this Alternative, in order to meet the objectives set forth in Chapter 1, both domestic and agricultural water demands in Upcountry Maui, as well as agricultural demands in Central Maui, would need to be met by alternative water sources that may include but are not limited to: desalinization of seawater or brackish groundwater or the extraction of fresh groundwater from wells that currently do not exist."

The DEIS should analyze what portion of A&B's water needs have been and can be met thru water from A&B lands outside of the License Areas through the EMI Aqueduct System. The system diverts at least 10 streams that are not part of the License areas.

Many sections of the EISPN conclude that the are No Impacts from the proposed action, therefore, none will be discussed in the DEIS. We believe the DEIS should consider the following impacts and discuss them in.

## Section 3.1 Climate

DEIS should mention of impacts of continued large scale diversions proposed in the event of climate change, and provide strategies for the EMI system to respond to changes in rainfall patterns. There should also be a discussion of funding needed to be resilient and grow the capacity of our watersheds to store and release surface and ground water that supplies the EMI system in response to changing weather events. The continued mass dewatering of streams will have impacts if rainfall patterns change.

## 3.8 Visual Resources

The DEIS should discuss impacts of proposed large scale diversions on the dry and diminished appearance of streams, pools and waterfalls enjoyed by the public during hiking and nature study and by local residents in areas like Ho'olawa, Hanawana, Mokuropa and Waipio.

### 3.10.4 Recreational Uses and Park Facilities

Section 3.10.4 states: "No significant impacts on parks and recreational facilities within the subject License Area are anticipated as hunting and hiking access to the License Area would be maintained under the issuance of a State Water Lease."

The EMI leases limit public use and enjoyment of public lands, as noted in comments from DNR lands division and Na Ala Hele. The proposed lease area also includes streams that are part of recreation use at such facilities as the Garden of Eden arboretum, Twin Falls Community and Camp Ke'anae. Recreational use of many streams in the lease area, especially in local neighborhoods such as Hanawana, Hoolawa, Mokuapapa, Honokala, Honopou and Huelo is already significantly impacted under the former lease conditions. The proposed diversions will continue those impacts and should be discussed.

### 3.10.5 Solid Waste

Section 3.10.5 states: "No significant impacts on solid waste disposal services or infrastructure are anticipated from the Proposed Action."

The DEIS should discuss EMI plans to remove decades worth of debris and waste from ditch system maintenance that has been left to clutter the natural features of the lease area. It is not accurate to conclude that the project will not generate any solid waste, when past activities already have generated significant waste, and this waste has not yet been removed.

### 3.10.1 Police and Fire Protection Services

If stream water is used for central Maui development there will be a cumulative impact on public facilities and services that must be considered. The EISPN is silent on those proposed uses, but A&B has "provided" stream water allotments to Maui County in the past to secure additional water meters for developments on A&B's own former agricultural lands (such as Haiku Hill, Haiku Makai). The full range of potential development impacts resulting from this type of water allotment should be discussed.

### 3.11.2 Traffic

The cumulative effects on traffic of A&B having access to millions of gallons of water to use for development if Ag operations "fail to be profitable" needs to be discussed as a real scenario. Even Maui County DWS has suggested in their comments that A&B's diversified agriculture plans may not be viable.

10

The following topics need to acknowledge existing and continuing impacts in the DEIS.

### 3.3.1 Hydrology

Section 3.31 states: "Of these 40 streams, A&B has historically operated diversions on 37, but abandoned the diversion of one stream in 2007, and is in the process of permanently abandoning all of its diversions on 5 additional streams, all as shown in Table 1-2."

There are far more than diversions than on the 37 streams in the license area. Dr. Milke's Decision & Order names 43 streams. Many of these streams also have multiple tributaries which are each individually diverted. The EISPN needs to fully describe the extent of the resource being impacted by the diversions.

Also, A&B already has or intends to abandon diversions on 8 streams: Waiakamilo, Wailua Nui (East and West) Palauhulu, Pi'ina'au Hanehoi, Puolua and Honopou. (July 18, 2016 CWRM order re: Interim Restoration of Stream Flow). The DEIS should contain this accurate information.

The DEIS needs to provide information on every stream in the lease area, including the amount of water that is diverted or planned to be diverted, from each section of each stream, each stream as a whole, each license area, and all licensed areas as a whole. This is not currently mentioned as needed data in the EISPN.

### 3.3.2 Groundwater

Nahiku to Keanae aquifer is believed to be fully saturated with no separated levels between Kula and Honomanu basalt layers. (Gingerich, 1998) This implication and the deep connection between surface and ground water in a "saturated" aquifer should be discussed in the DEIS. It should also acknowledge that diversions over the last century had significant impacts on the aquifers and watershed health, which continue to progress; the proposed lease would cause a resumption of those impacts.

### 3.3.3 Coastal Waters

Existing and ongoing impacts to our coastal waters and fisheries need to also be discussed in the DEIS. It should also acknowledge that East Maui diversions over the last century had significant impacts on coastal waters and fisheries, not just on Maui, but throughout the Hawaiian Islands; the proposed lease would cause a resumption of those impacts, and those impacts should be discussed.

11

### 3.5.1 Flora

We fully support the comments of USFWS regarding impacts of diversions on threatened and endangered flora and fauna in the Hanawi section of the lease areas. Significant native plant communities are also found above Puohakamoa, Waikamoi, Haipuana. Impacts of maintenance equipment bringing in invasive species needs to be discussed and mitigated.

### 3.5.2 Fauna and Aquatic Habitat

Impacts on endangered fauna and flora (plants and avian species) should be discussed, as well as impacts on existing native stream life resources and anticipated impacts on all native stream life species used for traditional practices. We concur with USFWS comments, which should be used to formulate content of the DEIS.

### 3.5.3 Historic and Archaeological Resources

Previous and ongoing impacts to archaeological resources such as lo'i, 'auwai and house sites in the lease areas should be fully documented, as these can be expected to continue if the proposed lease is granted.

### 3.5.4 Cultural Resources

Hamakupoko has cultural sites in A&B agricultural fields that should be identified and protected; Hamakulaoa also has cultural sites in the lease area lands that should have proper recording and protection. Old ditch structures such as the Spreckels Old Haiku ditch, are also deteriorating and drifting downstream in chunks. Impacts to gathering and cultivation of traditional crops should be addressed, including impacts in areas where no restoration is being proposed, such as the Hanawana and Kailua areas, Waipio and Waipio Iki, Hoolawa, Honokala, Makapipi and Mokupapa.

The DEIS should use Kepa Maly's East Maui study as part of the Cultural Impact Assessment.

### 3.9 Socio-Economic Characteristics

Cumulative Socio-Economic impacts of A&B controlling use of such a large amount of water for 30 years, as proposed, must also be discussed.

### 3.11.1 Diversion Infrastructure

DEIS needs to discuss abandonment of ditch structures on permanently restored streams and what happens to diverted water on streams while they await "permanent restoration." It should also discuss, the effect of diversion design and its impact on native streamlife migration, as well as the impacts/benefits of permanently removing all ditch structures on the

12

permanently restored streams. In addition, there should be a discussion of who controls the diversion structures, how any allowable streamflow amounts will be enforced, and the relationship that public access to the leased areas has on the likelihood of streamflow violations being reported.

### 3.11.3 Potable Water System

Some DWS Kula Pipelines intakes appear to divert streams in the lease area. The intake for the Nahiku DWS supply is in the lease area. Community water systems for Huelo, Honopou, Hoolawa, Waipio resident are in the lease area. What happens there affects many potable water users; this should be discussed in DEIS.

### 3.12 Secondary and Cumulative Impacts

The DEIS should include impacts of utilizing water for any uses other than agriculture that are anticipated over the 30 year term of the proposed lease.

### 4.2 Required Permits and Approvals:

If the IIFS limits diverted amounts on some streams in the lease area, it is possible that EMI may seek to obtain more water thru greater exploitation of the remaining streams in the lease areas. This should be discussed as a possible cumulative impact. Permits are already required and not complete for proposed restoration of 8 streams.

The DEIS should provide details of plans to restore stream courses and watersheds in the lease area where diversions are being permanently abandoned and removed, as well as impacts of such restoration.

Mahalo for the opportunity to comment.

Albert Perez  
Executive Director  
Maui Tomorrow Foundation

13



10238-02  
September 23, 2019

Mr. Albert Perez, Executive Director  
Maui Tomorrow Foundation  
55 North Church Street, Suite A-4  
Wailuku, HI 96793

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū,  
and Huelo License Areas

Dear Mr. Perez:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, by providing your written comments on the EISPN, dated March 10, 2017, and your oral comments at the February 22, 2017 scoping meeting. We also appreciate Maui Tomorrow Foundation's early consultation comments provided by letter dated December 27, 2016 from Mr. Isaac Hall, Esq., on behalf of Maui Tomorrow Foundation, wherein he stated that Maui Tomorrow Foundation joined in the early consultation comments made by Native Hawaiian Legal Corporation (NHL/C) dated December 26, 2016. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments and the NHL/C comments have been appended to the Draft EIS in Appendix J (Pre-Assessment Consultation Correspondence) and Appendix M (Scoping Meeting and EISPN Comments and Responses). We have also enclosed a copy of our response to NHL/C's comments.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Section 1.4 of the Draft EIS explains that in 2016, the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Albert Perez  
Page 2  
September 23, 2019

mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.

3. Chapter 1 of the Draft EIS discusses the purpose and need of the Proposed Action.
4. Chapter 4 of the Draft EIS discusses the existing environment, impacts of the proposed action and mitigation measures. As relevant and appropriate, the discussion of impacts includes those pertaining to conditions before and after the closure of sugar cultivation in 2016.
5. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including alternative duration and diversion volume, as well as a No Action alternative. Section 3.1.1 of the Draft EIS discusses water source alternatives. Section 3.1.2 of the Draft EIS discusses alternative aqueduct ownership.
6. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
7. Truttia and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action and alternatives on indigenous freshwater species, terrestrial flora and fauna, and invasive mosquitoes. The Draft EIS discusses the impacts of the Proposed Action to freshwater species in Section 4.2.1 and impacts to terrestrial flora and fauna in Sections 4.4.1 and 4.4.2. Both reports are appended to the Draft EIS (See Appendix B and Appendix C).
8. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full or partial restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of Streams and the Ocean Water Chemistry (See Appendix A); Terrestrial and Flora and Fauna Report (See Appendix B); Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment

(See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

9. Figure 1-1 in the Draft EIS illustrates the EMI Aqueduct System overlaid on the Department of Land and Natural Resources (DLNR) Division of Aquatic Resources (DAR) geographic information system (GIS) data of streams. An electronic drawing of the EMI Aqueduct System was georeferenced by Akinaka & Associates, Ltd. to depict major diversions on East Maui streams on a United States Geological Survey (USGS) GIS base map. Due to the complexity of the EMI Aqueduct System and the level of detail shown on the map, not all of the minor diversions could be associated with a stream or tributary. The stream names shown are from the DAR GIS database but a few of those stream names may differ from how some East Maui residents may refer to them. Moreover, certain streams that were identified during certain proceedings before the Commission on Water Resources Management (CWRM) do not have associated GIS data and therefore could not be precisely located on the map. Table 1-2 in the Draft EIS reconciles discrepancies between stream names used in the February 2017 EIS Preparation Notice and the D&O.
10. Section 2.1.4 of the Draft EIS includes a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on estimates of available surface and ground water. Information from the D&O was used to estimate the maximum amount of water that can be diverted by the EMI Aqueduct System from the License Area. Section 2.1.1 discusses the Department of Hawaiian Home Lands' water reservation.
11. Section 1.3.4 of the Draft EIS discusses the D&O and the authority of the BLNR to issue a Water Lease for non-instream uses pursuant to HRS § 171-58, that is subject to the IIFS set by CWRM.
12. Section 2.3.1 of the Draft EIS discusses the Maui Department of Water Supply (MDWS) system, including water sourced from the EMI Aqueduct System. Figure 2-4 depicts the MDWS surface water supply system.
13. Section 2.1.3.2 of the Draft EIS discusses water needs for the Kula Agricultural Park.
14. Section 1.3 in the Draft EIS incorporates additional historical information from the Archaeological Literature Review and field inspection report (Appendix E).
15. Section 4.3.1 and 4.3.2 of the Draft EIS discuss climate change and sea level rise, respectively as well as the Assessment of Streams and the Ocean Water Chemistry (See Appendix A).
16. Section 4.9 of the Draft EIS discusses Visual Resources.
17. Section 4.8 of the Draft EIS discusses recreational resources and park facilities.
18. Section 4.14 and Section 4.15 of the Draft EIS discuss how the amount of water available through surface water diversion may impact public services and facilities; and, infrastructure and utilities, respectively.

19. Section 4.13 of the Draft EIS discusses potential traffic impacts of Mahi Pono's proposed diversified agricultural operations.
  20. Section 1.3.4 of the Draft EIS discusses the D&O.
  21. Section 4.2.2 of the Draft EIS discusses groundwater hydrology, including in East Maui.
  22. Sea Engineering, Inc. and Marine Research Consultants, Inc. prepared an assessment of streams and the ocean water chemistry in support of the Draft EIS. The Draft EIS summarizes this assessment in Section 4.2.3. The report is also appended in the Draft EIS (Appendix A).
  23. Cultural Surveys Hawai'i, Inc. prepared an archaeological report as well as a cultural impact assessment, which are summarized in Section 4.5 and 4.6 of the Draft EIS, respectively. These reports are also appended in the DEIS (Appendices E and F, respectively).
  24. Earthplan prepared a social impact assessment which is summarized in Section 4.7.1 and 4.7.2 of the Draft EIS. The report is also appended in the Draft EIS (Appendix G).
  25. Implementation of the D&O through modifications and adjustments to the EMI Aqueduct System is independent of the Proposed Action, which is the issuance of a Water Lease. Section 1.3.4 of the Draft EIS discusses the D&O.
  26. Section 4.16 of the Draft EIS discusses secondary and cumulative impacts of the Proposed Action.
  27. Section 5.8 of the Draft EIS discusses the permits and approvals related to the Proposed Action.
- Your written and oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant  
Isaac Hall, Esq.



**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Mavis Oliveira-Medeiros

February 23, 2017

Haʻikū Park and Community Center

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

Enclosure (NHLC response letter)

MS. OLIVEIRA-MEDEIROS: But my name is Mavis Oliveira-Medeiros, and I come from Hana, Maui, Hamoa. But my mom and dad was -- my dad actually came from Nahiku, and my mom came from Olahino, both places that we were water people. So my mom was a gatherer. I don't know if anybody said that yet, but the gathering people need to be on that EIS. She taught us how to gather all the stuff growing in the fresh water ponds and rivers, and that's what we ate, that's what we ate to subsist. And then A & B took the water, and then we had our kids, and our kids had their kids, and it was never able to be passed on to the next generations.

So two generations, including me because I was a little girl when she used to take me in the rivers, so it's like three generations of people that were robbed of gathering, gathering food in the rivers. I cannot tell you how awful that feels. What was taught to us, we haven't been able to teach our kids. It feels like genocide, cultural genocide, when you cannot teach your children and theirs how to survive from the aina that they grow up around. That is a terrible, horrible thing. So I hope that you put that in your EIS, the gatherers.

There's also -- in Hana, there's tons of fishermen. So I wish you guys come to Hana too, on the list of wishes. Lots of fishermen, hula dancers, they rely on the water. And gatherers, we still have people who actually go in the EMI's ditches. I don't feel comfortable because it says "keep out, no trespassing." But there's people who still go in there and gather opai. So, you know, we still eat that stuff. In Hana, a lot of people in Hana still fish to subsist, to survive, to help put food on the table. That's another thing that you can add to the EIS. Subsistence. And if you ask me, I think you should put the people first and the corporation last.



10238-02  
September 23, 2019

Ms. Mavis Oliveira-Medeiros

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Oliveira-Medeiros:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Cultural Surveys Hawai'i, Inc. prepared a Literature Review and Field Inspection report of the License Area (Appendix E) as well as a Cultural Impact Assessment (Appendix F) in support of the Draft EIS. These studies are discussed in the Draft EIS in Section 4.5 Historical and Archaeological Resources and Section 4.6 Cultural Resources.
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Mavis Oliveira-Medeiros  
Page 2  
September 23, 2019

Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

4. Sea Engineering, Inc. and Marine Research Consultants, Inc. prepared an assessment of streams and the ocean water chemistry in support to the Draft EIS. The Draft EIS summarizes this assessment in Section 4.2.3. The report is also appended in the Draft EIS (Appendix A).

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**  
Ms. Megan Loomis Powers  
February 23, 2017  
Heʻiʻiū Park and Community Center  
**Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.**

MS. POWERS: Thank you, everyone, for all your incredible sharing and your spot-on, you know, right to the number responses. I grew up right next -- I grew up on Hoʻolawa Stream, which was an absolutely dry stream. And thank goodness for Stephen Cabral. He was the guy who managed the gates most of my life, the EMI gates. He knew that streams needed a certain minimum amount just to try and survive. And so every year, he would give us at least six weeks of uninterrupted stream flow. And what was so amazing is you would watch life start to return. And all the mosquitoes would get washed away, and the frogs would come back, and they'd eat the rest of the mosquitoes that were growing in the bananas.

And what we're here defending is that we know that is -- the East Maui watershed is the supply of water for the big half of Maui, and it's -- everybody's water depends on that. And if we don't steward that mountain, if we don't steward that watershed, if we don't take care of the plants that gather the rain and bring it down to the earth we're cutting off future generations. And we know that because we've lived there and witnessed it, like your beautiful child with some mysterious disease that you don't have any way to fix just withering in front of you. And the thing is living systems, they can only take so much abuse until something breaks, until you get cancer, until, oh, my goodness, how many species have gone extinct on the East Maui watershed in the last 120 years.

You know, that should be something in the EIS. How many species have gone extinct. So what I am observing is that there's been 120 years of severe mismanagement of this watershed that serves not only the people living here now but future generations and future generations and future generations. And that mismanagement also includes the 36,000 acres of A & B land that now doesn't even hold water because they never, not once, let land be fallow. They never gave back to the soil. There's no humic acid in the soil to hold water. I mean, we've seen studies. We've done it at the farm conferences. You pour water into A & B's soil, and it doesn't even make the dirt wet. It just runs around the outside and drips out. If you have healthy soil, it holds water. There's so many studies that show if you have good humic acid content in your soil, you can reduce watering by 70 percent. Wow, 70 percent of the water gets to stay in East Maui.

That's what we need. We need good management. This is just the beginning of like recognizing that. And what she said about going all the way back to the beginning, we need to -- this is not the baseline. Right here, this is not the baseline. The baseline needs to be way back when it was a healthy ecosystem; and we need to make plans, and this EIS has to direct that planning, to support bringing, regenerating and restoring what's already been damaged. And the same goes for the soil out in the valley. So I know I had something else to say, but thank you very much.

Wilson Okamoto Corporation  
1907 South Bertania Street, Suite 400  
Honolulu, Hawaii 96826

3/10/17

Attention: Mr. Earl Matsukawa, Project Manager  
[woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

Re: EISPN for Proposed Lease for the Nāhiku, Keʻanae, Honomanu, and Huelo License Areas of Public Land, Maui, Hawaii

Dear Mr. Okamoto,

Māhalo for the opportunity to provide comments on this Environmental Impact Statement Preparation Notice (EISPN) for the use of water from four license areas consisting of 33,000 acres of public lands and waters in East Maui.

As a landowner/resident of Huelo who has legal rights to use the waters of Hoʻolawa and Hanapou streams I am personally affected by the A&B request to secure 30 year leases for 33,000 acres of public lands in the East Maui Lease areas. My lands and water right apply to the Huelo lease area. Our community has no public water system and we are entirely dependent upon rainfall and the streams for our water supply.

Myself and my family and my neighbors have been impacted by the long term diversions of our streams by A&B/EMI ditch system. Our streams are so completely diverted, by the four levels of EMI ditches that there is rarely any flow at all except during rainstorms. This deprives me and my family and my neighbors (approximately 45 people) of sufficient water for domestic and agricultural use, forcing us to have limited water available for our needs. Our lands are zoned Ag. We are required to have productive and functioning farms according to *farm plans* submitted to the County in order to qualify for agricultural tax rates. We do not have access to a consistent or reliable source of water to meet those farming requirements.

I request that the Draft EIS have a specific discussion of the impacts of A&B/EMI diversions on Hoʻolawa and neighboring streams that have never been included in the 2001 IIFS petition contested case. The discussion should include amounts historically diverted from each stream; amounts planned to be diverted from each stream; amounts planned to be restored to each stream to meet the legally protected rights of downstream communities (plant, aquatic and human) and actions proposed to care for the watershed productivity of the Huelo lease lands where the diversions occur.

In the last 45 years I grew up, played, went to school from, farmed, built a homestead and raised a family alongside Hoʻolawa stream. I have witnessed the stream be stagnant and mosquito infested for most of that time. I have witnessed invasive species overtake the last remnants of native species of plants and wildlife as the ecology changed due to lack of consistent stream flow. I have witnessed springs where we collected our drinking water dry up. I have lost agricultural crops to lack of water, which has discouraged any significant investment in future



10238-02  
September 23, 2019

Ms. Megan Loomis Powers  
[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Powers:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, your oral comments at the February 23, 2017 EIS Scoping Meeting, and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. For the purposes of this Draft EIS, the stream list used was from the CWRM D&O.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

farming operations until water is secured. I have also witnessed the wonder and brilliance of the stream coming back to life when stream flow was returned due to rainstorms, or Steven Cabral allowing the stream to flow 6 weeks every year. Although many species may never recover and return the stream to its original glory and vitality, the few that have survived will be thrilled and re-introduction of native species from other streams may be possible.

The Draft IES needs to acknowledge the damage that has been done to the watershed and downstream animal, plant and human communities since the inception of the diversions. Many communities outside and downstream of the Lease areas have been devastatingly affected due to radical changes in habitat. Fisheries have nearly collapsed due to their nurseries being eliminated. The Hawaiian community whose culture of gathering stream related food sources and sharing them with other farming and fishing communities was destroyed.

The Draft IES needs to document the damage to stream, aquatic and amphibian life from the spraying of Round-up and other pesticides along the ditch. I witnessed first-hand the toad and frog population, which helped to control the mosquitoes, nearly disappear when the ditch spraying began in the mid-1980's.

As the largest watershed on the island of Maui, its care and proper management (maintaining a thriving ecosystem that collects and stores water – I'm not talking ditch system here) is paramount to the livelihood of current and future generations on all of Maui. A&B/EMI have not shown good stewardship over this ecosystem for the last 120 years and do not deserve to be given the "Golden Goose" again.

I request to be a consulted party during the entire EIS process for the proposed Lease request.

Sincerely,

Megan Loomis Powers

Megan Loomis Powers and Ohana  
[REDACTED]

Mailing address:  
[REDACTED]

4. Truttia and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).

5. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

Environmental Impact Statement Preparation Notice  
Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas  
Scoping Meeting Comments of

Mr. Michael Pasco

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. PASCO: I'm Michael Pasco. I want to save some of the comments about the taro farmers and about the agriculture, those -- those remarks were spoken for it seems like well today. But touching on a little bit the minimum flow standards, I know that's part of the CWRM process, but I just want to make sure that when we're looking at the ecosystems here, the CWRM process, that it's ecosystem based and not the needs of A&B based about what can be taken from the -- taken from the streams. And I echo those comments about maintaining mauka to makai connectivity not just for the health of the fishes for the fishermen, but, you know, I just want people to make sure we're keeping track of the fact that the fishes that are produced on East Maui side, they don't just stay and effect East Maui, you know, that affects the entire island and even neighbor islands. And especially when we have like 80 percent or so of our modern economy based on visitor industry and stuff like that, a lot of us here have jobs that are connected to the visitor industry and we need to make sure that we're protecting those resources also for our economy.

The other thing I want to talk about is the ecosystem-based flow standards, I want to make sure that we're also keeping enough movement in the water to keep the mosquito populations down because the mosquitos, when the -- when the stream flow gets too low, the mosquito populations come up and that affects the native birds. And we need to make sure we're protecting all of the native resources, the native plants, the native birds, you know, with the -- without those native animals or plants, you have no Native Hawaiian culture and we need to sure to be protecting those things. The other thing that we're talking about with the -- with the water is we're talking about this being such a -- such a cherished resource, so I want to make sure the EIS is addressing the management of that resource. We're seeing, you know, like 20 percent or so leakage and seepage and that doesn't sound like treating this resource like the valuable resource that it is.

And the last thing I want to say, the -- when we're talking about sustainable local agricultural for food production, I want to make sure that we're looking at it with the -- with the aspect of what's happening in the other parts of the world. Like the other gentleman was saying, there's -- particularly California, you know, we're looking at the Oroville dam situation and I know that impacts so much of the food that is produced in Southern California. And they're talking about -- worrying about that dam failing and what that's gonna do to all of the food prices that all of us pay since we're not producing enough food on island. So I hope that that's factored into this decision-making process about where we're going to be getting our food if events in the world make it so that we were not getting as much from across the ocean.



February 22, 2017  
And I guess lastly I just want to state that, you know, because over the years we've seen that A&B has been such poor stewards of the -- of the resource, flushing stuff out to sea when they're not use it, I want to make sure that we have public access to the -- to the ditches so that way some verification can take place, because we haven't been able to count on the words and actions of A&B over time to manage our resources. So that's all I want to say.



10238-02  
September 23, 2019

SCO



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Pasco:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Michael Pasco  
Page 2  
September 23, 2017

Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Michelle Waikiki

February 23, 2017

Ha'ikū Park and Community Center

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. WAIKIKI: My name is Michelle Waikiki. And this is a message from my husband to the EIMS --or EIS tonight. The Department of Water Supply, County of Maui, released their statements of cash flow audits done by M & K CPAs. In their audit, cash received from the public trust and others, from 2013 to 2017, equal \$200 million. Payments to suppliers, A & B, HC&S, EMI and Wailuku Water Company from 2013 to 2017 surpassed \$100 million. All suppliers are ditch operators. They are all selling state-owned water to the County and charging the public trust at a 33 percent or more increase. The public trust pays water bills to the County, who then pays A & B, EMI, HC&S and Wailuku Water Company to transport the water to the County grid. The public trust doctrine simply has no representation.

This is theft and fraud and other crimes because these operators are in violation of expired water licenses, expired leases, EIS audit violations, violation of HRS 167, failure to public auction, year to year revocable permits, violation of HRS 271G, Hawaii Water Carriers Act, violation of HRS 271G-10, violation of 271.12, under the PUC, PUCC, PCN. And the County of Maui is an accessory to these violations. Only a federally regulated public water utility company, publicly traded stock corporation, bonded and insured, providing water, can meet all of these requirements and lawful demands by representing and enforcing the public trust doctrine. Maui Electric Company is a public utility company, providing electricity to the public trust. In final, all of you, meaning the board, should be arrested for fraud, plundering and pillaging.

And then I would like to also say for myself, like, I would like to propose that the Hawaiians get together and we figure out how we can figure you guys out through blood quantum. I know my husband is 100 percent Hawaiian. They threw him in prison for 20 years over this water, over \$141,000. So I hope -- before he went to prison, he put videos out, which are on my Facebook page. The 1863 water course agreement, with my husband's two grandfathers' names on it, he created an EIN for Maui water utility company. So we need is the public to come together, and we use this Maui water utility company to put the water in the public's hands, not HC&S, EMI. And then we also have a document that is a Supreme Court order right here -- from 1914 to present, the American government owes the Kingdom of Hawaii, it's 74 billion on this paper, but it's about 125 billion now. And in court, Judge Nishimura ruled that A & B water permits are invalid. I have 11 file boxes full of information. I've proved my husband innocent beyond a reasonable doubt and this state guilty of fraud. And I want my husband out of prison. He don't belong in prison.

Thank you.



**WILSON OKAMOTO  
CORPORATION**  
PROPOSERS • PLANNERS • ENGINEERS

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>  
Attention: Mr. Earl Matsukawa

**RECEIVED**  
MAR 06 2017  
WILSON OKAMOTO CORPORATION

**SUBJECT: EISPN: PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU,  
KE'ANAE, HONOMANU, AND HUELO LICENSE AREAS -  
SCOPING MEETING, FEBRUARY 22-23, 2017**

*For Kingdom of Maui Government  
I would like Audits for the State of Hawaii  
And every department within the State.*

*Judge Rhonda Ioo and her Water Stocks  
With AEB Need Completely Reviewed as  
well as the Abuse of Power she Used to  
Throw my husband in prison for 20 years,  
Over Opunui Water Company.*

*I Propose Work & Education Rehabilitation  
Programs for the 10,000 Hawaiian men being  
held in America's High tech Slavery prison  
System.*

*State Officials are Committing Crimes  
Against Hawaiian People and the State  
Does Not even follow their own LAWS.*  
(include additional sheets as necessary)

PLEASE PRINT: Name: Michelle Warkiki Phone: [REDACTED]

Organization: Grow Warkiki LLC

Address: [REDACTED]

Email: [REDACTED]

Please submit comments by March 10, 2017 or email [woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

\*Receipt of e-mailed comments will be confirmed via e-mail. If you do not receive a confirmation message, please contact our office  
(see contact information, above).

(Fold on dotted lines and seal with tape or staple)

Michelle Warkiki

HONOLULU HI 968

02 MAR 2017 PM 11



Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
Attention: Mr. Earl Matsukawa

96826-130100

(Fold on dotted lines and seal with tape or staple)

002499



10238-02  
September 23, 2019

Waikiki

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'e'anae, Honomanū  
and Huelo License Areas

Dear Ms. Waikiki:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'e'anae, Honomanū, and Huelo License Areas, your oral comments at the February 23, 2017 EIS Scoping Meeting, and your written comments dated March 2, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaii's Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'e'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

Your oral and written comments, and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Michelle Waikiki  
Page 2  
September 23, 2019

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resource  
A&B / EMI, Applicant





10238-02  
September 23, 2019

Mikiala Pua'a Freitas

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mikiala Pua'a Freitas:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
3. Cultural Surveys Hawai'i, Inc prepared a report in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on cultural resources and practices. The impacts of the Proposed Action to cultural resources and practices are discussed in Section 4.6. The report is appended to the Draft EIS (See Appendix F).
4. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
5. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

## Environmental Impact Statement Preparation Notice Proposed Water Lease for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas

### Scoping Meeting Comments of

Mikiala Pua'a Freitas  
February 22, 2017  
Maui Electric Company Community Meeting Room  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

My name is Mikiala Pua'a Freitas. I'm a Native Hawaiian and my ohana has been on Maui for many generations. You know, this meeting should be held in East Maui so that, you know, everyone here and you folks as well can look the people of East Maui in the eye and talk about their resource that we're trying to do all these other things with, first and foremost. Maybe consider doing an environmental impact study on the generations of East Mauians that have lost of a way of life and continue to be oppressed by these diversions, so let's start there, you know. After 120 years of diverting the water, it's great that they're doing an environmental impact statement, but maybe look a little deeper and really look at what's been going on out in East Maui and not just argue and bicker about the water that should be out there and the uses that everybody wants to use their water with, you know. The people – the things that don't have voices, you know, the -- like the natural environment out there that doesn't have voices, you know, who's going to be speaking for them? So we need to consider an environmental impact study to be done on, you know, these people that have been effected, the people and environment that have been affected for 120 plus years.

Secondly, I think, you know, are you guys adequate enough to do this study for a 30-year lease, you know? I mean, is that a recommendation that you folks feel comfortable with, doing a study that's potentially going to influence a lease for 30 years. Maybe you recommend doing year to year if -- you know, if you can have any kind of input along the lines of that, you know. Thirty years is a long time and, you know, will your study be adequate enough for that? More public involvement, oversight, and transparency and less privatization, you know. I understand the need for existing homes and businesses and, you know, ranchers and everybody that's using the water right now, but, you know, why does the people of East Maui and, you know, the environment of East Maui have to put future developments and future business ideas and expenditures on their shoulders? You should be looking at, you know, alternative water resource -- I mean alternative water uses, you know, A&B should be looking at alternative water uses, you know, whether it be catchments or swales. Yeah, like uphold their end of the bargain and --

You know, as a kalo farmer, you know, the reason you hear so much about kalo farming and whatnot, is, you know, as a kalo farmer you use the water and then the water continues to be used. It's not you take the water, use it for one crop, and it replenishes a different aquifer from where it came from. So, you know, that's why you hear about the kalo farmers and the water is they still have that system of sharing and using the water for, you know, the things that don't have voices. So, you know, let's really -- yeah, I don't know how to end it, but that's basically my concerns and you want to follow up with. You got it?



10238-02  
Letter to Ms. Mikiala Puaa-Frietas  
Page 2  
September 23, 2019

be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

---

**From:** [Wilson Okamoto Corporation](#)  
**To:** [Earl Matsukawa](#); [Keola Cheng](#); [Rebecca Candliasa](#)  
**Subject:** FW: EIS Preparation Notice Comments for A&B Proposed Water Lease  
**Date:** Friday, March 10, 2017 8:38:11 AM

Jeanine S.H.Y. Morioka  
Secretary

1907 South Bertania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

**From:** [REDACTED]  
**Sent:** Thursday, March 09, 2017 6:35 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

Another 30 year water lease to A&B is ludicrous. The water belongs to all of the citizens of Maui and should not be leased to any one private entity for 30 years. This is an antiquated system that needs to be changed and be fair to all. The citizens of Maui should be the ones to decide the fate of this request. The BLNR should certainly NOT depend on an EIS report that has been paid for by the requesters. How fair do you expect that report to be? It is time to change this whole process of how this water has been allowed to be stolen from the people by the very departments that are supposed to represent the people and are paid for by the people. Let's once and for all clean up this system whose time has come for redirection.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR work on behalf of the people they are paid to represent and not private interests..

Mahalo for your time.

Sincerely,  
Miranda Camp  
Kihel, HI 96753

002502



10238-02  
September 23, 2019

10238-02  
Letter to Ms. Miranda Camp  
Page 2  
September 23, 2019

Ms. Miranda Camp

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Ms. Camp:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.

3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Moke Kiamoe & Ms. Kahikina Kiamoe

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. KAHIAMOE: My name is Moke Kahiameoe. I come from Huelo. I live by the stream. My family all from there from way back when they started doing the ditches. The thing I like you guys to remember when you looking at all this, everybody, the county (inaudible). I -- for right now, the -- you trying to take care of your -- there's so much to take care of this world going on, but I only can take care so much and the first thing is my ohana. So because now your parents getting older, sick, this, that, you get pulled away from the actual water situation going on. So the thing that I want to address is that this 30-day window, we gotta come in and make one decision, you know, that's pretty quick, yeah.

FACILITATOR SENELLY: Actually, it's not to make a decision, what --

MR. KAHIAMOE: But either way --

FACILITATOR SENELLY: Yeah, yeah, yeah.

MR. KAHIAMOE: We pick out points because what we talking about, 30 days is nothing, yeah.

FACILITATOR SENELLY: So what's going to happen is what you guys tell us during these 30 days is what they have to study, which will probably take months. So the things you bring up, that is the basis for the studies that they're going to look at. Your comments will be in the EIS and it'll help frame what is in the EIS.

MR. KAHIAMOE: Okay.

FACILITATOR SENELLY: Yeah.

MR. KAHIAMOE: Okay. That's what I was --

FACILITATOR SENELLY: Okay.

MR. KAHIAMOE: -- gonna bring you back to here. Because we've been going through this problem for way hell a long time. And probably me, I'm gonna (inaudible) before this thing get done, because there's other people, our parents, going, my grandparents going. Our cousins, they leave Keanae. They (inaudible) started all this stuff. We're talking about the same kind of things going on. But you know what, the water has been going. I live by 'em, I go up, I check all the time, yeah. Things are changing, the

Scoping Meeting Comments of Mr. Moke Kiamoe and Ms. Kahikina Kiamoe

Page 2

February 22, 2017

environment change, the trees not growing because they took the water away, you know, and something else that stay inside the land right now that we found out -- I went up and I seen something that is -- that is -- I have never seen in my -- since I was born stay in the stream. Now, whether or not it came -- if people threw it and it went in the water or the water wasn't there, that's why it grew up, I don't know. It's lot of stuff. So one we need to look at is that not only the streams that carry the water, but the places where the water do reach, but it's through spring, not necessarily on that water -- I mean that river itself, need to look at.

And then the next thing is when we dam stuff -- because I see the water come, go, come and goes, so I don't know where the thing going. I think -- I don't see 'em coming, yeah.

FACILITATOR SENELLY: So we've heard this before too, you want to know what the flows are and that -- how it's managed and stuff, yeah, where the flow goes. Are you signed up?

MS. KAHIAMOE: No, but I'm his daughter. Can I say something really quickly?

FACILITATOR SENELLY: You gotta talk like him then.

(Laughter.)

FACILITATOR SENELLY: No, no, no. Tell us your name. Tell us your name.

MS. KAHIAMOE: I can talk like him.

FACILITATOR SENELLY: Okay.

MS. KAHIAMOE: My name is Kahikina Kahiameoe. I live in Huelo. And I think the EIS should address the people that actually gets the water.

FACILITATOR SENELLY: Okay.

MS. KAHIAMOE: As far as -- I see the environmental issues as far as the fishermen and the farmers, but I'm talking about the people like myself, because I -- these clothes that I'm wearing, I wash them from that water that comes from that stream. We bathe in that water, you know, we wash our dishes, everyday use comes from that water. So I would like them to address the people and their normal daily lives that they need to do and that water that comes to their house.

FACILITATOR SENELLY: The social part.

MS. KAHIAMOE: Exactly. The modern day living.

FACILITATOR SENELLY: Okay. Everybody, I diverted, 'cause I let her talk, but we will still try to stay in order.

Okay?

MS. KAHIAMOE: Okay. Thank you.



10238-02  
September 23, 2019

Mr. Moke Kiamoe and Ms. Kahikina Kiamoe

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. and Ms. Kiamoe:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. For the purposes of this EIS, diversion quantities from the D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area.
4. The Draft EIS assesses impacts to socio-economic characteristics associated with the Proposed Action in Section 4.7 of the Draft EIS, as well as in the Social Impact Assessment (See Appendix G) and Economic and Fiscal Impact Study (See Appendix H). Existing conditions and impacts of the Proposed Action, including the impacts from modification or removal of diversion structures in streams designated for full restoration by the D&O, will be included in Chapter 4 of the Draft EIS and various technical studies, such as: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

September 23, 2019

Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Cultural Impact Assessment (See Appendix F); and Agricultural Related Economic Impacts report (See Appendix I).

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

February 26, 2017

As A resident of Nahiku I would like to express my grave concern over the use of the water streams of Nahiku, Keanae's, Huelo. The Board of Land and Natural Resources should realize this water should rightfully belong to the local residents and farmers. The Board should support the smaller family farms of East Maui. Not corporate farms from outside!

And certainly not developers! These outside interests won't even give you detailed plans for our water's use. It's NOT fair - it's NOT Right! = this is your opportunity to help us put an end to the gross misuse of our beloved resources. - respectfully, Mrs. Mugs Ivanovich

- resident on Nahiku Rd.





GREEN-INSPIRED.COM  
Printed on FSC®-certified paper with soy ink.





10238-02  
September 23, 2019

anovich

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mrs. Ivanovich:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated February 26, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mrs. Mugs Ivanovich  
Page 2  
September 23, 2019

Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Nalani Kanenau

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. KANENAU: Okay. Aloha kakou. My name is Nalani Kanenau. Mahalo for everyone to have my voice heard today. For me, it is no coincidence that today, a day water protectors from Standing Rock are being forcibly removed from the Oceti Camp trying to protect the water, that I, a Native Hawaiian, am here to testify to protect water. And this is my first time, so (inaudible).

I would like the EIS to address agricultural needs and that sustainable crops are found with any combination of co-op farmers. I would love A&B to be transparent in their plans for whatever mass farming that they're wanting to get into. I'd also like that there is no action until actual stream data -- stream flow data is gathered for all of the streams proposed to be diverted and that the repair and maintenance of the diversion system is cared for, cared for by charging of market rates for water to generate sufficient funds to keep that repair and maintenance going.

I'd like the EIS, EIS statement to look at impacts on aquatic life, native plant species, and traditional and customary Hawaiian practices, kalo farming, gathering native plants, and kahua dancers, recreation, et cetera. I believe we need real farmers, not rich gentleman farmers. If you go to the A&B website, there's -- you can become an investor of their gentleman farmers. I need to know that A&B truly has the interests of Maui at heart. I need A&B to honor the tradition of taking only what you need and not taking all that you can. Mahalo.

002509





10238-02  
September 23, 2019

Ms. Nalani Kanenau

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Kanenau:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Nalani Kanenau  
Page 2  
September 23, 2019

Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

4. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).

5. Cultural Surveys Hawai'i, Inc prepared a report in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on cultural resources and practices (See Appendix F). The impacts of the Proposed Action to cultural resources and practices are discussed in Section 4.6.

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Nik Hilananda  
February 23, 2017  
Haʻikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. HILANANDA: First of all, I wanted to refute the fake news -- we all know what that is now -- on the front page of the finest daily paper here on Maui, which said that yesterday at the meeting at MECO -- and it's interesting to have a meeting at MECO but not in Hana or Keānae -- that without the lease -- and, of course, a former County councilmember said this, and it was quoted in the paper -- without the lease, upcountry would have no water. Okay. Let's get rid of that fake news right away.

Next, the lease, A & B is going to donate the ditch system, and I had to the County. But thinking about it here, I changed that to some kind of publicly controlled trust. They could donate the delivery system to us, the people, because they've already made -- as has been said already by many people, they've already made millions and millions of dollars. EMI employees know that ditch system to be hired by this public entity to run the ditch system. I also want to say, before I go on, I wanted to incorporate in my testimony the brilliant testimony of people before me. It just got me. People have been here for generations. I bought my property 20 years ago. Mokuapapa Stream is totally bone dry. 20 feet west of my property, it blocks all the water. On December 31st, that big storm, 5 feet, it almost was over me, running through my streams, wiping out all the vegetation, all the trees and a hundred foot across in that streambed, running like the Wailuku River. I've been there 20 years, I've never seen that. It was incredible. That's how some of these streams used to be. Those who have been here for generations know that.

Somebody had earlier mentioned that the Maui Police Department was here and said they'd never seen that. Everybody said no, no, no. About 10 or 15 years ago, maybe 10 years ago, 12 years ago, there was a meeting right here in this very room, and there was just as many police here. Now who asked them to come and why is it a coincidence that it's another water meeting?

UNIDENTIFIED SPEAKER: EIS, EIS.

MR. HILAWANDA: I do want to thank you for saying "EIS, EIS," because what I really liked about this meeting, you guys who know only a little bit and you've been educated by the people, did you notice we weren't held to a three-minute testimony?

MODERATOR SENELLY: Actually, people came up to me, and they wanted -- we don't do that.

MR. HILAWANDA: Okay. So I want to thank you for that, because the passion of some of the people here, you can't cover that in three minutes, like when the County Council or whatever meeting says,

we're going to give you three minutes. It was incredible. You know, it's funny, I'm up here for about five minutes to seven minutes, and other people go -- and I know it's the end of the day, and half the people left, and it's fine. That's why I cut this down to just a couple of points. I hope I don't miss them.

So by the way, A & B is not going to get the 30-year lease. They're not even going to get -- hopefully, a one-year lease, but they're not going to get the 30-year lease because of what's happened in this room today. And it's not stopping here. It's been going on for generations, you guys know. So the EIS -- but we have to stay on top of that. And just as a side mention, I want to talk about development. There's about a half a dozen developments right here around Haiku already, just popping up, that we don't even know about, right here around the Haiku Community Center here. So it's going to keep on happening, keep on happening, keep on happening. People have mentioned some of the other ones. And I think that's about the things that I wanted to add that I didn't hear people talking about.

But again, now put in your EIS that A & B does not deserve it. The people should have the water and the people that live on the East side of Maui. And there's plenty of water. For the people that need the water upcountry, somewhere else, can then ask the community of East Maui, hey, could we have some of your water, not the other way around.

Thank you, Berna. You run a brilliant meeting.



**From:** [REDACTED] on behalf of [Earl Matsukawa](#)  
**To:** EIS Preparation Notice Comments for A&B Proposed Water Lease  
**Subject:**  
**Date:** Friday, March 10, 2017 4:36:15 PM

---

Dear Earl Matsukawa,

Aloha: I have land which has the dry creek bed of Mokuapapa stream run through it. Twenty feet west of my property line is an EMI dam which blocks 100% of the water from the stream. West of the dam, it continually flows 365 days a year. East of the dam, it is dry over 350 days! This is reprehensible and the time has come to deny A&B and EMI the continual environmental destruction which they have wrought on mine, and most of the East Maui streams for 150 years. They have been a terrible steward and to reward them with even one more day is sacrilegious. All of the natural fauna and flora are gone. Mosquitoes are now dangerous and terrible result of their destructive practices.

Our State Constitution says that water is a public trust, held for the people of Hawai'i. Yet this multi-national, for profit, land development company has made hundreds of millions of dollars by stealing this natural resource and selling it back to the county and State.

Enough is enough

Mahalo.

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the Nahiku, Ke'anae, Honomanu, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo

Nikhilamanda

Sincerely,  
Nikhilamanda



10238-02  
September 23, 2019

██████████  
██████████  
██████████

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Mr. Hilananda:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas, your oral comments at the February 23, 2017, and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawaiʻi Revised Statutes (HRS) Chapter 343 and Hawaiʻi Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on diversion quantities from the Commission

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Nihkilananda  
Page 2  
September 23, 2019

on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

4. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
5. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
6. The impacts from modification or removal of diversion structures in streams designated for full restoration by the D&O will be discussed in Chapter 4 of the Draft EIS, as well as the various technical reports done for the Draft EIS, including: the Social Impact Assessment by Earthplan (See Appendix G) in the Cultural Impact Assessment (See Appendix F), and the Agricultural and Related Economic Impacts Report done by Plaseh Econ Pacific, LLC (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

Enclosures

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

PHONE (808) 594-1888

FAX (808) 594-1938



STATE OF HAWAII  
OFFICE OF HAWAIIAN AFFAIRS  
560 N. NIMITZ HWY., SUITE 200  
HONOLULU, HAWAII 96817

April 4, 2017

HRD 16-8044

Board of Land and Natural Resources  
Attn: Ian Hirokawa  
1151 Punchbowl Street, Room 220  
Honolulu, HI 96813

RECEIVED  
APR 17 2017  
WILSON OZAMOTO CORPORATION

Re: Comments on the Environmental Impact Statement Preparation Notice (EISPN) for the Proposed "Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas" being proposed by Alexander & Baldwin Inc. and East Maui Irrigation Company, Limited, situated at TMK Nos. (2) 1-2-004:005, 007 (por.), 1-1-001:044, 1-1050, 2-9-014-001, 005, 011, 012, 017 in the Makawao and Hāna Districts, on the island of Maui

Aloha e Mr. Hirokawa,

The Office of Hawaiian Affairs (OHA) appreciates the opportunity to review and comment on the above-referenced Environmental Impact Statement Preparation Notice (EISPN) and application by and for Alexander & Baldwin Inc. and East Maui Irrigation Company, Limited (collectively "A&B"), who are seeking a long-term, thirty-year Water Lease pursuant to HRS §171-58(c) for the "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo license areas (collectively the "License Areas") "for the purpose of developing, diverting, transporting, and using government-owned waters." (Collectively the "Proposed Action.") This application relates to issues of past, present, and future significance which have required considerable review before responding. OHA apologizes that its comment is being submitted after the requested due date, and thanks the applicant for its previous agreement to consider the agency's analysis.

OHA appreciates the applicant's decision to proceed with an EISPN, and its acknowledgement that the "potential for significant environmental impacts requires the

Mr. Ian Hirokawa  
April 4, 2017  
Page 2 of 7

preparation of an EIS."<sup>1</sup> OHA's analysis and comments in response to the EISPN are limited to that document, while acknowledging that there are pending matters before the Commission on Water Resource Management (CWRM) regarding interim instream flow standards (IIFS). Finally, OHA's comments should be viewed as preliminary in nature, and will be supplemented as additional information is provided throughout the Chapter 343 process.

As the constitutionally-established agency possessing kuleana (responsibility) for protecting and promoting the rights of Native Hawaiians, OHA holds substantive obligations to advocate for Native Hawaiians, and to assess policies and practices as they may impact the rights and resources of Hawai'i's indigenous people. HRS §10-3(3) also designates OHA as "the principle public agency in this State responsible for the performance, development, and coordination of programs and activities relating to native Hawaiians and Hawaiians." OHA seeks to fulfill this kuleana not only with respect to those rights that extend specifically to Native Hawaiians by nature of their unique legal status; but also those laws of general applicability to Hawai'i and its people. This includes Article XI, §1, which lists water among those public natural resources "held in trust by the State for the benefit of the people," and also Article XI, §7, which confirms the State's "obligation to protect, control, and regulate the use of Hawai'i's water resources for the benefit of its people."

OHA is highly mindful of the unique value that Native Hawaiians have ascribed to wai (fresh water) since time immemorial, and which continues to be upheld in state law today. In pre-contact times, land, water, and other natural resources were not to be owned, but to be stewarded for the benefit of the general public. This worldview was reflected in the Kingdom of Hawai'i's first Constitution, which described the natural resources of the 'āina (land) as a public resource that "was not [the king's] private property. It belonged to the chiefs and the people in common, of whom [the king] was the head, and had the management of the landed property."<sup>2</sup> This concept continues to be embodied in Article XI of the State Constitution, as well as in the State Water Code, HRS Chapter 174C, and in a long line of judicial precedent from the state courts. These ancient values stand alongside the growing understanding amongst the scientific community of the fragile nature of the systems of abundance that make life and commerce possible in the world's most isolated inhabited archipelago.

OHA therefore emphasizes the legal and cultural significance of the application underlying the EISPN, which would grant a private landowner a thirty-year lease to control water resources that are considered to be held in trust for the public benefit. An inescapable consequence of the approval of the Proposed Action is that members of the public, including subsistence farmers affected by the water diversion, may continue to be denied the benefit of the very resources that our State's constitution promises are held in trust for them. Compounding the issue, OHA notes that this is a proposal to continue the diversion of stream water from the License Area that began in the 1870s, to the benefit of certain commercial and public interests, but at the expense of others.

<sup>1</sup> Applicant's EISPN, S-2

<sup>2</sup> See KING, HAW. CONST. OF 1840; D. Kapua'ala Sproat's Chapter "A Question of Wai: Seeking Justice Through Law for Hawai'i's Streams and Communities" in *A Nation Rising: Hawaiian Movements for Life, Land, and Sovereignty*, edited by Noelani Goodyear-Ka'ōpua Kaika Hussey, and Erin Kahunawaikua ala Wright.



OHA offers five general comments for your consideration as you prepare the draft EIS.

**1. Applicant should consider multiple alternative diversion volumes, including the alternative of discontinuing the diversion of fresh water entirely.**

Hawaii's environmental review regulations require a draft EIS, in its review of a proposed action, to meaningfully consider a range of alternatives, including alternatives "that might enhance environmental quality or avoid, reduce, or minimize some or all of the adverse environmental effects, costs, and risks."<sup>3</sup> The analysis of a "no action alternative" is explicitly called for, as well as alternatives that include actions of a "significantly different nature" or that relate to "different designs or details" which may result in different environmental impacts.<sup>4</sup> Notably, "environmental impact" is defined to include "an effect of any kind, whether immediate or delayed, on any component of the environment," i.e., "humanity's surroundings, inclusive of all the physical, economic, cultural, and social conditions . . . including land, human and animal communities, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance."<sup>5</sup>

In order to satisfy the alternatives analysis requirements of the law, any draft EIS should therefore include both a specific action proposal, as well as alternative actions that may result in lesser impacts to the natural, cultural, and socioeconomic environment. Given the clear and significant environmental impacts that have and continue to result from the diversion of East Maui's streams, the subject EIS should at a minimum contain a specified proposed amount of water to be diverted, as well as alternatives that involve the diversion of less or no water at all. However, while the EISPN early consultation request originally described a proposal to divert 100 million gallons per day (mgd) of "government-owned" i.e., public trust, water from the License Area for a period of thirty years, the notice to which OHA is responding to at this time does not specify the amount of water being proposed for diversion. Without such specificity, it may be difficult if not impossible to analyze the impacts of the Proposed Action, or provide comparative analyses of the lesser impacts of alternative diversion scenarios.

Accordingly, the draft EIS should provide the specific amount of public trust water to be requested by the applicant, and any alternative scenarios involving the diversion of less water. Such scenarios may include variations in end water uses and crops; infrastructure maintenance and development to increase efficiency and decrease the need for diverted water; and diversion practices that minimize diversions during low-flow conditions. OHA understands that several parties have already recommended that the draft EIS include multiple alternative diversion volumes.

Lastly, OHA appreciates the applicant's stated commitment to include an alternative of no action, which we interpret to mean the exploration of an alternative where no license has been

<sup>3</sup> HAR § 11-200-16(f) ("The draft EIS shall describe in a separate and distinct section alternatives which could attain the objectives of the action, regardless of cost, in sufficient detail to explain why they were rejected. The section shall include a rigorous exploration and objective evaluation of the environmental impacts of all such alternative actions. Particular attention shall be given to alternatives that might enhance environmental quality or avoid, reduce, or minimize some or all of the adverse environmental effects, costs, and risks." (emphases added)).

<sup>5</sup> HAR § 11-200-2.

granted, resulting in the end of diversions and the full restoration of streamflows. OHA notes that while the EISPN described several potential downsides to an alternative of no action, the draft EIS should, at minimum, pay equal attention to potential benefits of a no action alternative to East Maui residents and others.

**2. Applicant should consider multiple shorter alternative lease periods for use of the License Area and its public trust water.**

For similar reasons, OHA recommends that the draft EIS include shorter alternative lease periods, which may allow for the adjustment of diversion allocations to account for changing climate conditions, end uses, population increases, or other reasonably foreseeable circumstances. Both the early consultation request and the application in question seek use of the License Area and the diversion of public trust water for a period of thirty years. It is unclear why the applicant considers a lease of this length to be optimal, or what differences in benefit the applicant anticipates from a lease of a shorter period. Notably, a lease of this length may lock the State into a situation where critically needed public trust resources are unavailable for public use for decades, without potentially costly legal intervention.

Accordingly, OHA joins several parties who commented on the early consultation request in recommending that the draft EIS include multiple alternative lease periods. OHA recommends that the multiple periods be no greater than thirty years, a period for which OHA already has concerns. If the applicant believes that the State is able to provide such a lease in a manner consistent with its trust obligations, OHA encourages the applicant to provide its rationale in its analysis of these alternatives.

**3. Applicant's exploration of impacts and mitigation measures must consider current and cumulative impacts caused by diversions up to this point. OHA does not accept the framing of current diversion as neutral in impact.**

In its section on "Existing Environment, Potential Impacts to be Explored, and Mitigation Measures," the applicant repeatedly stresses that a granted lease would "maintain existing conditions, subject to the pending IIFS decision and any reservations in favor of DHHL."<sup>6</sup> It is unclear as to whether the applicant intends to limit its review of potential environmental impacts to those which go above and beyond current impacts (of current and historical diversions), or whether there will be due attention given to how stream diversions have impacted and currently impact members of the public, including East Maui communities, and the environment. Limiting the EIS' analysis in such a fashion would appear to be at odds with the applicant's responsibility to consider cumulative impacts of the Proposed Action, which the applicant acknowledges as:

Cumulative impacts refer to the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency, or person undertakes such

<sup>6</sup> While it is not treated as its own topic in this comment, OHA joins the Department of Hawaiian Homelands in urging that the applicant's analysis of the Proposed Action consider any impacts to DHHL and homesteaders, especially in light of DHHL's Maui Land Inventory and Maui Island Plan.



other actions. Cumulative impacts can result from individually minor, but collectively significant impacts taking place over a period of time.<sup>7</sup>

Any proposed diversion scenario would extend the impacts that have and continue to occur due to the diversion of East Maui's streams, and should therefore be analyzed cumulatively with these impacts. In other words, the impacts of historic and ongoing diversion actions cannot be ignored, by simply framing them as "existing conditions."

Moreover, the treatment of historic diversions as "existing conditions" not meriting an environmental impact analysis begs the question as to what the present EIS actually intends to analyze. For over a century, diversions have dewatered streams throughout East Maui, disrupting ecological and hydrological cycles, altering native habitat, and displacing communities reliant upon fresh and abundant water flow for their cultural, subsistence, and socioeconomic needs. The Proposed Action to grant a lease would result in the continued accumulation of such impacts for thirty years, the analysis of which would appear to be the very purpose of the instant EIS. Accordingly, the impacts of any historic or current diversions that may be continued by the Proposed Action cannot be dismissed as "existing conditions" not meriting careful consideration and analysis.

OHA therefore recommends that the applicant's draft EIS include the current and historic impacts that have resulted from the diversion of public trust water from its natural pathways from mauka to makai, and that would continue to accumulate as a result of any proposed action. The draft EIS should specifically consider possible adverse impacts to traditional and customary practices, the natural and cultural resources they rely upon, and the particular attributes of East Maui in general. These include, but are not limited to:

- Kalo cultivation;
- Estuarine and stream cultivation;
- Gathering areas;
- Aquifer recharge;
- East Maui's communities' unique character as kipuka for Native Hawaiian culture, values, and subsistence lifestyles;
- Key habitat for stream and coastal species, including species unique to East Maui, as well as species which may migrate or act as broodstock for other regions and islands; and
- Impacts to other cultural and subsistence practices

**4. Applicant should describe any limits or impacts to Native Hawaiians' ability to traverse or utilize the License Area in order to engage in traditional and customary practices, as well as feasible action to mitigate impacts to such practices.**

While much of OHA's concerns center around the applicant's use of a to-be-determined amount of public trust water, we also seek to understand how the Proposed Action may impact access to the License Area itself. Namely, we hope to understand how the applicant intends to

<sup>7</sup> HAR §§11-200-2, -12(a); see Applicant's EISPN, 3-19.

support any efforts by Native Hawaiians to travel through or otherwise utilize the License Area in the exercise of traditional and customary rights protected by Article XII, §7 of the Hawaii State Constitution.<sup>8</sup> OHA expects that the applicant has concrete plans and procedures in mind to ensure that Native Hawaiian rights to hunt, gather, and otherwise engage in traditional and customary practices are respected at all times, and that the EIS will examine alternatives that may mitigate any impacts to Native Hawaiian rights as part of the broadly defined socio-cultural "environment."

OHA further recommends that the applicant also explain what impacts will occur for the general public. Any restriction should be explained in terms of its purpose, with an appropriate analysis of less-impactful alternatives to achieving such a purpose.<sup>9</sup>

**5. Applicant should clearly articulate how its use of the license area and water is consistent with public trust purposes, especially in light of the impact of its diversions on Native Hawaiians and members of the public.**

While not an express requirement of Chapter 343, OHA reiterates the need for the applicant to support the assertion that any request for a thirty-year lease of public land for the purpose of diverting public trust water is consistent with the public trust. Absent such justification, any proposed action could be presumed contrary to the obligations of the State under its constitution and Water Code.<sup>10</sup> While it is not inconceivable that off-stream diversions, even by private entities, may in some cases be consistent with the public trust, such diversions and their end uses must be carefully justified and balanced with protected public trust purposes and other beneficial public uses. In other words, for the EIS to be a meaningful analysis of a realistic proposal, the Proposed Action must be legally justifiable as consistent with the public trust.

In this regard, OHA joins the U.S. Department of the Interior's Fish and Wildlife Service in noting that the Hawai'i State Water Code (HRS §174C) does not include agricultural diversions among those purposes necessarily considered consistent with public trust use. We add that HRS §174C-101 affirms that "the appurtenant water rights of kuleana and taro lands, along with those traditional and customary rights assured in this section, shall not be diminished or extinguished by a failure to apply for or to receive a permit under this chapter."<sup>11</sup> We further urge that the applicant demonstrate its understanding of what impacts continued diversion may have on the Native Hawaiian farmers, fishers, and other residents of East Maui.

**Conclusion**

From the earliest days to the present, fresh water has and continues to be a precious necessity to life in Hawai'i. In light of the generations that have passed since the continuous commercial dewatering of streams throughout East Maui, we approach the applicant's request

<sup>8</sup> Article XII, § 7: The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua'a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights.  
<sup>9</sup> HAR § 11-200-16.  
<sup>10</sup> See, e.g., In re Water Use Permit Applications, 94 Haw. 97, 154-55 (2001).

<sup>11</sup> The chapter referenced in this section is the State's Water Code.



Mr. Ian Hirokawa  
April 4, 2017  
Page 7 of 7

for the continued diversion of East Maui stream water for an additional thirty years as a serious matter. OHA urges the applicant to continue to utilize the Chapter 343 process as an opportunity to sincerely consider how to propose an arrangement that meets the legal obligations of all parties as well as the interests of Native Hawaiians and the greater public, especially the people of Maui. OHA looks forward to reviewing the draft EIS.

Mahalo once again for the opportunity to comment. If you have any question, please contact Kai Markell at (808) 594-0220 or via email at kaim@oha.org.

'O au iho nō me ka 'oia 'i 'o,

*Kamano Crabbe*

Kamana 'opono Crabbe, Ph.D.  
Ka Poughana, Chief Executive Officer

CC: OHA Trustee Hulu Lindsey, Maui Island  
Daniel Y. Yasui, Alexander & Baldwin/East Maui Irrigation Co., Ltd.  
✓ Earl Matsukawa AICP, Wilson Okamoto Corp.



10238-02  
September 23, 2019

Ms. Sylvia Hussey  
Interim Chief Executive Officer  
Office of Hawaiian Affairs, State of Hawai'i  
560 N. Nimitz Hwy., Suite 200  
Honolulu, HI 96817

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū,  
and Huelo License Areas

Dear Ms. Hussey:

Thank you for the Office of Hawaiian Affairs' (OHA) participation in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your agency's written comments dated April 4, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including alternative lease terms.
3. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from

September 23, 2019

the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)
5. Cultural Surveys Hawai'i, Inc. prepared an Archaeological Literature Review and Field Inspection (See Appendix E) and Cultural Impact Assessment (See Appendix F) reports in support of the Draft EIS assessing the impacts of the Proposed Action to historic and cultural resources, as well as cultural practices. The analysis of the reports is discussed in Sections 4.5 and 4.6 of the Draft EIS.
6. The Proposed Action's relationship to various State of Hawai'i and County of Maui plans will be discussed in Chapter 5 of the Draft EIS.

OHA's written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawai'i 96826

Attention: Mr. Earl Matsukawa, Project Manager  
[woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

9 March 2017

**Re:** Early Consultation for the Preparation of an EISP Proposed Lease for the Nahiku, Ke'anae, Honomanu, and Huelo License Areas East, Central and Up-Country Maui, Hawaii

Aloha Mr. Okamoto,

Mahalo for the opportunity to provide comments prior to the issuance of an Environmental Impact Statement Preparation Notice for the use of water from four license areas consisting of 33,000 acres of lands and waters in East Maui. I provide these comments as a restoration ecologist and conservation planner, with knowledge of the extensive ditch and diversion system of East Maui and the varying natural conditions of the streams and surrounding ecosystems there; and as a taro farmer.

My comments are preliminary in nature at this time. The proposed action involves the continued diversion of water from at least 31 streams (not inclusive of tributaries, springs and seeps) along the north-facing slopes of East Maui/Haleakala, covering the following license units: Nahiku, Keanae, Honomanu and Huelo for a total of more than 33,000 acres. This area represents critical source waters and watersheds that support native species, including numerous threatened and endangered terrestrial and aquatic plants, birds, fish, crustaceans, molluscs and insect species; riparian and nearshore fresh, brackish and marine water health; the health of coastal SMA areas such as the traditional Nahiku, Keanae-Wailuanui, Honopou and Huelo taro farming districts; as well as, Traditional Cultural Practice (TCPs) including gathering for food, medicine, weaving, kapa, cordage and hula mauka to makai, the tending of ancient sacred sites and the rehabilitation of traditional taro growing places.

Peak acreage in sugar and pineapple occurred in the 1940s with peak production in the late 1970s. Water extraction from East Maui has remained at 1940s levels, estimated at an average of 160-200mgd (system capacity has been estimated at roughly 400-440mgd), while acreage and production over the last five decades has sharply declined. Alexander & Baldwin is currently authorized to divert 80mgd and now seeks to obtain 150mgd water allocation with a 30-year lease from the Board of Land and Natural Resources to apply to 26,600 acres in Central Maui, as well as to maintain its current service to the County of Maui. The allocation of water to the County should be considered separately from the allocation to A&B in the EIS, as water has been determined to be a Public Trust resource and decisions for allocation rest with the BLNR, not Alexander & Baldwin.

In general, I support and reiterate the comments of the Native Hawaiian Legal Corp that the EIS should consider impacts to and along: (1) each diverted stream, (2) each individual license area, and (3) the entire 33,000 acres of license area, mauka to makai, along with the full disclosure of diversions, diversion conditions, maintenance roads and maps. The maps and EIS should make a distinction between taro farmer and resident diversions versus Alexander & Baldwin ditch system diversions. This is a surface water evaluation.

I would add to that and emphasize for A&B's Environmental Impact Statement the importance of evaluating the cumulative impacts of water diversion to East Maui based on the already 150 years of water diversion and the proposed 30 years, as a requisite for assessing cumulative impacts to:

- Aquifers and springs throughout the license area;
- Plant composition of native riparian habitat of each stream, particularly at the subsurface/tap root interface; and
- An assessment of the relationship/dispersal of strawberry guava (*Psidium cattleianum*), rose apple (*Syzygium jambos*) and black bamboo (*Phyllostachia nigra*) to ditches, maintenance practices and roads, and riparian areas in the 33,000 acre license area over the last 60 years, and projected encroachment into non-invaded areas of the units over the next 50 years under two scenarios - the ditches and roads remain open; and, if they are closed. I encourage the engagement of experts such as the Maui Invasive Species Committee in this analysis.

The EIS should also include:

- Declaration of the number acres for sugarcane and pineapple watered by the East Maui system from 1880 to 2016 and the average mgd change over that same period to provide a reference for review of the pending 150mgd application for 26,600 acres.
- A biological assessment of the instream aquatic fauna and riparian flora, including damselfishes, broken down by upper, mid- and lower reaches of each stream and tributary in the four proposed License Units of East Maui; and, a prioritization of each stream section by biological and ecological significance (see below; Alternatives).
- An assessment of feral ungulate populations in each unit broken down by upper, mid- and lower elevations, in relation to levels of *Leptospirosis*, *Escherichia coli* and *Staphylococcus* sp in stream bed and riparian area standing water and pig wallows (vis-à-vis correlation to stream flow or lack thereof).
- An assessment of the incidence of illnesses due to the above listed bacteria among taro farmers and residents of East Maui within the last 30 years.

The Alternatives section of the EIS should include an assessment of continued use of all 4 units, less than the 33,000 acres license area (3, 2, or 1 license units) and a no use/no diversion alternative. I concur with the details outlined by the NHLC regarding the analysis under each alternative, and add the following:

- As A&B/HCS is no longer in the business of sugar production, this analysis should also provide realistic and concrete, not speculative, water budgets for each proposed end use under each alternative for the 26,600 acres and separately for use by the County of Maui.
- The analysis of each license unit should also include a list of diversions on each stream/tributary that can be decommissioned and removed from the diversion system and restored to natural flows; and,
- A priority ranking of the most critical habitats for native aquatic flora and fauna by stream, tributary and stream section (in relation to ditches at various elevations) that would benefit from diversion and/or ditch removal within the license area.
- A priority ranking of streams and areas within each license unit for TCP use, historic sites and traditional taro-farming terraces and lands that would benefit from diversion and/or ditch removal within the license area.

I look forward to the publication of the EISP. Should you have any questions regarding the above, you may contact me at [REDACTED]

Sincerely,



Penny Levin



10238-02  
September 23, 2019

10238-02  
Letter to Ms. Penny Levin  
Page 2  
September 23, 2019

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Penny Levin:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. A description of the EMI Aqueduct System, its operation, and maps are included within the Draft EIS (refer to Sections 2.2.1, 2.1.2, and 2.1.5). The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area.
3. For purposes of this Draft EIS, the list of streams assessed as part of the License Area is taken from the D&O.
4. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
5. The Draft EIS will include in Chapter 4 an assessment of existing conditions and the impacts of the Proposed Action and modification or removal of diversion structures in streams designated for full restoration by the D&O, including a summary of secondary and cumulative impacts in Section 4.19.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

6. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).

7. Cultural Surveys Hawai'i, Inc conducted a Cultural Impact Assessment in support of the Draft EIS assessing the impacts of the Proposed Action on cultural resources and traditional practices. Cultural resources and practices are discussed in Section 4.6 of the Draft EIS. Agricultural impacts are also discussed in the Agricultural and Related Economic Impacts report (See Appendix J).

8. Hydrology conditions and potential impacts are discussed in Section 4.2 of the Draft EIS and the Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A) and Assessment of Streams and the Ocean Water Chemistry (See Appendix B).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

SHAME ON THE LOT OF THEM. PLEASE SIMPLY DISAPPEAR YOURSELF FROM FURTHER PARTICIPATION IN MAUI'S FUTURE!

Sincerely,  
Responsible Citizenry

**From:** [Wilson Okamoto Corporation](#)  
**To:** [Earl Matsukawa](#); [Koala Cheng](#); [Rebecca Candillaea](#)  
**Subject:** FW: EIS Preparation Notice Comments for A&B Proposed Water Lease  
**Date:** Tuesday, March 7, 2017 8:18:23 AM

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

Sent: Monday, March 06, 2017 8:14 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

In addition to what has been written by the East Maui Streams coalition's Call to Action ... I'd just like to say that A&B's continued access of Maui's water is a "disgrace" beyond belief. Too, that Maui's new dishonestly-contrived council aided and abetted by a Mayor (who doesn't believe rocks are sacred) and his hired gun corporation counsel are so deep in complicity with the spec-marketed exploitation (read "rape") of Maui demonstrated by their participation in the back-door January 2nd "Council Overthrow" akin to the 1893 takeover of HI - the lot of them should remove themselves from office! Additionally, Maui's planning department needs to take a deep look in the mirror itself!

Alas, not only has HC&S ceased growing sugar cane thus not needing the water, Iao River has been "raped" at the hands of a mind-boggling array of bulldozers, etc. that spent months re-routing the river back to the diversion grates. Word has it A&B is being "bought" by a mainland "devolve-ment" company. Is that correct? If so, what is all this greedy water-grabbing all about? To feed the "devolve-ment" plans of the new company?

A&B is a disgrace to Maui and has been since 1893 along w/its cohorts. INDEED, anyone working for A&B to the least paid clerk is complicit in the events that occurred 220 years ago! The entire operation needs to be shut down with its entire land holdings turned into a community trust that supports local organic agriculture and affordable homes. FOR INDEED, that is the only way it might clean up a measure of its so nasty karma here!

As for the water lease - it's a no-brainer! It should never happen, and to have to pay a consulting company gobs of money to make that decision signals a very distorted, dishonest county administration that lacks courage to do the right thing out the gate. Sadly, it seems it to know "squat" about true sustainability or commitment to aloha, ohana and pono w/re to this community.





10238-02  
September 23, 2019

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Responsible Citizenry:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 6, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSEHP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Responsible Citizenry  
Page 2  
September 23, 2019

Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**From:** [Wilson Okamoto Corporation](#)  
**To:** [Earl Matsukawa](#); [Koala Cheng](#); [Rebecca Candillasa](#)  
**Subject:** FW: EISPN: Proposed Lease (Water Lease) for Nahiku, Ke'anae, Honomanu and Huelo License Areas  
**Date:** Friday, March 10, 2017 11:04:05 AM

---

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

**From:** Riconet [REDACTED]  
**Sent:** Friday, March 10, 2017 10:47 AM  
**To:** Wilson Okamoto Corporation  
**Subject:** EISPN: Proposed Lease (Water Lease) for Nahiku, Ke'anae, Honomanu and Huelo License Areas

Dear Wilson Okamoto Corporation  
Attention: Mr. Earl Matsukawa

A&B or any related corporation or other business entities (such as a co-op or a business in partnership) SHOULD NOT BE ALLOWED TO LEASE WATER Until the residents of the license areas (Nahiku, Ke'anae, Honomanu and Huelo) Are fully provided for in their needs for water.

These residents are not being sufficiently provided for NOW and they have not been for years that A&B or other related business entities linked to A&B (which have been used to make short term leases adding up to a long term lease) have been obtaining the water using subversive business tactics.

YOU MUST STOP ALL LEASING ACTIVITIES

until the people of this land are compensated and provided for in reimbursement for the incredible detriment that A&B and related entities have caused upon this land for decades.

Furthermore, this EISPN should not be conducted by a corporation that is HIRED BY the corporation that wishes to obtain a lease!!!

This is a conflict of interest and it can impact the EISPN process in favor of the corporation. This is not the right way to do this.

THIS IS NOT PONO.

AND NOW IT WILL STOP.

THIS IS THE TIME FOR ALL THIS KIND OF ACTIVITY TO STOP.

The Wilson Okamoto Corporation  
MUST SUPPORT THE COMMUNITY OF MAUI  
by stopping the leasing process NOW.

And I will tell you on behalf of all the ancestors that have lived upon this land, that if Wilson Okamoto Corporation does NOT do what is PONO, Wilson Okamoto Corporation will fail to exist upon these islands.  
It is the only way for spiritual justice now.

Please do what is right, Pono

And all of us will be safe and provided for.  
All of us will have the prosperity that we seek.  
Water is Life & should not be taken over.

Mahalo,  
Ricardo Padilla

002523



10238-02  
Letter to Mr. Ricardo Padilla  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Padilla:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

5. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSEEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



10238-02  
September 23, 2019

Environmental Impact Statement Preparation Notice  
Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas  
Scoping Meeting Comments of

Ms. Rose Reilly  
February 23, 2017  
Haʻikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. REILLY: I would just like to say that I see that the streams reaching the ocean with all of the fish that are produced as fundamentally important to the survival of the people, and that for as far as Hawaiians are concerned and as far as everyone's concerned, we are here in Hawaii because of Hawaiians. The way that they made this place is what has made it so special and that everybody wants to be here because of it. And that they're here, they all are, with their lands and their water management, and like the system is set up to manage this.

The environmental impact is in their history, and they know the whole thing, and they're the ones that should be saying like, you know, restore the forests. Like that's all these different levels of having -- you have the groundwater, the middle, the upper. You know, like the animals. This system that is being imposed, this colonial system is killing all of us. Please do not be a part of that.

Ms. Rose Reilly

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻānae, Honomanū  
and Huelo License Areas

Dear Ms. Reilly:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas and your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Cultural Surveys Hawaiʻi, Inc. prepared a Literature Review and Field Inspection report of the License Area (Appendix E) as well as a Cultural Impact Assessment (Appendix F) in support of the Draft EIS. These studies are discussed in the Draft EIS in Section 4.5 Historical and Archaeological Resources and Section 4.6 Cultural Resources.
3. Sea Engineering, Inc. and Marine Research Consultants, Inc. prepared an assessment of streams and the ocean water chemistry in support of the Draft EIS. The Draft EIS summarizes this assessment in Section 4.2.3. The report is also appended in the Draft EIS (Appendix B).
4. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action and alternatives on indigenous freshwater species, and terrestrial flora and

10238-02  
Letter to Ms. Rose Reilly  
Page 2  
September 23, 2019

fauna, respectively. The Draft EIS discusses the impacts of the Proposed Action to freshwater species in Section 4.2.1 and impacts to terrestrial flora and fauna in Sections 4.4.1 and 4.4.2. Both reports are appended to the Draft EIS (See Appendix A and Appendix C).

5. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**From:** [Wilson Okamoto Corporation](#)  
**To:** Earl Matsukawa; Keola Cheng; Rebecca Candliasa  
**Subject:** FW: EIS Preparation Notice Comments for A&B Proposed Water Lease  
**Date:** Tuesday, March 7, 2017 8:20:40 AM

Jeanine S.H.Y. Morioka  
Secretary

1907 South Bertania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

**From:** [REDACTED]  
**Sent:** Monday, March 06, 2017 6:34 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

I am writing on behalf of Kipahulu Ohana, Inc. a nonprofit Hawaiian organization that operates Kipahulu Living Farm, a traditional wetland taro farm, in partnership with Haleakala National Park since 1995.

As East Maui taro farmers, Kipahulu Ohana strongly believes that the Environmental Impact Statement concerning A&B's proposed 30 year Water Lease for East Maui streams in the Ko'olau moku should be done by a consultant chosen and paid by DLNR, rather than by A&B. This is the only way that a fair, complete and legitimate EIS can be created.

Regardless of who completes this EIS, it needs to provide a complete analysis of past, present, and potential future environmental impacts from stream diversions, including effects on Native Hawaiian cultural practices, aquatic stream life, and nearshore fisheries and ecosystems, exploring multiple alternatives to the proposed 30 year lease.

A&B has a long history of abusing its position, delaying in every possible way any accountability for the impacts and costs of its diversions, and appearing to be motivated solely by its own interest and profit. The long-overdue EIS to consider these true impacts and costs must be done in a way that is impartial or it will have no credibility as actually addressing the real issues and alternatives.

Mahalo for your consideration of our comments.

Sincerely,

Scott Crawford



Executive Director  
Kipahulu Ohana, Inc.

Sincerely,

Scott Crawford



10238-02

September 23, 2019

Mr. Scott Crawford  
Executive Director  
Kipahulu Ohana, Inc.

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Crawford:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 6, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Scott Crawford  
Page 2  
September 23, 2019

reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the DLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.

3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).
5. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Sean Lester

February 23, 2017

Ha'ikū Park and Community Center

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. LESTER: Aloha. My name is Sean Lester. And I do have a little to read. I live in an area directly affected by the EMI's water system and the water request being made before this body of A & B, because this actually is by A & B. The accountability for water resources has been at the core of all water disputes and requests before this commission and the State of Hawaii since the formation of the State constitution. The requests before you today is no different in this regard. Several years ago, HC&S was receiving over 90 billion gallons of water while paying less than \$150,000 a year for the resource. They were, as A & B is now, requesting a 30-year lease. I applaud the wisdom of this commission, because a few years later, the direction of HC&S Corporation changed dramatically when it was liquidated.

Forward-looking local residents questioned this commission as to the validity of the 30-year lease request back then, and the commission kept the annual lease structure. Forward-looking citizens are once again questioning the validity of a 30-year lease here before you today. Any corporation can be merged or liquidated, even the corporation who is now before you asking for a 30-year lease. How prudent is it to give such a long-term lease to a corporation that may not be structured as the same company in a few years, much less 30 years. Maui gave tremendous support for many decades to HC&S as a large local employer and supporter of our local economy. Yet with the final decision in the A & B boardroom, these jobs in the HC&S Corporation itself were extinguished.

We, as citizens, need a place besides a boardroom where our future is decided. It is in places like this commission where we, the people, can ask for assurance that thoughtful and balanced approaches to land and the water use will be employed. As in this case, this is the legacy that can balance the corporate model with short-term profit and factor long-term local needs into the equation. Whether people liked it or not, HC&S did try to keep this land in agriculture. We could count on the acreage farm to be consistent, as was their water request. It was on this basis that this commission allowed HC&S to keep using these water contracts year after year.

So the question is: Do we acquiesce and give A & B a new long-term water subsidy to the tune of 41 billion gallons of water rights a year for hypothetical crops and unknown uses? You must ask: Is the water use efficiency of their hypothetical diversified agriculture, or what is it? Are they going to sell even more land designated as agriculture, as they did the 339 acres in Paia, to a mainland business, with no local review or thoughts as to the impact of the local water needs?

When A & B sells agricultural land, do they sell the rights to the water -- that they're asking you for now -- with the land sale? Did they bank it as a commodity? What are their use plans that are shown in this water efficiency and their support of local food sufficiency needs?

So many unanswered questions. Why? Because, frankly, if you take the time to ask them, they don't know. The parent company of HC&S needs about 150 million gallons a day for diversified ag use. This request is based on, at best, a speculative projection with no basis in real fact. Actually, what they're asking for is simply a request to get water rights, justified by the fact that they're a large land owner, hoping you will trust them to have the foresight to know how to utilize the water correctly as they did when they were a 140-year-plus monocrop agribusiness. This logic no longer applies as it's an entirely new ballgame. The logical game plan is what you have here on the table before you.

As you probably are aware, the continually shifting landscape of A & B's map and its parcels, and which are listed as ag, were sold, is far too tenuous to substantiate a blanket long-term water lease. So many questions are obscured and hidden behind A & B's corporate structure.

I'll skip on.

A bit of an overview here. A & B is a huge local land owner owned by out-of-state entities. A & B's major shareholders own 81.65 percent of the stock. We're talking from the mainland and from Europe, according to the Morningstar investment website. I will place the list of these investors in my written testimony. But you hear the names of these people that we know as A & B, you see T. Rowe Price, Vanguard, Touchstone Capital. What stands out here is there's not a single Hawaii-based institution or fund listed as an A & B major stockholder. Not one here. This is an out-of-state corporation. Understand that. Please take the time to look at each of these major investors as I have. These companies have one purpose: To ensure the largest possible return on a diversified portfolio of investments.

So let's be real when we talk about this lease request. It isn't about keeping diversified agriculture. A & B does not have the same need we do for this resource to be wisely allocated. We also, we who live here, are looking at a multigenerational survival. A & B's major shareholders are looking at a quarterly report that steers decisions on how many shares to buy and sell. We must weigh this part of the equation when making decisions of this magnitude. This company has two potential avenues of land use here on Maui. One is to sell and build out as much of this land as possible to keep their stratospheric 180 rating -- and if you look that up on online, they're higher than Microsoft was when they were at their zenith. The land banked for many years in future real estate sales. This would include leases or sales to a few large agri businesses and a thin covering of local farmers, et cetera, to placate, as they have for well over a hundred years placated by handing out a few dollars here and a few dollars there. Those days are over, those days are over.

The second possibility is to work with a very different model. Become partners with the County of Maui and other private or nonprofit organizations to move to a truly long-term profitable, sustainable, agricultural model that will ultimately be profitable in more than just the normal short-term corporate structure. This would lead to the wise use of water resources and engage community support of a future with long-term, locally aligned values and goals.

Please understand that the areas where this water is taken from on the East Side, Nahiku, Keanae, Huelo, have paid the price over the years for HC&S's use of this resource. An entire way of life was disrupted and destroyed, remaining so to this day. So in my opinion, there is no right to this water by A & B as a corporation. They were paid by many generations of local Hawaiian and other communities for every dollar of profit they have received, at extraordinarily heavy and profound costs to these communities. There is nothing owed to this company regarding water rights. At the same time, everything is owed to these West-side communities. We must reinstate their water rights ahead of any ruling on A & B's request. This could be done immediately on request. To put things in perspective, in order to receive ag-rate water as a small farmer here on Maui, we have to show on an annual basis of the stable farm plan, implement this plan, and be inspected to ensure it's being applied directly every single year. We had a plan inspection done annually to show that it was indeed an agricultural property. A & B is primarily a real estate and transportation company when sugar was taken out of the equation. They're entering an entirely new area of land use. Why should they not be held at least to the same level of accountability as other ag here on Maui?

And if you look at Keanae or Nahiku, there simply isn't any water, as you have -- as the commission has held up the disbursement of even small amounts of water that was fought for so hard by locals before the State. We cannot afford the old-style dog-and-pony show that allows entities like A & B to demand such water rights or play the game where they're the only guy at the table with the \$10,000 chip. Those previous models simply can't be used anymore. Hopefully, experience will be the guide to a new paradigm of water and land use in Hawaii. Today it's even more pressing that we have a real ag water utilization plan, one that is truly proven with substantive penalties if not met and a real review on an annual basis for water use. This is one of the agencies that can assure Maui of water use and land utilization that's a cornerstone for these precious lands. And we can't have a FONSI here where it's like there's no impact.

Anyway, that's mine. Thank you, folks.



10238-02  
September 23, 2019

Mr. Sean Lester

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Lester:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Section 1.3.4 of the Draft EIS discusses the Commission on Water Resources Management's (CWRM) Interim Instream Flow Standard (IIFS) Decision and Order (D&O) and the authority of the BLNR to issue a Water Lease for non-instream uses pursuant to Hawai'i Revised Statutes § 171-58, that is subject to the IIFS set by CWRM.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including alternative lease duration.
4. Section 2.1.4 of the Draft EIS includes a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on water available of which diversion quantities from the D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Sean Lester  
Page 2  
September 23, 2019

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



10238-02  
September 23, 2019

Ms. Sesame Shim

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Ms. Shim:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui. The environmental impacts of the potential Water Lease will be assessed.

1. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
2. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

Environmental Impact Statement Preparation Notice  
Proposed Water Lease for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas  
Scoping Meeting Comments of

Ms. Sesame Shim

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. SHIM: And pretty much the current state of EMI is take all and use all, that is not a resource management. And it has been this way since the ditches were (inaudible). Resource management is so alien to A&B and there's so much water being wasted and unaccounted for, we are truly starting from square one. There's so much to account for to consider and it affects all the people of East Maui. We shouldn't be giving all the power to EMI to determine what happens to all this water. This is a public resource and A&B is a private entity.

There needs to be more transparency and involvement from the Native Hawaiian community, especially the community that lives there. The Native Hawaiian community were there maintaining a communal relationship with the water prior to these ditches. Their lives and future generations have and continue to be affected by the actions of a private entity to control the water. The water usage from A&B is the last priority to any water usage. If there is not enough after meeting all the kalo farmers needs, the environmental needs, the current community needs, they should get none. The lands currently used for sugarcane was never intended to use so much water. Cultivation farming should return to where it is naturally intended to be.

FACILITATOR SENELLY: Sesame, I must ask you, what do you want to see the EIS address about that? How do you want that, what you just say, how do you want --

MS. SHIM: To prioritize.



(HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>  
Attention: Mr. Earl Matsukawa

**SUBJECT: EISP: PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU,  
KE'ANAE, HONOLULU, AND HUELO LICENSE AREAS -  
SCOPING MEETING, FEBRUARY 22-23, 2017**

Fan Deedy concerned for  
over-development - wrongful  
use of water - no infrastructure  
to support development -

(include additional sheets as necessary)

PLEASE PRINT: Name: Shari Rospond Phone: [REDACTED]  
Organization: NYSAF

Address: [REDACTED]

Email: [REDACTED]

Please submit comments by March 10, 2017 or email [woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

\*Receipt of e-mailed comments will be confirmed via e-mail. If you do not receive a confirmation message, please contact our office (see contact information, above).



10238-02  
September 23, 2019

Respond

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Rospond:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated February 23, 2017, and March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Fact, & Decision

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Shari Rospond  
Page 2  
September 23, 2019

and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

4. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
5. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
6. For the purposes of this EIS, diversion quantities from the D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area.
7. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Adriane Raff Corwin

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. RAFF CORWIN: My name is Adriane Raff Corwin. I'm with Sierra Club Maui Group. We will also be submitting written comments, but I'll just provide a little bit of what we want to say here. I'd like to say I agree with Albert Perez's comments that spoke earlier.

One of the main things we want to bring up is that the community has been asking for this EIS for decades and we know that that's not your fault as the consulting company that this hasn't been done, but just that there's a lot in here to address. Because the EIS should have been done so long ago, we don't have a track record, an official record of the environmental impacts that have already happened and so we need an accounting of that as to the damage that has been done by the previous diversions over all these years and so we would like to have that history and that understanding in this document.

Another thing is that, as Albert mentioned, that there's a lot of things that are in the preparation notice that claims that there aren't environmental impacts, but I would like to just draw attention and lot of our comments will come from at the end of the preparation notice -- and I recommend everyone look at this -- the United States Department of Interior's Fish and Wildlife Service submitted comments on this preparation notice that has many, many, many excellent points as to things that this EIS needs to address, one of them being currently A&B is only taking 25 million gallons per day from the diversions when, in fact, they could take up four hundred something and in the past they took about 170 per day, 170 million gallons per day during sugarcane growth. So they're only taking 25 right now and we are seeing many of the streams come back and the wildlife in those streams. And we need to have an understanding of if we -- if they start taking more than just 25 and those streams start disappearing again, that's a major environmental impact because we've gotten some restoration and we -- so we need that addressed.

There's a lot of other great points and, again, I recommend everyone read this document that's at the end of the preparation notice including, yes, different --

FACILITATOR SENELLY: You mean the letters?

MS. RAFF CORWIN: Yes, the letters. So the letter from U.S. Department of the Interior, Fish and Wildlife Service.

Different lengths of the lease is another thing we'd love you to address. There's a lot in here, but, yeah, I would say, again, my major points, because I know everyone else needs to speak, is we need to have a

full understanding, a true full environmental impact statement with primary, secondary, tertiary, etc., impacts, cultural impacts, environmental impact, social impacts, and the current preparation notice as written is not addressing much. It is skirting over the majority of these issues and so we would like you to completely readress this and look at what your preparation notice is missing on these factors.

FACILITATOR SENELLY: Okay. Just a couple of clarifications.

MS. RAFF CORWIN: Sure.

FACILITATOR SENELLY: The prep notice really cannot come to conclusions about significance.

MS. RAFF CORWIN: Oh, I don't mean -- I don't mean conclusions, but there's many things in the preparation notice that it looks like you're not even going to address because you claim there's no significance.

FACILITATOR SENELLY: Oh, that's why we're here.

MS. RAFF CORWIN: Right. So that's what we're saying, we want to make sure that doesn't happen.

FACILITATOR SENELLY: Yeah. And my only point is that the level or whatever of significance has not been determined because the studies have -- are not being -- have not been done. So I take -- I get your point, though, you want it -- you want it -- I think the gentleman here says you want it to be transparent and put a lot of stuff in.

MS. RAFF CORWIN: Well, for time reasons, I will leave it at that, but it's a lot more complicated than that.

**From:** [Adriane Raff-Corwin](mailto:Adriane.Raff-Corwin@sierraclub.org)  
**To:** [dlr@hawaii.gov](mailto:dlr@hawaii.gov); [Yasui@abpcc.com](mailto:Yasui@abpcc.com); [Earl Matsukawa](mailto:Earl.Matsukawa@hawaii.gov); [Ian.C.Hirokawa](mailto:Ian.C.Hirokawa@hawaii.gov)  
**Subject:** Comments on EISPN for Proposed Lease for Nāhiku, Kēānāe, Honomanū, and Huelo license areas  
**Date:** Friday, March 10, 2017 11:15:49 PM  
**Attachments:** [2017SCM5CommentsLetterforABEISPN-2.pdf](#)

Aloha,

Please find attached comments on the EISPN for the proposed Water Lease in East Maui from Sierra Club Maui Group. In addition to those contacts listed in the OEQC, I am also sending this to the DLNR because some of our comments are directed to that agency.

Mahalo,  
Adriane Raff Corwin

--  
Adriane Raff Corwin  
Sierra Club Maui Group Coordinator  
(808) 419-5143  
[adriane.raff-corwin@sierraclub.org](mailto:adriane.raff-corwin@sierraclub.org)



March 9, 2017

**TO:** Earl Matsukawa, Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400, Honolulu, HI 96826

**CC:** Ian Hirokawa, Board of Land and Natural Resources; Daniel Yasui, Alexander & Baldwin; Department of Land and Natural Resources.

**RE:** Comments on: EISPN for Proposed lease (Water Lease) for the Nāhiku, Kēānāe, Honomanū, and Huelo License Areas

Aloha kākou,

Thank you for the opportunity to provide comments on the Environmental Impact Statement Preparation Notice (EISPN) for Alexander & Baldwin's proposed 30-year Water lease. We have many members who live in the license areas, including in areas that are not part of the Interim In-stream Flow Standard (IIFS) contested case petition, and we want to ensure that the DEIS takes into account their stream flow needs.

To begin with, many Maui stakeholders are apprehensive of the way this EIS process is unfolding because Alexander & Baldwin (A&B) is paying for and directing the work of the consultant. In making this comment, we are not insinuating anything against the Wilson Okamoto Corporation; our concern is with the process. **Before the DEIS goes any further, we ask that the DLNR take control of the process by directly hiring and paying for a consultant.** This will remedy the following:

- Our members are greatly concerned that having Alexander & Baldwin in charge of the process diminishes the chances a thorough DEIS will be written because A&B has a vested interest in a specific outcome. Because of the decades of legal battles between A&B and impacted community

PO Box 79180, Pā'ia, Hawai'i 96779 | 808-419-5143 | [adriane.raff-corwin@sierraclub.org](mailto:adriane.raff-corwin@sierraclub.org) | [maui.sierraclub.org](http://maui.sierraclub.org)  
Emailed correspondence reduces paper waste. If you do print this letter, please recycle. Mahalo.

members, the community will not see an EIS commissioned by A&B as legitimate. By taking it out of the hands of A&B, the DLNR will alleviate these concerns and help instill trust in the governmental process.

- The FEIS, if approved by the BNLNR, will need to go through a public auction process, which A&B may not win. An EIS commissioned by A&B appears designed to tip the process in its favor, whereas an EIS that is commissioned by a neutral party is more likely to weigh the many potential alternatives to A&B's proposed 30-year lease and will enable more parties to make viable bids in a public auction.

**For these reasons, we ask that DLNR take direct control of this process as soon as possible and commission a new EISPN.**

With that said, we have reviewed the current EISPN document submitted by Wilson Okamoto Corporation and have the following comments:

1) **We endorse the comments provided by the U.S. Fish and Wildlife Service**, which include:

- a) **Alternative Lease Durations:** The EIS should analyze the costs and benefits of many alternatives to the proposed 30-year lease, including shorter scenarios (5, 10, 15 years) and should take into account how the climate and rainfall patterns may change in these time periods, resulting in different impacts. We agree with the recommendation that a shorter lease, such as 5 years in length, is better because environmental changes may be more drastic in 10, 15, and 30 year intervals.
- b) **Alternative Water Amounts to be Diverted:** As of October 2016, A&B reported that it was only diverting 25 mgd from East Maui streams yet is requesting up to 100 mgd in its lease. The EIS should analyze how different diversion volumes (such as 25, 50, 80, 100) would impact the birds, plants, and aquatic life whose direct habitats are affected. It is especially important to analyze how the diversion structures "may represent barriers to upstream or downstream faunal passage of native Hawaiian fishes and other migratory stream biota."
- c) **Maintenance of the Diversion System:** The EIS must analyze the amount of water lost through seepage and how these losses can be mitigated so the diversion system is more efficient and ensures a maximum amount of water remains in the streams.
- d) **Actual Uses of the Diverted Water:** Because these waters are a natural resource and

2

therefore defined as a public trust, the EIS should analyze what is legally allowed for the leaseholder to do with the diverted water. As the USFWS notes, "public trust uses such as minimum instream flows for ecological integrity and traditional cultural practices must be fully addressed before off-stream allocations can be granted...[and] agricultural diversions are not considered a public trust use."

- e) **Alternatives to Stream Water:** The EIS should analyze whether other water sources, such as existing pumped wells, provide enough water to meet A&B's immediate water needs for agriculture and its obligations to the county to provide water to Upcountry Maui residents.

2) **Regarding Section 1.4:** Section 1.4 states that, "Settlements along Hāna Highway from west to east, toward Hāna, include Huelo and Kailua makai of the Huelo License Area, Ke'anae and Wailua makai of the Ke'anae License Area and Nāhiku makai of the Nāhiku License Area." This description should add the communities of Honopou, Hanawana Hoolawa to the Huelo Lease area. These communities have no public water systems and the DEIS needs to specifically discuss mitigation plans to restore sufficient flows to Puniawa, Ho'olawa, Mokupapa, Honokala, Waipio, East Waipio, Waipio iki, and Hanawana streams to provide domestic water to hundreds of families who live in these communities. Their streams are not part of the 2001 IIFS petition for the East Maui Lease areas, yet the continued diverted conditions of their streams impact their daily lives and their rights to have sufficient water for their domestic needs.

3) **Regarding Section 2:** Section 2 states, "The Draft EIS, in addition to the No Action alternative, however, will identify alternative(s) that contemplate a lease that permits less than the IIFS-enabled diversions, and will evaluate environmental impacts, benefits, costs, and risks of such alternative(s)." One of the alternatives that the DEIS should consider is the restoration of stream flows to communities with no public water supply in the Huelo license area, who are not part of the East Maui IIFS contested case petition.

4) **Regarding Section 3.5.4:** There are impacts in areas where no restoration is being proposed like Hanawana and Kailua areas, Waipio and Waipio iki, Hoolawa, Honokala, Makapipi and Mokupapa.

5) **Regarding Section 3.10.4:** Recreational use of many streams in the lease area, especially in local neighborhoods such as Hanawana, Hoolawa, Mokupapa, Honokala, Honopou and Huelo, is already significantly impacted under the former lease conditions. The proposed diversions will continue

3





10238-02  
September 23, 2019

Ms. Adriane Raff Corwin, Coordinator  
Sierra Club Maui Group  
PO Box 791180  
Pā'ia, HI 96779  
Adriane.raff-corwin@sierraclub.org

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū,  
and Huelo License Areas

Dear Ms. Raff Corwin:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, for your letter dated March 9, 2017, and your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action which are being studied. In accordance with

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

those impacts and should be discussed.

- 6) **Regarding Section 3.11.3 Potable Water System:** Community water systems for Huelo, Honopou, Hoolawa, Waipio resident are in the lease area. What happens there affects many potable water users and that should be discussed in the DEIS.

7) **In addition, the DEIS should:**

- Analyze how the water diversions impact the whole ecosystem from mauka to makai, and how these impacts may affect the larger ecosystem of Maui and Hawai'i Nei;
- Provide a complete assessment of the damage already done to the ecosystem and cultural practices from the stream diversions and how these already existing negative impacts can be remedied;
- Analyze all possible secondary and tertiary impacts of the diversion system, such as those on Native Hawaiian cultural practices and traditional food gatherers;
- Provide an economic analysis of the financial value of the water to be sourced from this lease.

Mahalo again for this opportunity to provide comments on this EISPN.

Aloha,

Adriane Raff Corwin  
Coordinator, Sierra Club Maui Group

Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.

3. The Draft EIS includes in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including a discussion of alternative lease terms and duration. Section 3.1.1 of the Draft EIS discusses water source alternatives.
4. For purposes of this Draft EIS, the list of streams assessed as part of the License Area is taken from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). The D&O as it applies to the streams in the License Area is explained in Section 1.3.4 of the Draft EIS.
5. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action and alternatives on indigenous freshwater species, and terrestrial flora and fauna, respectively. The Draft EIS discusses the impacts of the Proposed Action to freshwater species in Section 4.2.1 and impacts to terrestrial flora and fauna in Sections 4.4.1 and 4.4.2. Both reports are appended to the Draft EIS (See Appendix A and Appendix C).

7. Impacts of the Proposed Action on groundwater, including system losses over the Kahului and Pā'ia aquifers are discussed in Section 4.2.2 of the Draft EIS.

8. Section 1.3.4 of the Draft EIS discusses the CWR D&O and the authority of the BLNR to issue a Water Lease for non-instream uses pursuant to HRS § 171-58, that is subject to the IIFS set by CWRM.

9. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See

Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

10. Direct, secondary and Cumulative Impacts of the Proposed Action are discussed in Section 4.16 of the Draft EIS.

11. Munekiyo & Hiraga Inc. prepared an Economic and Fiscal Impact Study (Appendix H) and Plaseh Econ Pacific Inc. prepared an Agricultural and Related Economic Impacts study (Appendix I) in support of the Draft EIS. These studies are discussed in the Draft EIS in Sections 4.7.3 and 4.7.4, respectively.

Your written and oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

DAVID Y. IGE  
GOVERNOR OF HAWAII



VIRGINIA PRESSLER, M.D.  
DIRECTOR OF HEALTH

LORIN W. PANG, M.D., M.P.H.  
DISTRICT HEALTH OFFICER

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
MAUI DISTRICT HEALTH OFFICE  
54 HIGH STREET  
WAILUKU, HAWAII 96793-3378

February 23, 2017

Mr. Ian Hirokawa  
Board of Land & Natural Resources  
1151 Punchbowl Street, Room 220  
Honolulu, Hawaii 96813

Dear Mr. Hirokawa:

**Subject:** Water Lease for the Nahiku, Keanae, Honomanu and Huelo License Areas EISPN  
TMK: (2) 1-2-004:005, 007; (2) 1-1-002:002; (2) 1-1-001:44, 050; and (2) 2-9-014:001, 005, 011; 012, 017

Thank you for the opportunity to review this project. We have no comments to offer.

It is strongly recommended that the Standard Comments found at the Department's website: <http://health.hawaii.gov/epo/home/landuse-planning-review-program/> be reviewed and any comments specifically applicable to this project should be adhered to.

Should you have any questions, please contact me at 808 984-8230 or email me at [patricia.kitkowski@doh.hawaii.gov](mailto:patricia.kitkowski@doh.hawaii.gov).

Sincerely,

*Patti Kitkowski*

Patti Kitkowski  
District Environmental Health Program Chief

c EPO  
Daniel Y. Yasui, A&B Inc.  
Earl Matsukawa, Wilson Okamoto Corp.

DAVID Y. IGE  
GOVERNOR OF HAWAII



VIRGINIA PRESSLER, M.D.  
DIRECTOR OF HEALTH

LORIN W. PANG, M.D., M.P.H.  
DISTRICT HEALTH OFFICER

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
MAUI DISTRICT HEALTH OFFICE  
54 HIGH STREET  
WAILUKU, HAWAII 96793-3378

March 22, 2017

Mr. Earl Matsukawa, AICP  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

**Subject:** Environmental Impact Statement Preparation Notice for Proposed Water Lease for the Nahiku, Keanae, Honomanu and Huelo License Areas  
TMK: (2) 1-2-004:005, 007; (2) 1-1-002:002; (2) 1-1-001:44, 050; and (2) 2-9-014:001, 005, 011, 012, 017

Thank you for the additional information provided to us. We have no comments to offer.

It is strongly recommended that the Standard Comments found at the Department's website: <http://health.hawaii.gov/epo/home/landuse-planning-review-program/> be reviewed and any comments specifically applicable to this project should be adhered to.

Should you have any questions, please contact me at 808 984-8230 or email me at [patricia.kitkowski@doh.hawaii.gov](mailto:patricia.kitkowski@doh.hawaii.gov).

Sincerely,

*Patti Kitkowski*

Patti Kitkowski  
District Environmental Health Program Chief

c EPO  
Daniel Y. Yasui, A&B Inc.  
Ian Hirokawa, DLNR-Land Division

RECEIVED  
MAR 24 2017  
WILSON OKAMOTO CORPORATION



10238-02  
September 23, 2019

Ms. Patti Kitkowski  
Maui District Environmental Health Program Chief  
Department of Health  
54 High Street  
Wailuku, HI 96793-3378

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Ms. Kitkowski:

Thank you for your agency's participation in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas. You provided an early consultation letter dated December 23, 2016, which was prior to the publication of the EISP on February 8, 2017, and you also provided written comments dated February 23 and March 22, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix J (as to the early consultation comments) and Appendix M (as to your comments on the EISP).

We acknowledge that the Department of Health, Maui District Health Office, in early consultation did not have comments but recommended that the applicant review the Standard Comments on the Department of Health's former Environmental Planning Office's (EPO) website. The EPO submitted early consultation comments, a copy of which is included in Appendix J to the Draft EIS.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



**OFFICE OF  
ENVIRONMENTAL QUALITY CONTROL**

DEPARTMENT OF HEALTH | 235 South Beretania Street, Suite 702, Honolulu, HI 96813 | eoqc@hawaii.gov

DAVID Y. GEE  
GOVERNOR  
SCOTT GLENN  
DIRECTOR  
(808) 586-4185

March 3, 2017

Ms. Suzanne D. Case, Director  
Department of Land and Natural Resources, State of Hawaii  
1150 Punchbowl Street  
Honolulu, HI 96813

Dear Ms. Case:

SUBJECT: Environmental Impact Statement Preparation Notice Comment: Proposed Water Lease  
to Alexander and Baldwin, and East Maui Irrigation (EMI) Company (collectively, A&B),  
for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas

Having reviewed the subject document, the Office of Environmental Quality Control submits the following comments for your consideration in the preparation of a draft EIS.

**CLIMATE CHANGE:** Section 3.1 of the EISP notes that the Proposed Action is limited to the issuance of the Water Lease for the subject License Area, which would enable A&B to continue operation of the EMI Aqueduct System that has been in operation for over a century. The document notes that the proposed action will have no significant impacts on temperatures, winds, or rainfall levels in the region. The Office requests that the document expand discussions on climate change impacts (global warming, greenhouse gas increases, etc.) on the various elements of the environmental setting for the proposed action especially during the proposed lease-life. This would include potential direct, indirect and cumulative climate change impacts related to rainfall, ground water and surface water, flora, fauna, severe weather conditions, flooding, historic and archaeological resources, cultural resources, socio-economic impacts, and traffic impacts.

Thank you for the opportunity to comment. Please contact Mr. Leslie Segundo if there are any questions regarding this letter.

Sincerely,

Scott Glenn, Director

c: Wilson Okamoto Corporation



10238-02  
September 23, 2019

Mr. Scott Glenn  
Director, Office of Environmental Quality Control  
235 S. Beretania Street, Suite 702  
Honolulu, HI 96813

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Director Glenn:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 3, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS assesses climate change in Section 4.3.1 and the Assessment of Streams and the Ocean Water Chemistry report (See Appendix B).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Scott Glenn  
Page 2  
September 23, 2019

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



DAVID Y. IGE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P.O. BOX 5378  
HONOLULU, HI 96801-5378

VIRGINIA PRESSLER, M.D.  
DIRECTOR OF HEALTH

In reply, please refer to  
BAC006

02020PMHK.17

February 17, 2017

Mr. Earl Matsukawa  
Project Manager  
Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

**SUBJECT: Comments on the Environmental Impact Statement Preparation Notice for the Proposed Water Lease for the Nāhiku, Kēʻanae, Honomanū, and Huelo License Areas**

**Honomanu, and Huelo License Areas**

**Makawao and Hana Districts, Island of Maui, Hawaii**

**TMKs: (2) 1-2-004:005 and 007 (por.); (2) 1-1-002:002; (2) 1-1-001:044; (2) 1-1-001:050; and (2) 2-9-014:001, 005, 011, 012, 017**

The Department of Health (DOH), Clean Water Branch (CWB), has reviewed the subject document and has no comments at this time. The DOH-CWB provided comments on the Early Consultation for this project (Letter No. 12005PNN.16, dated December 5, 2016).

Please note that our review is based solely on the information provided in the subject document and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: <http://health.hawaii.gov/epo/files/2013/05/Clean-Water-Branch-Std-Comments.pdf>.

If you have any questions, please visit our website at: <http://health.hawaii.gov/cwb>, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

ALEC WONG, P.E., CHIEF  
Clean Water Branch

MHK:ctt

c: Mr. Daniel Yasui, A & B/East Maui Irrigation Company, Limited (EMI)  
[via e-mail [dvasui@abirrop.com](mailto:dvasui@abirrop.com) only]  
Mr. Ian Hirokawa, BLNR [via e-mail [ian.c.hirokawa@hawaii.gov](mailto:ian.c.hirokawa@hawaii.gov) only]  
DOH-EPO [via e-mail [Noelia.Narimatsu@doh.hawaii.gov](mailto:Noelia.Narimatsu@doh.hawaii.gov) only]



WILSON OKAMOTO  
CORPORATION  
INNOVATORS • PLANNERS • ENGINEERS

10238-02  
September 23, 2019

Mr. Alec Wong  
Chief of Clean Water Branch  
PO Box 3378  
Honolulu, HI 96801-3378

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Kēʻanae, Honomanū  
and Huelo License Areas

Dear Mr. Wong:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Kēʻanae, Honomanū, and Huelo License Areas. You provided an early consultation comment letter dated December 5, 2016, prior to the publication of the EISP on February 8, 2017, and also provided written comments on the EISP dated February 17, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaii Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix J (as to the early consultation letter) and Appendix M (as to your EISP comments).

Your early consultation comments have been incorporated in to the Draft EIS as relevant to the Proposed Action. As suggested by your early consultation comments, the Proposed Action will implement appropriate BMFs which is discussed in Chapter 4 of the Draft EIS. As discussed in Chapter 4 of the Draft EIS, the Proposed Action will comply with the relevant regulations related to Water Quality Standards, HAR Chapter 11-54, and Water Pollution Control, HAR Chapter 11-55.

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277



**OFFICE OF PLANNING  
STATE OF HAWAII**

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813  
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

DAVID Y. IGE  
GOVERNOR  
LEO R. ASUNCION  
DIRECTOR  
OFFICE OF PLANNING

Telephone: (808) 587-2646  
Fax: (808) 587-2824  
Web: <http://planning.hawaii.gov/>

Ref. No. P-15508

March 2, 2017

**RECEIVED**  
**MAR 06 2017**  
**WILSON OKAMOTO CORPORATION**

Mr. Earl Matsukawa, AICP  
Project Manager  
Wilson Okamoto Corporation  
1907 S. Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

Subject: Environmental Impact Statement Preparation Notice (EISP/N) Proposed Lease for the Nāhiku, Keānā, Honomanu and Huelo License Areas  
Tax Map Keys: (2) 1-2-004-005, 007; (2) 1-1-002-002; (2) 1-1-001-44, 050; and, (2) 2-9-014-001, 005, 011, 012, 017

Thank you for the opportunity to provide comments on the EISP/N on the proposed water lease for the license areas of Nāhiku, Keānā, Honomanu, and Huelo on the Island of Maui. The EISP/N review material was transmitted to our office via letter dated February 8, 2017.

It is our understanding that Alexander and Baldwin, Inc. (A&B) is preparing a Draft Environmental Impact Statement (DEIS) on the issuance of a long-term 30-year water lease involving these license areas from the Board of Land and Natural Resources. The water lease (proposed action) will require the lessee to use lands owned by the State of Hawaii to maintain and repair existing access roads and trails used as part of the East Maui Irrigation (EMI) Company aqueduct system.

The objectives of the proposed action are to preserve and maintain the EMI Aqueduct System, to meet the domestic water demands in Upcountry Maui, to provide water for agricultural purposes in Central Maui, and to serve community water demands in Nāhiku, Maui

The Office of Planning (OP) has reviewed the transmitted material and has the following comments to offer:

1. The EISP/N acknowledges a number of our comments made in a previous early consultation letter dated December 8, 2017 (Reference Number P-15388).

a) Section 4.1, page 4-1 states that the DEIS will need to demonstrate the proposed action's adherence to the goals and objectives of the Hawaii Coastal Zone Management program as listed in Hawaii Revised Statutes (HRS) § 205A-2.

Mr. Earl Matsukawa, AICP  
Project Manager  
Wilson Okamoto Corporation  
March 2, 2017  
Page 2

b) Section 4.1, page 4-1 affirms that the DEIS will need to address the proposed action's consistency with the objectives, policies, priority guidelines of the Hawaii State Planning Act, HRS Chapter 226, and Part II State Functional Plans.

2. The following issues are related to plans, policies, and initiatives that fall under the jurisdiction of OP:

a) Section 3.2.2, page 3-2 lists the environmental impacts related to soils that will be covered in the DEIS. It states that the proposed action is limited to the issuance of the Water Lease for the subject License Area, which would enable the lessee to continue operation of the EMI Aqueduct System. Anticipated impacts will be identified and discussed in the DEIS.

The DEIS should examine the proposed action's impact on the nearshore environment from loose soil, erosion, and ocean turbidity. This analysis should include mitigative strategies and proposed land controls to keep soil in place and prevent it from harming marine life, coral reefs, and impacting water quality within the nearshore ecosystem.

b) Section 3.3.1, page 3-4 asserts that environmental impacts related to hydrology and surface water resources will also be covered in the DEIS. This section also states that the proposed action is limited to the issuance of the Water Lease for the subject License Area, and anticipated impacts will be identified and discussed in the DEIS.

The DEIS should consider the proposed action's impact on surface water resources in terms of water quality and polluted runoff reduction strategies. Stormwater runoff, and the pollution it carries, can have a devastating effect on inland hydrological resources, as well as down range coastal areas. The DEIS should provide analysis on planned mitigative designs and source controls measures to safeguard water resources.

c) Section 4.2, page 4-2 of the EISP/N that the project may be subject to a Section 404 Clean Water Act and Section 10 Rivers and Harbors Act Permit from the U.S. Army Corps of Engineers. This federal permit may also require a Federal Consistency review.

The national Coastal Zone Management Act (CZMA) requires that federal actions be consistent with approved state coastal programs enforceable policies. A

002543

Mr. Earl Matsukawa, AICP  
Project Manager  
Wilson Okamoto Corporation  
March 2, 2017  
Page 3

Federal action is defined by the CZMA to include federal permits or approvals.

OP is the lead state agency with the authority to conduct Federal Consistency reviews. If a federal permit is required, please contact our office on the policies and procedures involved in a Federal Consistency Review.

- d) The DEIS should address the impacts to agriculture from the proposed action. The license area appears to be within the State Conservation District and does not involve land within the State Land Use Agricultural District. However, the proposed action may impact domestic water use and agricultural production potential on Central Maui lands. The DEIS should include an examination on the impact of the water lease to agricultural land use on the Island of Maui.

We have no further comments at this time. If you have any questions regarding this comment letter, please contact Joshua Hekeia of our office at (808) 587-2845.

Sincerely,



Leo R. Asuncion  
Director



10238-02  
September 23, 2019

Ms. Mary Alice Evans, Director  
Office of Planning, State of Hawai'i  
PO Box 2359  
Honolulu HI, 96804

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Ms. Evans:

Thank you for the Office of Planning's participation in the scoping process for the subject Environmental Impact (EIS) Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas. Office of Planning provided early consultation comments dated December 8, 2016, which was prior to the publication of the EISPN on February 8, 2017. Office of Planning also provided written comments dated March 2, 2017, in response to the EISPN. We acknowledge your agency's comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix J (as to the early consultation comments) and M (as to the EISPN comments).

We have taken your agency's comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui, which are now owned by Mahi Pono and planned for diversified agriculture.
2. Pursuant to HAR § 11-200-17(h), the Draft EIS discusses the Proposed Action's consistency with various plans and policies in Chapter 5 of the Draft EIS, specifically the Hawai'i Coastal Zone Management Program in Section 5.1.5, the Hawai'i State Plan in

Section 5.1.1, and the State Functional Plans in Section 5.1.2. As you suggested, the analysis is provided in tabular form, followed by discussion paragraphs.

3. The Draft EIS discusses impacts to soils associated with the Proposed Action in Section 4.1.2 of the Draft EIS.
4. The Draft EIS discusses impacts to hydrology associated with the Proposed Action in Section 4.2 of the Draft EIS as well as the reports various technical reports prepared for the Draft EIS, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); and Terrestrial and Flora and Fauna Report (See Appendix C).
5. The Draft EIS includes in Section 4.7 an assessment of the impacts of the Proposed Action to socio-economic characteristics including the agricultural economy. Various technical studies will be appended the Draft EIS and provide detailed examinations, including an Agricultural and Related Economic Impacts Report (See Appendix I) and an Economic and Fiscal Impact Analysis Report (See Appendix H).

Your agency's written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Stacey Sills

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. SILLS: My name is Stacey Sills and I have been on Maui for 25 years. And there was -- the two issues that I think I'd like to address is the six-year drought for the Upcountry cattle farmers was noted as well as you notice California had a ten-year drought. The issue I think that you need to be looking at and that needs to be studied are the actual particles tested in the water, in the people. I think the people need to be tested as well because there is a thing and it is called geoeengineering and it's being done over Maui. It's shut down the lao Valley. I am the only person in the world who documented the bombing of lao Valley and also the bombing of protest -- of the protesters on the Big Island Hawaii. They drop aerosol down bursts, they're filled with aluminum, barium, and strontium. I'm sure you're gonna pick up those particles in the environment. And I think that needs to be studied because they can create six-year droughts, ten-years droughts, and now they're creating a flood.

I just watched the same down bursts that are happening right now in Orville that happened in lao Valley. They're doing the same thing. They're -- that dam's gonna blow. Trust me, I know it, because I'm watching them. They're exploding the same aerosols that they did here in lao and this is an issue, it needs to be addressed, and you need to look at that factor in your environmental impact study. It's not a joke. I know it's top secret, we can't talk about it, but, you know what, I'm gonna talk about it, because it affects each and every one of you. It's global, it happens here, it happens all around the globe. I don't know --

How many people know about global engineering? Anyone.

Okay. That is very few. You're just ignorant. Please educate yourself. It affects you, you're breathing it. It happened today. It happens every single day. They're whitening out the planet. You'll never see a light blue sky again. Please check the particles, that's what I'd like you to do on your environmental impact statement, is protect the health of these Hawaiian people because they're being attacked.





10238-02  
September 23, 2019

Ms. Stacey Sills  
[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Sills:

Thank you for participating in the scoping process for the subject Environmental Impact Statement pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS discusses impacts to hydrology associated with the Proposed Action in Section 4.2 of the Draft EIS as well as the reports various technical reports prepared for the Draft EIS, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); and Terrestrial and Flora and Fauna Report (See Appendix C).

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP

Vice President, Director of Planning

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Stacey Sills  
Page 2  
September 23, 2019

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277



**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Mr. Steve Slater  
February 23, 2017  
Haʻikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

Not \$3 dollars. And the last thing is what does this EIS cost? Because if some group or the County wants to reimburse for the EIS, is this EIS going to be so expensive that it's going to make that \$160,000 starting point double? Do we know what this EIS is going to cost?

MR. SLATER: Hi. Steve Slater. I would like to have some -- well, first thing, I think 30 years is way too long the way science and biology is going. I mean, we're just breaking the surface of how important the microbial systems are to the soil, to our own human bodies, how much symbiotic both bacteria, virus, fungus. Just it's a whole new era. To lock us into a 30-year lease at this point, I don't think the EIS can be at all functional.

I think if we did an EIS in two years or five years, I think we'd be talking about completely different things on the watershed, like the connection of the microbial system from the ocean, like miniature salmon, microscopic salmon swimming upstream, carrying nutrients. I mean, we're in a whole 'nother era. I just find it's going to be very difficult to get an accurate EIS unless we bring in state-of-the-art science these days. And I don't think we're going to get that on Maui. I really think you'd have to bring in some cutting-edge biologists, look at the whole microbial system, what it means to endangered species. And we're at a time when we're not going to get a lot happening in a short period. So why can't A & B be satisfied with a one-year lease? They've been living with it for all this time, and now major changes are happening. I just can't -- you know, that leads me back into the Glyphosate/Roundup problem, like the gentleman was explaining. So much spraying. Not just on the edges; but because it's difficult for them to go, they spray right in the water.

Could we possibly get a study? You're not going to be able to go take water samples and find glyphosate, but couldn't we study some of the people who have used it as drinking water? Could they have free access to a urine test and maybe compared to these people have a higher rate of glyphosate? And remember, glyphosate also kills the microbial content. It's like it's got more repercussions than just if it gave something to human health. It's changing the whole biosphere of the area. So why didn't A & B ever -- they've never had to say how much they pumped. A & B has a record of being able to put poisons out, not inform the Health Department, not inform the County, keep secret lists. Could EIS look at what chemicals have been put in the stream? And also, A & B has been spraying -- HC&S has been spraying the cane with glyphosate to make it dry so they can burn it. That has gone into the ocean. Plus what they're spraying into the fields. So what they've put on the fields also compounds what's coming down the streams. Is that possible?

Also, you know, I own a property for the last 15 years where I can only live on catchment. Even though I have rights on my deed to two ditches, Lowrie Ditch, Haiku Ditch, and Waipio Stream, I can't exercise those rights. You can't talk to EMI about using rights on your deed. It's a whole legal battle. You're looking for trouble. I have to live on catchment. It's \$200 per thousand, I pay to have it water trucked in

**From:** Steve Slater  
**To:** Wilson Okamoto Corporation  
**Subject:** Testimony: EISP: Proposed Lease  
**Date:** Sunday, March 5, 2017 10:36:43 PM  
**Attachments:** [30 year lease EIS -- Wilson Okamoto Corporation.docx](#)

Please reply back that you received this email and that my testimony is accepted.



10238-02  
September 23, 2019

Mr. Steve Slater  
55 East Waipi'o Road  
Hā'i'ku, HI 96708

**Subject:** Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Slater:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, your written comments dated March 5, 2017, and your oral comments at the February 23, 2007 EIS Scoping Meeting. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS will include in Chapter 4 an assessment of the impacts of the Proposed Action. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
3. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams  
1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C);, Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

4. The Draft EIS discusses impacts to hydrology associated with the Proposed Action in Section 4.2 of the Draft EIS as well as the reports various technical reports prepared for the Draft EIS, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); and Terrestrial and Flora and Fauna Report (See Appendix C).

5. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including discussion of alternative lease duration.

Your written and oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



**SUBJECT: EISP: PROPOSED LEASE (WATER LEASE) FOR THE NĀHIKU, KE'ANAE, HONOMANŪ, AND HUELO LICENSE AREAS – SCOPING MEETING, FEBRUARY 22-23, 2017**

Return the water to the original streams with no diversions. Then let the residents along the streams decide how much water they can spare to share.

(include additional sheets as necessary)

PLEASE PRINT: Name: Suzanne Wilson Phone: [REDACTED]

Organization: —

Address: [REDACTED]

Email: [REDACTED]

Please submit comments by March 10, 2017 or email [woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

\*Receipt of e-mailed comments will be confirmed via e-mail. If you do not receive a confirmation message, please contact our office (see contact information, above).



10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Ms. Wilson:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated February 23, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui. The environmental impacts of the potential Water Lease will be assessed.
2. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
3. A description of the Proposed Action is discussed in Chapter 2 of the Draft EIS. The Draft EIS will include in Section 2.1.4, a description of Mahi Pono's Farm Plan for the agricultural fields in Central Maui. The Farm Plan is based on the water available of which diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Suzan Wilson  
Page 2  
September 23, 2019

be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Tammy Luat-Huen  
February 23, 2017  
Ha'ikū Park and Community Center  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MS. LUAT-HUEN: Thank you. My name is Tammy Luat-Huen. I am from Keanae. I live on the peninsula. And we try to farm taro in our yard, but we're the last taro farm to receive the water. So in your EIS, I would like the temperature of the water to be tested. You guys keep taking water out, the water is going very low; the sun is so hot, it makes the water hot. By the time it gets to me, all my taro was like horrible. We tried to save the -- you know, when we harvested, we tried different patches to see how it is. Oh, my god, it was terrible, and it was like spongy. So definitely I think that the EIS should include the temperature. And also, before I even started, I was supposed to tell you guys this. I tripping out that you guys are talking about our water and handing out permits to the highest bidder, like you're talking about stocks and bonds.

We're not talking about stocks and bonds. We're talking about life. We're talking about water for all of us to live, because I don't know about you, but I cannot drink money. So without water, we cannot survive. EMI has had control of East Maui's waters for way too long, also stewards of these lands.

In your EIS, I demand that EMI be ordered to restore these rivers and streams, especially the ones that they're not using. They leave all their cement, their metal, their crap. Take it out. Like if they were my tenants, I would be like, you know what, you're out, you're not going to get another lease from me. You let go our place, you're out. So I think we should demand that they restore our rivers and streams to how it was before they got it. And on that note, also in your EIS, it should say they took so much water -- when I was little, my grandpa used to work for EMI, so I know. He took me up there. There was plenty of water flow. I'm not that old. You know, I don't want to tell you guys, but I had one big birthday the other week. But I know how much water there was flowing.

When I drive home to Keanae, there's so much rivers that used to flow all the time. Now only trickles coming down. And I'm trying to remember the story about that water that used to come up the side of Waikoloa. And we always used to pull over, wash the baby bottle if something spilled, drink water. You know, we used to use that, and it's gone. I remember that. But anyway, where they took a lot of water, and now they let the rivers run bone dry. Not even like a little bit. We went all the way up to the top, dry bone. As wide as you can imagine, this river was dry. So now what's in there? Just so happens that invasive trees, bushes, vines, all kinds of weird stuff started growing in there. Now they go, oh, we are ordered to release the water, what does EMI do? Instead of they go clean the rivers and the beds because it's all grown with invasive stuff, open the water, water is flowing, no more place to go, where does it go? Every which way but loose. Not in the flow that it's supposed to be. So I honestly believe a lot of these landslides that we've been experiencing on the east side of Maui, all A & B's fault. They

Scoping Meeting Comments of Ms. Tammy Luat-Huen  
Page 2  
February 23, 2017

should have -- they were so worried about their employees, their 400 employees. They could have had their employees stay on for one more year while they go clean up all our rivers and streams. It's their responsibility.

So for the EIS, I highly recommend that you guys have them -- not ask them -- demand that they go clean up our rivers and streams to where -- to the point where they got it. And I'm sorry about that, but it makes me so mad. Because now, you know, those landslides has caused us so much havoc. We have people that are putting their lives in danger just to go to the doctor, you know. We have roads that's completely shut down for seven hours; and then what happens if there's an emergency? This is the kind of stuff that EMI personally caused. And I know that for a fact. So that's one more thing that I wanted your thing to say.

And, you know, like if it was clean, the water would flow the way it always flowed centuries ago. But when the thing is all plugged up, where does it go? It's got to go to the outside, now it's going wider and wider, and it's bringing down everything. And we're not talking small rocks. We're talking rocks as big as trucks. And now we're going to be driving home, all unaware -- especially tonight; it's dark already -- now we're driving home, and let's go play Frogger and try and jump on this side, oh, no, let's go to this side, and then here comes the rocks, you know. So you guys didn't do us no favors by giving them the lease. They literally put our lives in danger, and I'm over it. So it's time for somebody else to -- I understand that everybody on this side needs water. I do understand that. But you're talking about our water as if it's a commodity, and it ain't.

Thank you.





10238-02  
September 23, 2019

Ms. Tammy Luat-Huen

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Luat-Huen:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and your oral comments at the February 23, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Section 1.3.4 of the Draft EIS discusses the Commission on Water Resources Management's (CWRM) Interim Instream Flow Standard (IIFS) Decision and Order (D&O) and the authority of the BLNR to issue a Water Lease for non-instream uses pursuant to Hawai'i Revised Statutes § 171-58, that is subject to the IIFS set by CWRM.
3. For the purposes of this Draft EIS, diversion quantities from the D&O were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area.
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Tammy Luat-Huen  
Page 2  
September 23, 2019

provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**Environmental Impact Statement Preparation Notice**  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
**Scoping Meeting Comments of**

Ms. Tiare Lawrence  
February 22, 2017

Maui Electric Company Community Meeting Room  
Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

And I would also like East Maui to get a dedicated water management area. Mahalo.

MS. LAWRENCE: Aloha. My name is Tiare Lawrence. I'm here from. I'm a lineal descendant of Keanae. My tutu wahine was from there. I enjoy the bountiful akule that come in when my friend Healoha gives me bags of akule, so I know that since the -- since the restoration of some of the streams, that akule have been coming in more frequently. And it's been mind blowing for a lot of the residents out there that they get to experience that. A lot of them thought they wouldn't be able to experience this bounty that's been happening over the past few months. I'll go into details. I'd definitely like the EIS to include interviews of kapuna makua and opio from East Maui, their moku. I'm pretty sure many people in this room are willing to participate in that. I would also like to request an additional meeting be held in Keanae and Hana. The kapuna go to work so they couldn't drive the two hours to be here. I believe that their voices are being left out and they should be given the opportunity to speak.

I would like the EIS to provide the benefits of short-term versus long-term leases. The EIS should detail the impacts of the diversion of each stream, not a generalized view of the entire watershed. The EIS should consider a range of alternatives. Besides the no diversions at all alternative it should reveal the impact of just diverting enough for existing county need and the alternative of leaving enough water in every single stream so that they each receive enough to support 90 percent of stream life.

The EIS should disclose those areas that are pumping from A&B lands. The EIS should include all past impacts such as kuleana land titles, quiet titles, and a clear explanation on how A&B acquired these lands with records. And present impacts to the streams (inaudible) they have more water than normal which helped increase habitat right now. If they are given the lease, the stream habitat will be killed, that is a fact. As well as the impacts of the various broken infrastructure and leaks along the system.

Also I would like the EIS to include a map of potential loi that can be restored. This will provide an opportunity for more kalo cultivation. Kalo farmers are unable to keep up with the current demand and the kalo industry is a multimillion dollar industry with so much more potential. I would also like the draft EIS to include the following: past and present impacts on aquatic life, native plant species, invasive plant species, recreational activities, aesthetic value such as waterfalls and scenic waterways, traditional and customary practices such as kalo cultivation and gathering of oopu, hihiki, and opae. I personally believe that no future subdivisions or gentleman estates should have access to surface water for development.

I also believe the EIS should explore policy, if passed at the county level, such as allowing gray water use that would allow less use from potable sources. At the very least before any lease is given they should be required to fix the ditch system and reservoirs adequately to stop wasting 41 million gallons a day.



10238-02  
September 23, 2019

Ms. Tiare Lawrence

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Ms. Lawrence:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. Cultural Surveys Hawai'i, Inc. prepared a report in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on cultural resources and practices. The impacts of the Proposed Action to cultural resources and practices are discussed in Section 4.6. The report is appended to the Draft EIS (See Appendix F).
3. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
4. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including discussion of alternative lease duration and volume.
5. The Draft EIS discusses impacts to hydrology associated with the Proposed Action in Section 4.2 of the Draft EIS as well as the reports various technical reports prepared for the Draft EIS, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); and Terrestrial and Flora and Fauna Report (See Appendix C).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Tiare Lawrence  
Page 2  
September 23, 2019

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended to the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I)

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

Environmental Impact Statement Preparation Notice  
**Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**  
Scoping Meeting Comments of

Mr. Tom Blackburn-Rodriguez

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. BLACKBURN-RODRIGUEZ: My name is Tom Blackburn-Rodriguez. I live in Kihei. My family has lived in Hawaii since 1870, that's the Blackburn side of the family, the Rodriguez family got here before the wall was built and we were refugees from the revolution in Mexico and it wasn't a pretty process to be a refugee.

I'm representing Go Maui, Incorporated. Go Maui is a nonpartisan, nonprofit organization with a focus on affordable workforce housing, water, and a healthy economy with good-paying jobs and benefits, among other issues. There are many issues to consider in the development of this EIS and it is a challenging task. There are five questions I would like to highlight for your consideration and which should be answered in the EIS.

Briefly, first: Will the EIS cover and assess what would happen to Central Maui if there were no agriculture there because there's not enough water.

Number two, second: Will the EIS cover what can happen to our hopes of energy and food sustainability on Maui if the Central Maui lands cannot be cultivated?

Third: What about Upcountry residents? The EIS -- farmers, ranches, etc. The EIS should address where they will get their water if there's no state lease.

Fourth: I have many friends who are in business Upcountry. Will the EIS address what will happen to them and the other businesses in Upcountry Maui if there's no more East Maui stream water?

Finally and perhaps most important: Will the EIS cover what development might occur if there's no agriculture in Central Maui? These and other questions you will hear and have heard tonight are important and the answers will have real consequences for our community which we all love.

And, finally, I would just like to endorse the concept of having a meeting in Hana. Although the Maui County Council has facilities where you can do remote meetings as well, I think it's very important for the people of Hana to be able to participate fully in a meeting of this nature and strongly endorse that. Thank you.

**Comments Regarding State Water Lease EIS**  
**Kahului, Maui, Hawaii**  
February 22, 2017

Aloha and good evening,

My name is Tom Blackburn-Rodriguez and I live in Kihei. My family has lived in Hawaii since 1870. I am representing Go Maui, Inc. Go Maui is a non-partisan non-profit organization with a focus on affordable workforce housing, water and a healthy economy with good-paying jobs and benefits, among other issues.

There are many issues to consider in the development of this EIS and it is a challenging task.

There are five questions I would like to highlight for your consideration and which should be answered in any EIS.

First, will the EIS cover and assess what would happen to Central Maui if there were no agriculture there, because there's not enough water?

Second, Will the EIS cover what can happen to our hopes of energy and food sustainability on Maui if the Central Maui lands can't be cultivated?

Third, what about the Up County residents? The EIS should address where they will get their water if there's no state lease.

Fourth, I have many friends who are in business Up Country. Will the EIS address what will happen to them and the other businesses in Upcountry Maui if there's no more East Maui stream water?

Finally, and perhaps most important, Will the EIS cover what development might occur if there's no agriculture in Central Maui?

These and other questions you will hear tonight are important and the answers will have real consequences for our community, which we all love.

Mahalo.



10238-02  
September 23, 2019

rodriguez

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Blackburn-Rodriguez:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas, your written comments dated February 22, 2017, and oral comments at the February 22, 2017 scoping meeting. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaii's Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. The Draft EIS includes in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action, including a discussion of the No Action Alternative should the Water Lease not be issued.
3. The Social Impact Assessment (See Appendix G), Economic and Fiscal Impact Study (See Appendix H), and Agricultural and Related Economic Impacts report (See Appendix I) assess the social, economic, and agricultural impacts of the Proposed Action and alternatives.

Your written and oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-01  
Letter to Mr. Tom Blackburn-Rodriguez  
Page 2  
September 23, 2019

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

002556



**Environmental Impact Statement Preparation Notice  
Proposed Water Lease for the Nāhiku, Keʻānae, Honomanū, and Huelo License Areas**

**Scoping Meeting Comments of**

Mr. Zack Williams

February 22, 2017

Maui Electric Company Community Meeting Room

Excerpt of Transcription by Ralph Rosenberg Court Reporters, Inc.

MR. WILLIAMS: Hi, everyone. Aloha. I'm Zack Williams. I'm from Lower Nahiku. I'm just here to say a couple of things really quick about the EMI and what I would like in the EIS. So starting from the beginning, A&B, their subsidiaries HC&S and East Maui Irrigation Company have been very deceitful in what they're saying their uses are. They said right now they've restored 100 percent of Makapipi Stream. I walked up, because we cannot drive and I'm a residence of Nahiku, I walked up to their diversion yesterday, their eastern boundary diversion because they have multiple diversion at different layers of each stream so they can take not water from one place, but multiple places in each stream and they have pumps as well, they can pump water out of the streams.

So on their eastern most diversion, they said they'd give us 100 percent stream flow, but I have a video showing they've opened a little door and it's about four or six inches deep where the water flows out the door and then their flume, which is right on the inside of their diversion, has as much water as they could be possibly taking still flowing into their diversion. And I have video evidence of this from yesterday. And that's what they call 100 percent stream flow, they get more than 50 percent of our water. Well, I'm a new kalo farmer, but I'm a lifelong resident of Lower Nahiku. I'm struggling to get my rhodes going, but that's just wind, Kona winds for the last two weeks. And for the first time since July we've lost mauka to makai connectivity. We've had that since July of this year. So yesterday I went up to the diversion, then I went down to the bridge at the bottom of the road and into the ocean to check the mauka to makai connectivity.

My neighbors, the (Hawaiian name), were getting opae and because the water stopped flowing at Wahine Mo, which is about -- a pond 300 yards up from the ocean, they had to go above there to even get opae in their ponds because it was all neko, because HC&S and EMI are not giving us our fair share and they're saying they're giving us 100 percent. So I want. I guess, the definitions of 100 percent water restored to actually be 100 percent. They're like falsifying this to everybody in Maui County and the State of Hawaii saying they're giving us our water and I still no more water.

And as far as Auntie saying, "Oh, we're worried about (inaudible) guys paying for the water," hey, don't worry us, we'll take care, so -- And one more thing too about the opae, the hihwi, the pipiwai, the (Hawaiian word), the moi, all these things are all interdependent on that fresh water connectivity into the ocean. But we also need accountability, we need (audible) to come down and count the opae, count the hihwi, count the pipiwai, the oopu. And we need this above and below the diversions on every single river and then we can decide who gets to take what. But until we have a precedent to preserve our animals and our people and everybody who lives in Maui (Hawaiian word), then I don't -- I don't see

Scoping Meeting Comments of Mr. Zack Williams

Page 2

February 22, 2017

--I don't know where the future is going with EMI, but they need to come forward and be way more transparent.

And also their water lines are all bust, they call them broken water lines, they're just leaking water yesterday, buried under gingers. And the EMI guys are driving by in their trucks, there's no way they would hear that. I'm walking by, I heard the thing, I un-- dug under gingers and ahui for like ten to fifteen feet with my cane knife to find a four-inch water line completely ruptured, just busting water they've diverted from Makapipi Stream straight into the bushes. Where's the accountability? How long has this been busted? I just found it yesterday, it was buried a foot underground. If I wasn't walking, I wouldn't have heard it.

And lastly, I talked to Uncle Frank James, who is a lineal descendant of (Hawaiian name) in East Maui. And I think Kuihewa, Maui Land and Pine, they used to have on Kuihewa, but they don't take surface water from Kuihewa, but they do take water, they pump it, because it's one of the largest aquifers we have in East Maui. And since 1990 when they put in that pump, Uncle Frank told me that the pond, what they call Blue Pond, is actually only running for two or three weeks after a big storm and then it dries up completely dry. His whole life that never happened, but since 1990 when they put in that pump, that's been happening. And what effect did that -- these pumps and these pumps stations have an effect on other ahupuaas? What about the next ahupuaa in Koolau? But we're all connected and there's been no scientific study or research to see how our aquifers are connected. When you take from one place, people are affected somewhere else. So they cannot just say, Oh, this and that. We need way more, way more scientific impact statements and, I don't know, research. Anyway, that's all I have to say.



10238-02  
September 23, 2019

Mr. Zack Williams

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Mr. Williams:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and your oral comments at the February 22, 2017 EIS Scoping Meeting. We acknowledge your comments and concerns, they have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
1. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Zack Williams  
Page 2  
September 23, 2019

Your oral comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

**From:** [Wilson Okamoto Corporation](#)  
**To:** [Earl Matsukawa](#); [Keola Chenoy](#); [Rebecca Candlisha](#)  
**Subject:** FW: EISP for Proposed Lease for the Nahiku, Ke`anae, Honomanu, and Huelo License Areas of Public Land, Maui, Hawaii  
**Date:** Friday, March 10, 2017 3:47:31 PM  
**Attachments:** [image001.jpg](#)

**Jeanine S.H.Y. Morioka**  
Secretary

Wilson Okamoto Corporation



1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

**From:** Zen Powers  
**Sent:** Friday, March 10, 2017 3:34 PM  
**To:** Wilson Okamoto Corporation  
**Subject:** Re: EISP for Proposed Lease for the Nahiku, Ke`anae, Honomanu, and Huelo License Areas of Public Land, Maui, Hawaii

Wilson Okamoto Corporation  
10th, 2017  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Attention: Mr. Earl Matsukawa, Project Manager  
[woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

March

Re: EISP for Proposed Lease for the Nahiku, Ke`anae, Honomanu, and Huelo License Areas of Public Land, Maui, Hawaii

Dear Mr. Okamoto,

Mahalo for the opportunity to provide comments on this Environmental Impact Statement Preparation Notice (EISP) for the use of water from four license areas consisting of 33,000 acres of public lands and waters in East Maui.

As a landowner/ resident of Ho`olawa who has legal rights to use the waters of Ho`olawanui and Ho`olawali`ili`i streams I am personally affected by the A&B request to secure 30 year leases for 33,000 acres of public lands in the East maui Lease areas. My lands and water right apply to the Huelo lease area. Our community has no public water system and we are entirely dependent upon rainfall and the streams for our water supply.

Myself and my family and my neighbors have been impacted by the longterm diversions of our streams by A&B/EMI ditch system. Our streams are so diverted, by the four levels of EMI ditches that there is rarely any flow at all except during rainstorms. This deprives me and my family and my neighbors of sufficient water for domestic use forcing us have limited water available for our needs.

I request that the Draft EIS have a specific discussion of the impacts of A&B/EMI diversions on Ho`olawanui and neighboring streams that have never been included in the 2001 IIFS petition contested case. The discussion should include amounts historically diverted from each stream; amounts planned to be diverted from each stream; amounts planned to be restored to each stream to meet the legally protected rights of downstream communities and actions proposed to care for the watershed productivity of the Huelo lease lands where the diversions occur.

In the resent past the A&B/EMI diversions below the Hana highway took all of the water from Ho`olawa stream and this created an expanse of river bed with out running water. This not only destroyed the once abundant aquatic life and made it harder for our farming community to grow our food but also provided a prime breeding ground for mosquitos. I not only consider this to be poor stewardship of our natural resources but dangerous. If there was ever to be an epidemic of a mosquito born illness, having large areas of standing water could prove fatal to members of our community. It's for these reasons that I request a minimum water flow standard be set for these streams, that meets the environments need for continual flow and the domestic and agricultural needs of my community.

I request to be a consulted party during the entire EIS process for the proposed Lease request.

Zen Kekoa Powers





10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Mr. Powers:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued *"right, privilege, and authority to enter and go upon"* the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the *"purpose of developing, diverting, transporting, and using government owned waters"* through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui. The environmental impacts of the potential Water Lease will be assessed.
2. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
3. Trutta and SWCA prepared reports in support of the Draft EIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the Draft EIS (See Appendix A and Appendix C).
4. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Zen Kekoa  
Page 2  
September 23, 2019

Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED] on behalf of Alan Bradbury  
Sent: Thursday, March 09, 2017 9:01 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

Friends,

We have seen an increase in water flow in several streams since the decline of Maui's sugar industry. Seeing the streams flow has greatly enhanced the ambiance of the region and ability to grow Taro for many local residents. Re-establishing minimum stream flows is a wonderful step forward for our watershed. Better to reduce unnecessary water waste than to take all the water from our streams. As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Kēʻanae, Honomanū, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Alan Bradbury



10238-02  
September 23, 2019

[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Kēʻanae, Honomanū  
and Huelo License Areas

Dear Mr. Bradbury:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Kēʻanae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Kēʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawaiʻi Revised Statutes (HRS) Chapter 343 and Hawaiʻi Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002561



4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED] on behalf of Alex Beers

Sent: Monday, March 06, 2017 5:10 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Alex Beers



10238-02  
Letter to Mr. Alex Beers  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Beers:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 6, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED] on behalf of Andrew Isoda  
Sent: Thursday, March 09, 2017 6:08 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Andrew Isoda



10238-02  
September 23, 2019

[REDACTED]  
oda

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman?,  
and Huelo License Areas

Dear Mr. Isoda:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman?, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002564

10238-02  
Letter Mr. Andrew Isoda  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED] on behalf of Ann Lentz

Sent: Thursday, March 09, 2017 7:05 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Ann Lentz





10238-02  
Letter to Ms. Ann Lentz  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Lentz:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



From: Wilson Okamoto Corporation  
Sent: Monday, March 06, 2017 7:46 AM  
To: Earl Matsukawa; Rebecca Candilasa; Keola Cheng  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Follow Up Flag: Follow up  
Flag Status: Flagged

Categories: Red Category

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Saturday, March 04, 2017 6:36 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N'hiiku, Ke'anae, Honomanu?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this one will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent

of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Arianna Feinberg

002567



10238-02  
Letter to Ms. Arianna Feinberg  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Feinberg

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū,  
and Huelo License Areas

Dear Ms. Feinberg:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 6, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Friday, March 10, 2017 8:38 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Thursday, March 09, 2017 9:52 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

Aloha everyone,  
As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Where are the cultural practitioners overseeing this process?

Asking A&B to procure their own EIS is like the fox guarding the hen house.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these alters and areas. This will also help instill trust that the completed EIS will be impartial and independent A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Barbara Barry

002569



10238-02  
Letter to Ms. Barbara Barry  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

M [REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Ms. Barry:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Friday, March 10, 2017 8:39 AM  
To: Earl Matsukawa; Rebecca Candilasa; Keola Cheng  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----  
From: [REDACTED]  
Sent: Friday, March 10, 2017 6:55 AM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on geologic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Barbara Best  
HI





10238-02  
Letter to Ms. Barbara Best  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Kē'anae, Honomanū  
and Huelo License Areas

Dear Ms. Best:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Kē'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Kē'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.

3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED] on behalf of Bob Ferguson

Sent: Thursday, March 09, 2017 6:17 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Bob Ferguson



10238-02  
September 23, 2019

[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman?,  
and Huelo License Areas

Dear Mr. Ferguson:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman?, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002573

10238-02  
Letter to Mr. Bob Ferguson  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action on freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED] on behalf of chi guyer

Sent: Thursday, March 09, 2017 8:14 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
chi guyer



10238-02  
Letter Chi Guyer  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū,  
and Huelo License Areas

Dear Chi Guyer:

I Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



From: Wilson Okamoto Corporation  
Sent: Tuesday, March 07, 2017 2:23 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Tuesday, March 07, 2017 2:21 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on geologic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
David-John Fernandez





10238-02  
Letter to Mr. David-John Fernandez  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Mr. Fernandez:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 7, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.

3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Thursday, March 09, 2017 2:31 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----  
From: [REDACTED]  
Sent: Thursday, March 09, 2017 1:43 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on geologic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Debra Nix



10238-02  
Letter to Ms. Debra Nix  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Nix

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Mr. Nix:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Wednesday, March 08, 2017 10:57 AM  
To: Earl Matsukawa; Rebecca Candilasa; Keola Cheng  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Wednesday, March 08, 2017 10:36 AM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

Alexander & Baldwin has dominated the islands' government, policy, land, economy and people for almost 150 years. Now is the time to stand up to them in the name of fairness and logic.

It is not fair that A&B diverts water from streams so that local farmers are unable to water their crops and it is equally unfair to have A&B personally select and pay for an EIS. Knowing the power that A&B has wielded over elected and appointed government officials over the decades, it is only logical to wonder how their personally-hired consultants for an EIS could possibly remain impartial. There is no logic in letting the wolf guard the hen house. Now is the time to prove that an impartial EIS is possible; and that would be to have the DLNR pay for it.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and led for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Denise Boisvert

002580



10238-02  
September 23, 2019

vert

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Boisvert:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 8, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Denise Boisvert  
Page 2  
September 23, 2019

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
  5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
  6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).
- Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



From: Wilson Okamoto Corporation  
Sent: Friday, March 10, 2017 3:29 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EISP for Proposed Lease for License Areas of Public Land, Maui, Hawaii

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

From: Diana L. Dahl  
Sent: Friday, March 10, 2017 3:27 PM  
To: Wilson Okamoto Corporation  
Subject: EISP for Proposed Lease for License Areas of Public Land, Maui, Hawaii

Wilson Okamoto Corporation  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826

Attention: Mr. Earl Matsukawa, Project Manager  
[woc@wilsonokamoto.com](mailto:woc@wilsonokamoto.com)

Re: EISP for Proposed Lease for the Nāhiku, Keʻanae, Honomanu, and Huelo License Areas of Public Land, Maui, Hawaii

Dear Mr. Okamoto,

Mahalo for the opportunity to provide comments on this Environmental Impact Statement Preparation Notice (EISP) for the use of water from four license areas consisting of 33,000 acres of public lands and waters in East Maui.

As a landowner in the community on Loomis Road in Huelo who has legal rights to use the waters of Hoʻolawa Stream I am personally affected by the A&B request to secure 30 year leases 33,000 acres of public lands in the East Maui Lease areas. My lands and water right apply to Huelo lease area. Our community has no public water system and we are entirely dependent

upon rainfall and the streams for our water supply.

Myself and my family and my neighbors have been impacted by the long-term diversions of our streams by A&B/EMI ditch system. Our streams are so diverted, by the four levels of EMI ditches that there is rarely any flow at all except during rainstorms. This deprives me and my family and neighbors—at least 15 neighbors not including our family of 5—of sufficient water for domestic use forcing us have limited water available for our needs.

I request that the Draft EIS have a specific discussion of the impacts of A&B/EMI diversions on Hoʻolawa Stream and neighboring streams that have never been included in the 2001 IIFS petition contested case. The discussion should include amounts historically diverted from each stream; amounts planned to be diverted from each stream; amounts planned to be restored to each stream to meet the legally protected rights of downstream communities, and actions proposed to care for the watershed productivity of the Huelo lease lands where the diversions occur.

These last points are of great importance! We have seen throughout our time on Hoʻolawa (45 yrs) a disappointing lessening of stream life. Even if there haven't been definitive studies of the minimal daily/annual stream flow to restore healthy stream life and provide for fair Ag and domestic use of the water, an estimated range needs to be determined to meet these legally protected rights of the downstream communities.

I am requesting to be a consulted party during the entire EIS process for the proposed Lease request.

Yours truly,

Diana L. Dahl

002582



10238-02  
Letter to Ms. Diana Dahl  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Ms. Dahl:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
  5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
  6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).
- Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Tuesday, March 07, 2017 8:17 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----  
From: [REDACTED]  
Sent: Monday, March 06, 2017 4:13 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on geologic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Donald Erway



10238-02  
Letter to Mr. Donald Erway  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Mr. Erway:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 7, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Friday, March 10, 2017 1:16 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Friday, March 10, 2017 11:55 AM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on geologic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Douglas Berry





10238-02  
Letter to Mr. Douglas Berry  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

ITY

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Mr. Berry:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED]@com on behalf of Edie Van Hoose

Sent: Thursday, March 09, 2017 7:40 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

[REDACTED]



10238-02  
September 23, 2019

[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman? and Huelo License Areas

Dear Mr. Van Hoose:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman?, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

002588

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Friday, March 10, 2017 4:31 PM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Eileen Naaman



10238-02  
Letter to Ms. Eileen Naaman  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Ms. Naaman:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 13, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



From: Yasui, Daniel at A&B <dvasui@abprop.com>  
Sent: Tuesday, March 07, 2017 1:06 PM  
To: Keola Cheng; Earl Matsukawa  
Cc: Ching, Meredith at A&B; Hew, Garret at HCS; Minakami, Dean at A&B;  
Yvonne Izu (yizu@morihaingroup.com); jim@carlsmith.com  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

EISPN comment letter.

Daniel Y. Yasui  
Vice President  
A&B Properties, Inc.  
822 Bishop Street  
Honolulu, Hawaii 96813  
Tel: (808) 525-8449  
Fax: (808) 525-8447  
email: dvasui@abprop.com

This message, including any attachments, is intended for the use of the party to which it is addressed and may contain information that is privileged, confidential and exempt from disclosure. If you are not the intended recipient, any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please contact the sender immediately by reply e-mail, and delete the original and any copies of this message. It is the sole responsibility of the recipient to ensure that this message and any attachments are virus free.

-----Original Message-----  
From: [REDACTED]

Sent: Tuesday, March 07, 2017 12:36 PM  
To: Yasui, Daniel at A&B  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Daniel Yasui,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past,

present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Erika Lechuga Disalvo





10238-02  
September 23, 2019

[Redacted Address]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū,  
and Huelo License Areas

Dear Ms. Disalvo:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 7, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Erika Disalvo  
Page 2  
September 23, 2019

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED]

Sent: Thursday, March 09, 2017 8:57 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, K'e?anae, Honoman? and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
eva roberts



10238-02

September 23, 2019

[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the N?hiku, K'e?anae, Honoman? and Huelo License Areas

Dear Ms. Roberts:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the N?hiku, K'e?anae, Honoman?, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the N?hiku, K'e?anae, Honoman?, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

002593

10238-02  
Letter to Ms. Eva Roberts  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSEHP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Tuesday, March 07, 2017 8:16 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Monday, March 06, 2017 3:24 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water

diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
George Vierra



10238-02  
September 23, 2019

Vierra

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Vierra:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 7, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002595



10238-02  
Letter to Mr. George Vierra  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Friday, March 10, 2017 1:16 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Friday, March 10, 2017 12:25 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple



alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Grace Woods



10238-02  
September 23, 2019

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Woods:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Earl Matsukawa  
Sent: Tuesday, March 07, 2017 8:48 AM  
To: Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Earl Matsukawa, AICP  
Vice President & Director

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]

Sent: Tuesday, March 07, 2017 8:39 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N'hiku, Ke'anae, Honomanu, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on

aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Hawcookalani Johnson



10238-02  
September 23, 2019

Johnson

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū,  
and Huelo License Areas

Dear Hawcookalani Johnson:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 7, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Saturday, March 11, 2017 6:50 PM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Helen Barrow

From: Wilson Okamoto Corporation  
Sent: Tuesday, March 07, 2017 2:23 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Tuesday, March 07, 2017 1:51 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on geologic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Helen Barrow





10238-02  
Letter to Ms. Helen Barrow  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Barrow  
[Redacted]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Barrow:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 7 and 11, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED]

Sent: Thursday, March 09, 2017 5:11 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Jack Rollens



10238-02  
September 23, 2019

ens

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman? and Huelo License Areas

Dear Mr. Rollens:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman?, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002603

10238-02  
Letter to Mr. Jack Rollens  
Page 2  
September 23, 2019

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Tuesday, March 07, 2017 8:26 AM  
To: [REDACTED]  
Subject: RE: EIS Preparation Notice Comments for A&B Proposed Water Lease

Follow Up Flag: Follow up  
Flag Status: Flagged

Dear Ms. Ching,

This is to acknowledge that we have received your email comment on the subject EIS Preparation Notice. Your participation is appreciated.

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Monday, March 06, 2017 5:12 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

Water is life. The water that flows in the streams from Huelo to N'hiku, belongs to the animals, the plants and the generations of people who live on that land.

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the Ke'anae, Honomanu, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices.

The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

I remember when the streams were full in 1960s through the 1970s in spite of sugar cane production. Since 1980s, thirty years ago, East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Jacquelyn Ching  
HI



10238-02  
September 23, 2019

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Ching:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 7, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

002605



10238-02  
Letter to Ms. Jacquelyn Ching  
Page 2  
September 23, 2019

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Thursday, March 09, 2017 6:07 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

002606





10238-02  
Letter to Ms. Jacqui Skill  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū,  
and Huelo License Areas

Dear Ms. Skill:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Mr. Franzen:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawaiʻi Revised Statutes (HRS) Chapter 343 and Hawaiʻi Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

From: [Redacted]

Sent: Thursday, March 09, 2017 6:42 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
James Franzen



002608

10238-02  
Letter to Mr. James Franzen  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Thursday, March 09, 2017 1:35 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary  
  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Thursday, March 09, 2017 1:03 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
James Padgett



10238-02  
September 23, 2019

ett  
[Redacted]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū,  
and Huelo License Areas

Dear Mr. Padgett:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawaiʻi Revised Statutes (HRS) Chapter 343 and Hawaiʻi Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002610



10238-02  
Letter to Mr. James Padgett  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action on freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Thursday, March 09, 2017 6:26 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Jean Power

002611





10238-02  
Letter to Jean Power  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Jean Power:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Monday, March 06, 2017 7:46 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Saturday, March 04, 2017 8:29 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on geologic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Jennifer Noelani Ahia



10238-02  
Letter to Ms. Jennifer Ahia  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū and Huelo License Areas

Dear Ms. Ahia:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED]

Sent: Sunday, March 05, 2017 8:48 PM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Jessica Mitchell



10238-02  
September 23, 2019

[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman? and Huelo License Areas

Dear Ms. Mitchell:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman?, and Huelo License Areas and for your written comments dated March 6, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

002615



10238-02  
Letter to Ms. Jessica Mitchell  
Page 2  
September 23, 2019

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Thursday, March 09, 2017 6:40 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Jill Blakelev

002616





10238-02  
Letter to Ms. Jill Blakeley  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū,  
and Huelo License Areas

Dear Ms. Blakeley:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Thursday, March 09, 2017 2:31 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----  
From: [REDACTED]  
Sent: Thursday, March 09, 2017 1:41 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on geologic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Joan Heartfield PhD



10238-02  
Letter to Dr. Joan Heartfield  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Dr. Heartfield:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED]

Sent: Thursday, March 09, 2017 5:27 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Joel Kubby



10238-02  
September 23, 2019

by [REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman?,  
and Huelo License Areas

Dear Mr. Kubby:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman?, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002620



10238-02  
Letter to Mr. Joel Kubby  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Earl Matsukawa  
Sent: Thursday, March 09, 2017 8:47 AM  
To: Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Please verify

Earl Matsukawa, AICP  
Vice President & Director

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Thursday, March 09, 2017 8:40 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

A full, complete and independent EIS is mandatory at this time. Period!

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past,



present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
John Naylor



10238-02  
September 23, 2019

Naylor

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Mr. Naylor:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawaiʻi Revised Statutes (HRS) Chapter 343 and Hawaiʻi Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002622

10238-02  
Letter to Mr. John Naylor  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSheP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Thursday, March 09, 2017 2:31 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary  
  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Thursday, March 09, 2017 1:42 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
John Nix



10238-02  
September 23, 2019

X  
[Redacted]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Nix:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

10238-02  
Letter to Mr. John Nix  
Page 2  
September 23, 2019

4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Friday, March 10, 2017 8:39 AM  
To: Earl Matsukawa; Rebecca Candilasa; Keola Cheng  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary  
  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----  
From: [REDACTED]  
Sent: Friday, March 10, 2017 6:53 AM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

John Norman



10238-02  
September 23, 2019

an [REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Mr. Norman:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawaiʻi Revised Statutes (HRS) Chapter 343 and Hawaiʻi Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.



4. Trutna and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Tuesday, March 07, 2017 8:23 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: Wilson Okamoto Corporation  
Sent: Tuesday, March 07, 2017 8:22 AM  
To: 'wao-maui@mauiareclub.org@WeAreOne.cc'  
Subject: RE: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Dr. Kohn,

This is to acknowledge that we have received your email comment on the subject EIS Preparation Notice. Your participation is appreciated.

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: wao-maui@mauierrclub.org@everyactioncustom.com [mailto:wao-mauierrclub.org@everyactioncustom.com]

Sent: Monday, March 06, 2017 9:42 PM

To: Wilson Okamoto Corporation

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

EIS should include the long term effects of the original water leases, and the cost of remediation of the damaged ecosystems involved. A&B and EMI should pay for it, but the investigation should be done by DLNR.

www.WeAreOne.cc

Mahalo for your time.

Sincerely,

Joseph Kolm MD

1268 W Hiahia Pl Wailuku, HI 96793-9762

002628



10238-02  
September 23, 2019

Dr. Joseph Kolm  
1268 W. Hiahia Pl.  
Wailuku, HI 96793-9762  
Wao-mauierrclub.org@everyactioncustom.com

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Dr. Kolm:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated March 7, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawaiʻi Revised Statutes (HRS) Chapter 343 and Hawaiʻi Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Dr. Joseph Kohn  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Thursday, March 09, 2017 8:27 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Judith Michaels



10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Michaels:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Judith Michaels  
Page 2  
September 23, 2019

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



From: Wilson Okamoto Corporation  
Sent: Wednesday, March 08, 2017 10:25 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----  
From: [REDACTED]

Sent: Tuesday, March 07, 2017 4:47 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water

diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Kamaile Aipa





10238-02  
Letter to Kamaile Aipā  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū  
and Huelo License Areas

Dear Ms. Aipā:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas and for your written comments dated March 8, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'ānae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.

3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Earl Matsukawa  
Sent: Tuesday, March 07, 2017 8:48 AM  
To: Keola Cheng; Rebecca Candliss  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Earl Matsukawa, AICP  
Vice President & Director

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----  
From: [REDACTED]  
Sent: Tuesday, March 07, 2017 8:34 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on geologic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Kamulani Antonio



10238-02  
Letter to Kapulani Antonio  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū,  
and Huelo License Areas

Dear Kapulani Antonio:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 7, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED]  
Sent: Thursday, March 09, 2017 6:36 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

Please ensure that the environmental impact assessment is as thorough as possible. This is a unique time in Maui's history and a unique opportunity to make it right...pono...for future generations. As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N'hiku, Ke'anae, Honomanu?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Kathryn Morgan



10238-02  
September 23, 2019

[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū,  
and Huelo License Areas

Dear Ms. Morgan:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002635



10238-02

Letter to Ms. Katharyn Morgan

Page 2

September 23, 2019

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Friday, March 10, 2017 1:16 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

Sent: Friday, March 10, 2017 12:26 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor. This is a conflict-of-interest in the extreme.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

002636



alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Keith Ranney  
Kula, HI 96790



10238-02  
September 23, 2019

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Ranney:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Mr. Keith Ranney  
Page 2  
September 23, 2019

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Monday, March 06, 2017 7:46 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Saturday, March 04, 2017 7:51 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Kelli Medeiros



10238-02  
September 23, 2019

M [REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Ms. Medeiros:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated March 6, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawaiʻi Revised Statutes (HRS) Chapter 343 and Hawaiʻi Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Kelli Medeiros  
Page 2  
September 23, 2019

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Wednesday, March 08, 2017 10:59 AM  
To: Earl Matsukawa; Rebecca Candilasa; Keola Cheng  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary  
  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Wednesday, March 08, 2017 10:57 AM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

Don't let future generations ask, "What were they thinking?" The time to do the right thing for East Maui farmers is long overdue; the first step is not allowing A&B to pay for their own EIS. Expert witnesses who give "expert" testimony always follow the money. Having the DLNR pay for an EIS is the only way to get as much of an impartial opinion as possible.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

002640



10238-02  
September 23, 2019

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Mr. Jorgensen:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated March 8, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawaiʻi Revised Statutes (HRS) Chapter 343 and Hawaiʻi Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277



10238-02  
Letter to Mr. Kim Jorgensen  
Page 2  
September 23, 2019

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Friday, March 10, 2017 11:04 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Friday, March 10, 2017 10:17 AM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Konnie Fox



10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Fox:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Konnie Fox  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Thursday, March 09, 2017 10:43 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
L Cummings  
Lahaina, HI 96761

002644



10238-02  
Letter to L. Cummings  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear L. Cummings:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.

3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



From: [REDACTED]  
Sent: Thursday, March 09, 2017 8:01 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Lauren Tyler



10238-02  
September 23, 2019

[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honomanu  
and Huelo License Areas

Dear Ms. Tyler:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honomanu, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honomanu, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002646



10238-02  
Letter to Ms. Lauren Tyler  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSheP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Thursday, March 09, 2017 1:34 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary  
  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----  
From: [REDACTED]  
Sent: Thursday, March 09, 2017 11:43 AM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Lauri Fritsch



10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Ms. Fritsch:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawaiʻi Revised Statutes (HRS) Chapter 343 and Hawaiʻi Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

September 23, 2019

4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Friday, March 10, 2017 1:16 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From:

Sent: Friday, March 10, 2017 12:41 PM

To: Wilson Okamoto Corporation

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on

aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Leialoha Medeiros



10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas

Dear Ms. Medeiros:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

10238-02  
Letter to Ms. Leialoha Medeiros  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Wednesday, March 08, 2017 3:51 PM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Lezley Jacintho  
HI

002651





10238-02  
Letter to Ms. Lezley Jacintho  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Jacintho:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.

3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Monday, March 13, 2017 9:15 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: proposed E. Maui renewal for water use

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

From: Lina Gooley [mailto:linagooley@hawaii.gov]  
Sent: Friday, March 10, 2017 5:27 PM  
To: Wilson Okamoto Corporation  
Subject: proposed E. Maui renewal for water use

I am concerned that your upcoming draft EIS contain the following information in order to insure that the permitting process is legal and accurately reflects the environmental effects of water diversion on this ecosystem:

- Full disclosure of every single diversion along the East Maui Irrigation system
  - Full disclosure of the amount of water proposed to be taken from each stream, license area and from the entire license area daily (on average and at minimum and maximum)
  - The impact of how the proposed diversions may affect federally listed plant/ bird/bat & insect species in lease areas
  - The impacts of diverting water from East Maui streams on outdoor recreational activities
  - The impacts on the maintenance of ecosystems
  - The impacts on traditional and customary Hawaiian practices (including kalo farming)
- A discussion of alternatives including: shorter lease periods, less volumes than proposed, termination of diversions from the Nahiku and/or Keanae areas

Mahalo' for your attention to this matter,  
Lina Gooley

002653



10238-02  
September 23, 2019

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Gooley:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 13, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Lina Gooley  
Page 2  
September 23, 2019

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Tuesday, March 07, 2017 8:29 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Tuesday, March 07, 2017 8:27 AM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Lory Ono



10238-02  
September 23, 2019

[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū,  
and Huelo License Areas

Dear Ms. Ono:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 7, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.



10238-02  
Letter to Ms. Lory Ono  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Thursday, March 09, 2017 8:51 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Malia Dair





10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Datr:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Malia Datr  
Page 2  
September 23, 2019

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Friday, March 10, 2017 11:49 AM  
To: Earl Matsukawa; Rebecca Candilasa; Keola Cheng  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Friday, March 10, 2017 11:24 AM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on geologic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Marc Drehsen



10238-02  
Letter to Mr. Marc Drehsen  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Drehsen

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Drehsen:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



10238-02  
September 23, 2019

[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Mr. Nall:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated March 13, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawaiʻi Revised Statutes (HRS) Chapter 343 and Hawaiʻi Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

From: [REDACTED]

Sent: Friday, March 10, 2017 7:48 PM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Matthew Nall

[REDACTED]

002660



10238-02

Letter to Mr. Matthew Nall

Page 2

September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP

Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Thursday, March 09, 2017 6:28 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Matti Christensen

002661





10238-02  
Letter to Ms. Matti Christensen  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Christensen

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū,  
and Huelo License Areas

Dear Ms. Christensen:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED]

Sent: Thursday, March 09, 2017 11:32 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

I feel that it is a conflict of interest for A&B to hire it's own consultant to do the EIS. It needs to be done by DLNR so that public interests are served, not A&Bs

Sincerely,  
Melanie Padgett



10238-02  
September 23, 2019

gett

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman? and Huelo License Areas

Dear Ms. Padgett:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman?, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002663

10238-02  
Letter to Ms. Melanie Padgett  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Thursday, March 09, 2017 6:04 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Melodie Ulman

002664



10238-02  
Letter to Ms. Melodie Ulman  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Man  
[Redacted]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū,  
and Huelo License Areas

Dear Ms. Ulman:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



From: [REDACTED]

Sent: Monday, March 06, 2017 8:34 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Michelle Anderson



10238-02  
September 23, 2019

[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman? and Huelo License Areas

Dear Ms. Anderson:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman?, and Huelo License Areas and for your written comments dated March 6, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

002666



impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Thursday, March 09, 2017 1:35 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Thursday, March 09, 2017 12:12 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Michelle Ramos



10238-02  
September 23, 2019

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Ramos:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Monday, March 13, 2017 9:17 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: Draft EIS Scoping Comment

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

From: [REDACTED]  
Sent: Friday, March 10, 2017 5:07 PM  
To: Wilson Okamoto Corporation  
Subject: Re: Draft EIS Scoping Comment

Dear Sir,

\*\*Please forgive the accidental sending of the first email\*\*

It is my understanding that an East Maui Watershed EIS is being formulated regarding the water lease from that flank of Haleakala. I just wanted to voice my concern that it will satisfy all standard NEPA processes, including the socioeconomic impacts to the native peoples of East Maui. Below is a list of those concerns that I hope will be addressed in this important lease decision.

- Full disclosure of every single diversion along the East Maui Irrigation system
- Full disclosure of the amount of water proposed to be taken from each stream, license area and from the entire license area daily (on average and at minimum and maximum)
- The impact of how the proposed diversions may affect federally listed plant/ bird/bat & insect species in lease areas
- The impacts of diverting water from East Maui streams on outdoor recreational activities
- The impacts on the maintenance of ecosystems
- The impacts on traditional and customary Hawaiian practices (including kalo farming)
- A discussion of alternatives including: shorter lease periods, less volumes than proposed, termination of diversions from the Nāhiku and/or Kēānāe areas

The above list was copied from the concerns expressed from the Surfrider Foundation. The population of this island continues to grow and long term, large scale sugar and pineapple

production have come to an end. Perhaps it is time to reconsider putting most of the water back where it belongs, in their respective gravity fed drainages?

Thank you for your time,

Nicholi Stoyanoff

On Fri, Mar 10, 2017 at 4:58 PM, Nicholi Stoyanoff <[REDACTED]> wrote:  
Dear Sir,

It is my understanding that an East Maui Watershed EIS is being formulated regarding the water lease from that flank of Haleakala. I just wanted to voice my concern that it will satisfy all standard NEPA processes, including the socioeconomic impacts to the native peoples of East Maui. Below is a list of those concerns that I hope will be addressed in this important lease decision.

- Full disclosure of every single diversion along the East Maui Irrigation system
- Full disclosure of the amount of water proposed to be taken from each stream, license area and from the entire license area daily (on average and at minimum and maximum)
- The impact of how the proposed diversions may affect federally listed plant/ bird/bat & insect species in lease areas
- The impacts of diverting water from East Maui streams on outdoor recreational activities
- The impacts on the maintenance of ecosystems
- The impacts on traditional and customary Hawaiian practices (including kalo farming)
- A discussion of alternatives including: shorter lease periods, less volumes than proposed, termination of diversions from the Nahiku and/or Keanae areas



10238-02  
September 23, 2019

[REDACTED] yanoff

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū  
and Huelo License Areas

Dear Mr. Stoyanoff:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas and for your written comments dated March 13, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawaiʻi Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Keʻanae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawaiʻi Revised Statutes (HRS) Chapter 343 and Hawaiʻi Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002670

10238-02  
Letter to Mr. Nicholi Stoyanoff  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Thursday, March 09, 2017 8:19 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Nicole Harrell

002671





10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Harrell:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Nicole Harrell  
Page 2  
September 23, 2019

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Thursday, March 09, 2017 1:34 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----  
From: [REDACTED]  
Sent: Thursday, March 09, 2017 11:35 AM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on geologic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Patricia Lailey



10238-02  
Letter to Ms. Patricia Lailey  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Lailey:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002674

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Friday, March 10, 2017 11:03 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Friday, March 10, 2017 9:52 AM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Randall Rospond  
Makawao, HI



10238-02  
Letter to Mr. Randall Rospond  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Rospond:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.
4. Trutta and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



From: [REDACTED]  
Sent: Thursday, March 09, 2017 9:17 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Rosalind McKeivitt



10238-02  
September 23, 2019

[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman? and Huelo License Areas

Dear Ms. McKeivitt:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman?, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002677

10238-02  
Letter to Ms. Rosalind McKeivitt  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Tuesday, March 07, 2017 2:22 PM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Tuesday, March 07, 2017 11:29 AM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water

diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Roxv Duarte



10238-02  
September 23, 2019

[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomānū  
and Huelo License Areas

Dear Ms. Duarte:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomānū, and Huelo License Areas and for your written comments dated March 7, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomānū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Thursday, March 09, 2017 7:21 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Sallyvane Bodnar





10238-02  
Letter Ms. Sallyjane Bodner  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Bodner:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002681

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant



From: Yasui, Daniel at A&B <dvasui@abprop.com>  
Sent: Monday, March 06, 2017 8:16 AM

To: Keola Cheng; Earl Matsukawa  
Cc: Ching, Meredith at A&B; Hew, Garret at HCS; Minakami, Dean at A&B;  
Yvonne Izu (yizu@morihangroup.com); jim@carlsmith.com  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

EISPN comment letter.

Daniel Y. Yasui  
Vice President  
A&B Properties, Inc.  
822 Bishop Street  
Honolulu, Hawaii 96813  
Tel: (808) 525-8449  
Fax: (808) 525-8447  
email: dvasui@abprop.com

This message, including any attachments, is intended for the use of the party to which it is addressed and may contain information that is privileged, confidential and exempt from disclosure. If you are not the intended recipient, any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please contact the sender immediately by reply e-mail, and delete the original and any copies of this message. It is the sole responsibility of the recipient to ensure that this message and any attachments are virus free.

-----Original Message-----

From: [REDACTED]  
Sent: Sunday, March 05, 2017 8:28 PM  
To: Yasui, Daniel at A&B  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Daniel Yasui,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Kē?anae, Honomanu?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on

aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Shannon Rudolph

002682



10238-02  
September 23, 2019

Rudolph  
[Redacted]  
[Redacted] com

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Rudolph:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 6, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

10238-02  
Letter to Ms. Shannon Rudolph  
Page 2  
September 23, 2019

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Friday, March 10, 2017 11:03 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Friday, March 10, 2017 9:42 AM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on geologic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Shari Rospond



10238-02  
Letter to Ms.Shari Rospond  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

spnd  
[Redacted]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Rospond:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED]

Sent: Thursday, March 09, 2017 11:32 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,

Sherri Mora



10238-02  
September 23, 2019

[REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman? and Huelo License Areas

Dear Ms. Mora:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman?, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

002686



10238-01  
Letter to Ms. Sherri Mora  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action on freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Thursday, March 09, 2017 8:00 AM  
To: Earl Matsukawa  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Susan Byrne



10238-02  
Letter to Ms. Susan Byrne  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

ne [REDACTED]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Byrne:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).

5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Friday, March 10, 2017 11:03 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----  
From: [REDACTED]  
Sent: Friday, March 10, 2017 9:52 AM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, DLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple

alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Susan Douglas



10238-02  
Letter to Ms. Susan Douglas  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

35  
[Redacted]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Douglas:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 10, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002690

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Yasui, Daniel at A&B <dvasui@abprop.com>  
Sent: Monday, March 06, 2017 8:17 AM

To: Keola Cheng; Earl Matsukawa

Cc: Ching, Meredith at A&B; Hew, Garret at HCS; Minakami, Dean at A&B;

Yvonne Izu (yizu@morihargroup.com); jim@carlsmith.com

Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

EISPN comment letter.

Daniel Y. Yasui  
Vice President  
A&B Properties, Inc.  
822 Bishop Street  
Honolulu, Hawaii 96813  
Tel: (808) 525-8449  
Fax: (808) 525-8447  
email: dvasui@abprop.com

This message, including any attachments, is intended for the use of the party to which it is addressed and may contain information that is privileged, confidential and exempt from disclosure. If you are not the intended recipient, any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please contact the sender immediately by reply e-mail, and delete the original and any copies of this message. It is the sole responsibility of the recipient to ensure that this message and any attachments are virus free.

-----Original Message-----

From: [REDACTED]

Sent: Sunday, March 05, 2017 10:44 PM

To: Yasui, Daniel at A&B

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Daniel Yasui,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Kē?anae, Honomanū?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on

aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
sylvia litchfield

002691





10238-02  
Letter to Ms. Sylvia Litchfield  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Litchfield

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Litchfield:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 6, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.

2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.

3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).

6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Wilson Okamoto Corporation  
Sent: Monday, March 06, 2017 7:45 AM  
To: Earl Matsukawa; Keola Cheng; Rebecca Candilasa  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

Jeanine S.H.Y. Morioka  
Secretary

1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96826  
T (808) 946-2277 F (808) 946-2253  
W <http://www.wilsonokamoto.com>

This message contains information that might be confidential and privileged. Unless you are the addressee or are authorized by the sender, you may not use, copy or disclose the information contained in this message. If you have received this message in error, please delete it and advise the sender.

-----Original Message-----

From: [REDACTED]  
Sent: Saturday, March 04, 2017 6:34 PM  
To: Wilson Okamoto Corporation  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Wilson Okamoto Corporation,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water

diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Terese Wormser

[REDACTED]



10238-02  
Letter to Ms. Terese Wormser  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

msr  
[Redacted]

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Wormser:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 6, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: [REDACTED]

Sent: Thursday, March 09, 2017 5:31 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Timothy Hills



10238-02  
September 23, 2019

Hills

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman? and Huelo License Areas

Dear Mr. Hills:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the N?hiku, Ke?anae, Honoman?, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

002695



10238-02  
Letter to Mr. Timothy Hills  
Page 2  
September 23, 2019

4. Trutina and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversions on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,



Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From:

Sent: Thursday, March 09, 2017 7:40 AM

To: Earl Matsukawa

Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Earl Matsukawa,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Ke?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

No matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
tony.aneelini





10238-02  
Letter to Mr. Tony Angelini  
Page 2  
September 23, 2019

10238-02  
September 23, 2019

Angelini

Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Mr. Angelini:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 9, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public action. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public action.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

1907 S. Beretania Street, Suite 400 • Honolulu, Hawaii • 96826 • (808) 946-2277

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Stream Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

From: Yasui, Daniel at A&B <dvasui@abprop.com>  
Sent: Tuesday, March 07, 2017 10:10 AM

To: Keola Cheng; Earl Matsukawa  
Cc: Ching, Meredith at A&B; Hew, Garret at HCS; Minakami, Dean at A&B;  
Yvonne Izu (yizu@morihargroup.com); Jim@carlsmith.com  
Subject: FW: EIS Preparation Notice Comments for A&B Proposed Water Lease

EISPN comment letter.

Daniel Y. Yasui  
Vice President  
A&B Properties, Inc.  
822 Bishop Street  
Honolulu, Hawaii 96813  
Tel: (808) 525-8449  
Fax: (808) 525-8447  
email: dvasui@abprop.com

This message, including any attachments, is intended for the use of the party to which it is addressed and may contain information that is privileged, confidential and exempt from disclosure. If you are not the intended recipient, any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please contact the sender immediately by reply e-mail, and delete the original and any copies of this message. It is the sole responsibility of the recipient to ensure that this message and any attachments are virus free.

-----Original Message-----

From: [REDACTED]  
Sent: Tuesday, March 07, 2017 10:08 AM  
To: Yasui, Daniel at A&B  
Subject: EIS Preparation Notice Comments for A&B Proposed Water Lease

Dear Daniel Yasui,

As you know, BLNR has tasked A&B with the job of commissioning a consultant to prepare an EIS for its proposed 30 year Water Lease for East Maui streams which, if granted, would give A&B the continued "right, privilege, and authority to enter and go upon" the N?hiku, Kē?anae, Honoman?, and Huelo License Areas.

Because A&B is in charge of procuring the EIS, I am worried that it will not include a thorough study of both the full environmental impacts and alternatives to a 30 year lease. It will also give A&B an unfair advantage if and when the lease goes up for public auction, as it is legally required to do so. By tasking A&B with commissioning and paying for the EIS, this government process has lost legitimacy because it appears slanted in A&B's favor.

To remedy this, I request that the DLNR instead pay for and direct the consultant for this EIS. Only if this is done will core parts of the EIS - the definition of the current environment and the identification of alternatives - be comprehensive and encompass all the possible outcomes for the management of these waters and areas. This will also help instill trust that the completed EIS will be impartial and independent of A&B's specific wants.

matter who completes this EIS, I would like to see that it provides a complete analysis of past, present, and potential future environmental impacts from stream diversions, including both effects on

aquatic stream life and Native Hawaiian cultural practices. The EIS should also explore multiple alternatives to the proposed 30 year lease, including: shorter leasing periods, lesser amounts of water diverted than stated in the current EIS, and the viability of alternatively using pumped well water in place of some or all diverted stream water.

In conclusion, the East Maui community's struggle for water has long been ignored by A&B. It is important that this long-awaited EIS is done correctly, which means the process should be directed and paid for by DLNR and include a thorough analysis of all possible impacts from and alternatives to A&B's proposal. I ask that DLNR take direct control of this process as soon as possible.

Mahalo for your time.

Sincerely,  
Valerie Toro

002698



10238-02  
Letter to Ms. Valerie Toro  
Page 2  
September 23, 2019

10238-02  
September 23, 2019



Subject: Environmental Impact Statement Preparation Notice  
Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū  
and Huelo License Areas

Dear Ms. Toro:

Thank you for participating in the scoping process for the subject Environmental Impact Statement (EIS) pertaining to the Proposed Lease (Water Lease) for the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas and for your written comments dated March 7, 2017. We acknowledge your comments and concerns which have been considered in the preparation of the Draft EIS with regard to meeting content requirements prescribed in Hawai'i Administrative Rules, Title 11, Chapter 200, Section 17. A record of your comments has been appended to the Draft EIS in Appendix M.

We have taken your comments into consideration in preparing the Draft EIS, and offer the following responses to your comments relating to the content of the Draft EIS:

1. The Draft EIS assesses anticipated environmental impacts associated with the issuance of a long-term (30 years) Water Lease by the Board of Land and Natural Resources (BLNR) for the continued "right, privilege, and authority to enter and go upon" the Nāhiku, Ke'anae, Honomanū, and Huelo License Areas for the "purpose of developing, diverting, transporting, and using government owned waters" through the existing East Maui Irrigation Company, Ltd. (EMI) Aqueduct System which supplies water to domestic and agricultural water users, including A&B's former sugar cane fields in Central Maui.
2. As explained in Section 1.4 of the Draft EIS, in 2016 the BLNR ordered A&B to prepare an EIS for the proposed Water Lease. The Proposed Action under the Draft EIS is the issuance of a Water Lease by the BLNR which will enable the lessee of the proposed Water Lease the rights mentioned above. The Draft EIS also studies a proposed long term farm plan by Mahi Pono who purchased A&B's Central Maui agricultural lands, but also acknowledges that the proposed Water Lease will be put out for public auction. For purposes of HRS Chapter 343 review, regardless of who the applicant is, it is the Proposed Action (i.e., the issuance of a long-term Water Lease) and the environmental effects of the Proposed Action and all reasonable alternatives which are being studied. In accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Section 11-200-4(b), the BLNR, as the executive board of the DLNR, is the accepting authority for the EIS. The DLNR is also the agency that will be issuing the proposed Water Lease for public auction.
3. The Draft EIS will include in Chapter 3 an evaluation of the reasonable alternatives to the Proposed Action.

4. Truttia and SWCA prepared reports in support of the DEIS assessing the impacts of the Proposed Action, particularly impacts on indigenous freshwater species, and terrestrial flora and fauna. The impacts of the Proposed Action to freshwater species are discussed in Section 4.2.1 and the impacts to terrestrial flora and fauna are discussed in Sections 4.4.1 and 4.4.2. The two reports are appended to the DEIS (See Appendix A and Appendix C).
5. For the purposes of this EIS, diversion quantities from the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O) were used to estimate the maximum amount of water to be diverted by the EMI Aqueduct System from the License Area. A description of the EMI Aqueduct System and its operation is included within the Draft EIS (refer to Sections 2.2.1 and 2.1.2).
6. The Draft EIS will include in Chapter 4 an assessment of the existing environment and impacts of the Proposed Action, including the modification or removal of diversion structures in streams designated for full restoration by the Commission on Water Resource Management's (CWRM) June 20, 2018 Interim Instream Flow Standards (IIFS) Findings of Fact, Conclusions of Law, & Decision and Order (D&O). Various technical studies will also be appended the Draft EIS and provide detailed examinations, including: Assessment of the Environmental Impact of Stream Diversion on 33 East Maui Streams using the Hawaiian Steam Habitat Evaluation Procedure (HSHEP) Model (See Appendix A); Assessment of Streams and the Ocean Water Chemistry (See Appendix B); Terrestrial and Flora and Fauna Report (See Appendix C); Historical Structure Assessment (See Appendix D); Archaeological Literature Review and Field Inspection (See Appendix E); Cultural Impact Assessment (See Appendix F); Social Impact Assessment (See Appendix G); Economic and Fiscal Impact Study (See Appendix H); and Agricultural and Related Economic Impacts report (See Appendix I).

Your written comments and this response will be reproduced in the Draft EIS. It is anticipated the Draft EIS, including the various technical studies associated with it, will be available for review on September 23, 2019 at the Office of Environmental and Quality Control website.

We appreciate your interest and participation in this environmental review process.

Sincerely,

Earl Matsukawa, AICP  
Vice President, Director of Planning

cc: Suzanne Case, Chair, Department of Land and Natural Resources  
A&B / EMI, Applicant

Proposed Lease (Water Lease) for the  
Nāhiku, Keānae, Honomāhū, and Huelo  
License Areas

## Draft Environmental Impact Statement

