DAVID V. IGE GOVERNOR OF HAWAII



DFC

8

2016

KEKOA KALUHIWA HRST DEPUTY JEFFREY T. PEARSON, P.E. DEPCTY DRICTOR - WATER

SUZANNE, D. CASE (HARDERSON) BOARD OF LAND AND NATURAL RESOURCES MMISSION ON CATHER SOURCES MAN 461-401 NT

AOTATIC RESOLRCES IROALISES INDO FAN RECEIVATION IBLICACIO UNIVERSITATION COMMISSION ON WATHER RESOLRCES MANAGEMENT CONSTRUCTION OF MANAGEMENT CONSTRUCTION OF MANAGEMENT STRUCTURENT UNSTRANSING AND RESOFTED STRATEGICS IN ENGINEERING TORESERVAND WEDTEF HISTORY PRESERVE COMMISSION KAROULAWE ISLAND RESERVE COMMISSION TAND STATE PARKS

20

A9

ŝ

#### **STATE OF HAWAII** DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF FORESTRY AND WILDLIFE 1955 MAIN STREET, ROOM 301 WAILUKU, HAWAII 96793 November 9, 2016

Jessica Wooley, Director Office of Environmental Quality Control Department of Health, State of Hawaii 235 South Beretania Street, Room 702 Honolulu, Hawai'i 96813

13 MD-132

LILY CONT SUBJECT: Final Environmental Assessment, Waihee Ridge Trail Improvements Kahakuloa, Maui, TMK (2) 3-1-001:001

Dear Ms. Wooley:

With this letter, the State of Hawaii, Department of Land and Natural Resources hereby transmits the Final Environmental Assessment and Finding of No Significant Impact (FEA-AFONSI) for the Waihee Ridge Trail Improvements situated at TMK (2)3-1-001:001, in the Wailuku District (Kahakuloa) on the island of Maui for publication in the next available edition of the Environmental Notice.

Enclosed is a completed OEQC Publication Form, two copies of the FEA-FONSI, and Adobe Acrobat PDF file of the same, and an electronic copy of the publication form in MS Word. Simultaneous with this letter, we have submitted the summary of the action in a text file by electronic mail to your office. If there are any questions, please contact Torrie Nohara, Trails and Access Specialist, at the Maui Division of Forestry and Wildlife Office at (808)984-8100.

Sincerely oniellohara

Torrie Nohara Trails and Access Specialist

DEC - 8 2016

AGENCY FILE COPY

PUBLICATION FORM

Project Name:	Waihee Ridge Trail Improvements Final Environmental Assessment
Project Short Name:	Waihee Ridge Trail Improvements – Final EA
HRS §343-5 Trigger(s):	Use of Mechanized Equipment on county and state lands with corresponding funds
Island(s):	Maui
Judicial District(s):	Wailuku
TMK(s):	(TMK) (2) 3-1-006:001 AND {TMK) (2) 3-1-001:028
Permit(s)/Approval(s):	The Waihe'e Ridge Trail is considered a permitted use under Chapter 205, HRS, as well as permitted under Maui County Code Chapter 19.30A, relating to the County's Conservation and Agricultural zoning districts, the trail is considered an existing permitted use. For this reason, the application for County Special Use Permit will be limited to and for the new observation platform (s) should the Maui Planning Department considered it outside the current permitted use as a extraneous activity. As well as all other structural improvements (i.e. railings) on the Waihe'e Ridge Trail, will be filed for review and consideration by the Maui Planning Department. It is likely that the Maui Planning Commission will only require the filing of a building permit for the Waihe'e Ridge Trail structural components.
Proposing/Determining Agency:	State of Hawaii, Department of Land and Natural Resources
Contact Name, Email, Telephone, Address	Torrie Nohara 54 South High Street, Wailuku, HI 96793 Phone No: (808) 984-8100 torrie.l.nohara@hawaii.gov
Accepting Authority:	(for EIS submittals only)
Contact Name, Email, Telephone, Address	
Consultant:	WHALE Environmental Services LLC
Contact Name, Email,	PO Box 455, Kahuku HI 96731
Telephone, Address	Contact: Mark Howland <u>markahowland@hawaii.rr.com</u> Phone: 808-294-9254
Status (select one) DEA-AFNSI	Submittal Requirements Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.
_x FEA-FONSI	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.
FEA-EISPN	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.
Act 172-12 EISPN ("Direct to EIS")	Submit 1) the proposing agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.
DEIS	Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.
FEIS	Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.
FEIS Acceptance	The accepting authority simultaneously transmits to both the OEQC and the proposing agency a letter

Office of Environmental C	Quality Control	Agency Publication Form February 2016 Revision
Determination	of its determination of acceptance or nonacceptance (pursuant to Se FEIS; no comment period ensues upon publication in the Notice.	ection 11-200-23, HAR) of the
FEIS Statutory Acceptance	Timely statutory acceptance of the FEIS under Section 343-5(c), HRS actions.	, is not applicable to agency
Supplemental EIS Determination	The accepting authority simultaneously transmits its notice to both to OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the determines that a supplemental EIS is or is not required; no EA is recensues upon publication in the Notice.	the proposing agency and the previously accepted FEIS and quired and no comment period
Withdrawal	Identify the specific document(s) to withdraw and explain in the pro	ject summary section.
Other	Contact the OEQC if your action is not one of the above items.	

#### Project Summary

#### Proposed Action

The State of Hawaii – Department of Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW) is proposing to implement trail improvements and related structures on the Waihe'e Ridge Trail (TMK (2) 3-1-006:001) and (TMK (2)3-1-001:028 (Parcel 28))

located at Kahakuloa, Maui, Hawaii. The property is owned by the DLNR.

#### Purpose and Need

These trail improvements are intended to update the trail to address public safety concerns as related to hikers and/or other trail users through surface improvements, drainage upgrades, and vegetative management.

Related improvements include establishment of viewing platforms from the trail, which are the construction of two (2) observation platforms, and associated support structures which are intended to enhance the existing trail system experience and bring the trail up to current trail improvement design standards.



WHALE Environmental Services LLC

Waihe'e Ridge Trail Environmental Assessment

**Final EA** 

DOFAW -Division of Forestry and Wildlife

November 2016



Prepared by: WHALE Environmental Services LLC www.whalees.com

# Final Environmental Assessment

# Waihe'e Ridge Trail and Related Area Improvements

(TMKs (2) 3-1-006:001 and (2) 3-1-001-028)

Prepared for: State of Hawaii, Department of Land and Natural Resources, Division of Forestry and Wildlife

> Approving Agency Department of Land and Natural Resources November 2016

Copyright © 2016, by WHALE Environmental Services LLC



DAVID Y. IGE GOVERNOR OF HAWAII





SUZANNE D. CASE CHARPERSON BOARD OF LAND AND NATURAL RESOURCES COMMISSION ON WATER RESOURCE MANAGEMENT

KEKOA KALUHIWA

JEFFREY T. PEARSON, P.E. DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES BOATING AND OCEAN RECREATION BUREAU OF CONVEYANCES COMMISSION ON WATER RESOURCE MANAGEMENT CONSERVATION AND RESOURCES ENFORCEMENT ENSORIEERING FORESTRY AND WILDLIFE HISTORIC PRESERVATION KAHOOLAWE ELAND RESERVE COMMISSION LAND STATE PARKS

#### STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF FORESTRY AND WILDLIFE 1955 MAIN STREET, ROOM 301 WAILUKU, HAWAII 96793 November 9, 2016

Jessica Wooley, Director Office of Environmental Quality Control Department of Health, State of Hawaii 235 South Beretania Street, Room 702 Honolulu, Hawai'i 96813

13 MD-132 SUBJECT: Final Environmental Assessment, Waihee Ridge Trail Improvements Kahakuloa, Maui, TMK (2) 3-1-001:001

Dear Ms. Wooley:

With this letter, the State of Hawaii, Department of Land and Natural Resources hereby transmits the Final Environmental Assessment and Finding of No Significant Impact (FEA-AFONSI) for the Waihee Ridge Trail Improvements situated at TMK (2)3-1-001:001, in the Wailuku District (Kahakuloa) on the island of Maui for publication in the next available edition of the Environmental Notice.

Enclosed is a completed OEQC Publication Form, two copies of the FEA-FONSI, and Adobe Acrobat PDF file of the same, and an electronic copy of the publication form in MS Word. Simultaneous with this letter, we have submitted the summary of the action in a text file by electronic mail to your office. If there are any questions, please contact Torrie Nohara, Trails and Access Specialist, at the Maui Division of Forestry and Wildlife Office at (808)984-8100.

Sincerely TonieNopara

Torrie Nohara Trails and Access Specialist

## **Table of Contents**

#### Page

PREFACE	i
List of Acronyms	ii-iii
Executive Summary	iv-vi

#### Section One - LOCATION, PURPOSE OF AND NEED FOR ACTION

I. PROJECT OVERVIEW	1
A. PROPERTY LOCATION, EXISTING USE, AND LAND OWNERSHIP	
B. PROJECT NEED	3
C. SUMMARY OF THE PROPOSED ACTION	3
1. Waihe'e Ridge Trail Improvements	
<ol><li>Structural Components for Waihe'e Ridge Trail</li></ol>	
D. APPLICABLE REGULATORY REQUIREMENTS OVERVIEW	

#### Section Two – AFFECTED ENVIRONMENT

II. DESCRIPTION OF THE EXISTING ENVIRONMENT, POTENTIAL IMPACTS, AND	
MITIGATION MEASURES	16
A. PHYSICAL SETTING	16
1. Surrounding Land Uses	16
2. Climate	17
3. Agricultural Productivity Considerations	17
4. Topography and Soils Characteristics	19
5. Flood and Tsunami Hazards	20
6. Streams and Wetlands	21
7. Flora and Fauna	21
8. Archaeological Resources	22
9. Cultural Resources	23
10. Air Quality	24
11. Noise	26
12. Scenic and Open Space Resources	28
13. Beach and Mountain Access	29
B. SOCIO-ECONOMIC ENVIRONMENT	29
1. Population	. 29

2. Economy	30
C. PUBLIC SERVICES	31
1. Police and Fire Protection	31
2. Medical Services	32
3. Solid Waste	32
4. Recreational Resources	33
5. Schools	33
D. INFRASTRUCTURE	34
1. Roadways	. 34
2. Water	. 34
3. Wastewater	35
4. Drainage	36
5. Energy and Communication Systems	36
E. CUMULATIVE AND SECONDARY IMPACTS	37
III. RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS	. 37
A. STATE LAND USE DISTRICTS	. 37
B. CHAPTER 226, HRS, HAWAI <u>'</u> I STATE PLAN	38
1. Objectives and Policies of the Hawai <u>'</u> i State Plan	38
C. GENERAL PLAN OF THE COUNTY OF MAUI	. 39
1. Countywide Policy Plan	. 40
2. Maui Island Plan	43
D. WAILUKU-KAHULUI COMMUNITY PLAN	45
E. COUNTY ZONING	46
1. County Special Use Permit Requirement	46
F. COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES	. 48
1. Recreational Resources	. 48
2. Historic Resources	. 49
3. Scenic and Open Space Resources	50
4. Coastal Ecosystems	. 50
5. Economic Uses	. 51
6. Coastal Hazards	52
7. Managing Development	52
8. Public Participation	. 53
9. Beach Protection	53
10. Marine Resources	54

IV. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS AND IRREVERSIBLE	
AND IRRETRIVEABLE COMMITMENT OF RESOURCES	60
V. ALTERNATIVES TO THE PROPOSED ACTION A. NO ACTION ALTERNATIVE	. 55 . 55
VI. SIGNIFICANCE CRITERIA ASSESSMENT	. 56
VII. LIST OF PERMITS AND APPROVALS	. 60
VIII. LIST OF PARTIES, AGENCIES, ORGANIZATIONS PLANNED FOR THE DISTRIBUTION OF THE DRAFT ENVIRONMENTAL ASSESSMENT;	F
	. 61
X. REFERENCES	64

#### LIST OF APPENDICES

Appendix A. Flora and Fauna Study

Appendix B. Archaeological Review Report and Cultural Impact Assessment

**Appendix C.** Best Management Practices Plan and Site Specific Pollution Prevention Procedures

# **Preface**

This Chapter 343, Hawai'i Revised Statutes (HRS), Environmental Assessment (EA) has been prepared to address actions on lands owned by the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife. These actions are triggers for the preparation of an EA, as follows:

 DLNR- DOFAW proposes the improvement of trail components on the Waihe'e Ridge Trail (TMK (2) 3-1-006:001 and TMK (2) 3-1-001:028 (Parcel 28)), along with the installation of new observation structural platform improvements which lie within TMK (2) 3-1-006:001 and TMK (2)3-1- 001:028 (Parcel 28), as well as a portion of the adjacent State-owned parcel (TMK (2)3-1-001:001 (Parcel)). This action triggered the need to provide trail improvements using Federal funds, and State-owned lands will also be used for the implementation of these projects. Mechanized equipment will be used for these trail improvements, thus accordingly triggering a Chapter 343, HRS, EA (Environmental Assessment).

# **List of Acronyms**

### List of Acronyms

ADA	Americans with Disabilities Act
AIS	Archaeological Inventory Survey
ALISH	Agricultural Lands of Importance to State of Hawaii
AMSL	Above Mean Sea Level
BMP	Best Management Practice
BSA	Boy Scouts of America
CIA	Cultural Impact Assessment
CZM	Coastal Zone Management
DLNR	Department of Land and Natural Resources
DOE	Department of Education
DOFAW	Division of Forestry and Wildlife
DWS	Department of Water Supply
EA	Environmental Assessment
FONSI	Findings of No Significant Impact
GPD	Gallons Per Day
GPM	Gallons Per Minute
HAR	Hawaii Administrative Rules
HC&S	Hawaiian Commercial & Sugar Company
HDPE	High Density Polyethylene
HRS	Hawaii Revised Statutes
HwD	Honolua Silty Clay, 15 to 25 percent slopes
KAPWC	Kahakuloa Acres Private Water Company
LSB	Land Study Bureau
MCR	Maluhia County Ranches
MGD	Million Gallons per Day
MIP	Maui Island Plan
NPDES	National Pollutant Discharge Elimination System
rRK	Rock Land
SDR	Standard Dimension Ratio
SMA	Special Management Area
ТМК	Tax Map Key
USDA	U.S. Department of Agriculture
WKWWRF	Wailuku-Kahului Wastewater Reclamation Facility

#### Other Acronyms

AAQS	Ambient Air Quality Standards
ac	acre(s)
CAA	Clean Air Act
CoM	County of Maui
CFR	Code of Federal Regulations
CZM	Coastal Zone Management Program
DLNR	State of Hawaii Department of Land and Natural Resources
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ft	feet/foot
$ft^2$	square feet/foot
ha	hectare(s)
HAR	Hawaii Administrative Rules
HDOH	State of Hawaii Department of Health
HRS	Hawaii Revised Statutes
IRBH	Indoor Radiological Health Board (DOH)
m	meter(s)
$m^2$	square meter(s)
mi	mile
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OEQC	Office of Environmental Quality Control
SHPD	State Historic Preservation Division
SMA	Special Management Area
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

# **Executive Summary**

Project Name: Waihe'e Ridge Trail Improvements **Type of Document:** Final Environmental Assessment Legal Authority: Chapter 343, Hawaii Revised Statutes **Determination:** Finding of No Significant Impact (FONSI) Applicable Environmental Assessment review "Trigger": Use of Mechanized Equipment Location: Maui Island, Wailuku: (TMK (2) 3-1-006:001) and (TMK (2)3-1-001:028 (Parcel 28)) Landowners: State of Hawaii, Department of Land and Natural Resources 54 South High Street, Wailuku, Hawaii 96793 Phone No.: (808) 984-8100 Applicants: State of Hawaii, Department of Land and Natural Resources 54 South High Street, Wailuku, HI 96793 Phone No.: (808) 984-8100 Approving Agency: State of Hawaii, Department of Land and Natural Resources 54 South High Street, Wailuku, Hawaii 96793 Phone No.: (808) 984-8100 Consultant: WHALE Environmental Services LLC P.O. Box 455, Kahuku, HI 96731 Contact: Mark Howland Phone: (808) 294-9254

#### **Project Summary:**

This Environmental Assessment (EA) analyzes the environmental consequences of the Proposed Action and reasonable alternatives in accordance with Hawaii Administrative Rules (HAR) and Chapter 343, Hawaii Revised Statutes (HRS). This EA demonstrates that construction and operation of the Proposed Action would not result in any significant effects to the environment. Pursuant to Chapter 343, HRS, should a Finding of No Significant Impact be determined, an Environmental Impact Statement would not be required.

#### **Proposed Action**

The State of Hawaii – Department of Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW) is proposing to implement trail improvements and related structures on the Waihe'e Ridge Trail (TMK (2) 3-1-006:001) and (TMK (2) 3-1-001:028 (Parcel 28)) located at Kahakuloa, Maui, Hawaii. The property is owned by the DLNR. The work will be done by a contractor (Trails Unlimited LLC) with some assistance from DLNR staff.

#### **Purpose and Need**

These trail improvements are intended to update the trail to address public safety concerns as related to hikers and/or other trail users through surface improvements, drainage upgrades, and vegetative management. Related improvements include stormwater mitigation upgrades to the trail, and the construction of two (2) new observation platforms (summit and valley overlook), and associated support structures (i.e. benches, picnic tables) which are intended to enhance the existing trail system experience and bring the trail up to current trail improvement design standards.

The underlying land use designations for Parcel 28 are as follows:

- State Land Use Classification: Agricultural
- Maui Island Plan: Outside Growth Boundaries
- Wailuku-Kahului Community Agriculture Plan: Agricultural
- County Zoning: Agricultural

The Waihe'e Ridge Trail is considered a permitted use under Chapter 205, Hawaii Revised Statutes (HRS). As well, under Maui County Code (MCC) Chapter 19.30A relating to the County's Agricultural zoning district, the trail is deemed to be an existing nonconforming use. In the Final Environmental Assessment for the Boy Scouts of America Base Yard Improvements and Parking Area creation, the trail itself was stated to be a permitted, non-conforming use under Maui County Code. For this reason, a request for the applicability of the need for a County Special Use Permit for the trail upgrades, improvements and structures will be filed for review and determination by the Maui Planning Commission prior to construction beginning. The trail originates on Parcel 1, which is on the leased land of the Boy Scouts of America and was the subject noted in the prior filed Final EA by the Boy Scouts of America.

The underlying land use designations for Parcel 1 are as follows:

- State Land Use Classification: Agriculture/Conservation
- Maui Island Plan: Outside Growth Boundaries
- Wailuku-Kahului Community Plan: Conservation/Agriculture
- County Zoning: Agriculture/Interim

The trail is considered a permitted use under Chapter 205, HRS as well as MCC 19.30A as open area recreation. Due to the foregoing project's use of State and County funds and use of State-owned lands with mechanized equipment, compliance with Chapter 343, HRS will be necessary. The approving agency for the Environmental Assessment will be the State Department of Land and Natural Resources.

The Proposed Action will have no significant impacts to any environmental resources areas. The implementation of standard Best Management Practices will ensure no significant impacts occur to geological and soil resources and water resources. The Proposed Action will not contribute to any significant cumulative impacts or reasonably foreseeable direct or indirect effects on any land use or resource use of the State's lands. The improvement will address stormwater and/or erosion issues that may be the result of increased rainfall or storm actions resulting from climate change. WHALE Environmental Services LLC has included the Field Inspection report for review by the State of Hawaii Preservation Division as an appendix. As well, at SHPD request, a Supplemental Archival Research report was also prepared by TCP Hawaii LLC. The Proposed Action is not anticipated to adversely affect historic properties. Included also is the Biological Assessments in the appendixes as performed by DLNR/DOFAW.

**Alternatives.** The filing entertains the Proposed Action or a No Action Alternative to the Proposed Action:

1. Trail improvements to surface, vegetative and drainage of the trail, as well as related structural implementation of two (2) new observation platforms.

2. The No-Action Alternative where the proposed project would not be constructed. The alternate No-Action Alternative that is considered would be on the same 2.5 mile trail site. The environmental consequences of the No Action Alternative are evaluated as a baseline for comparison with the environmental consequences of the Proposed Action. Under this alternative, the Proposed Action would not be constructed. Therefore, DLNR would not benefit from the increase of safety factors for trail hikers and/or users, nor gain from the improvements to drainage and vegetative management that address climate change and public safety. In addition, there would be a lost opportunity to assist the State in reaching the tourism goal of having the Waihe'e Ridge Trail a lead hiking trail in the state with improved hiking conditions and viewpoint observational improvements.

**Environmental Consequences.** The Proposed Action would have beneficial socioeconomic impact. No significant adverse impacts are anticipated to biology, noise, air quality, geology and soils, land use, socioeconomics and traditional cultural practices, hazardous materials and waste, utilities and public services, and adherence to existing laws and regulations, water or archaeological resources. Moreover, this EA demonstrates that the Proposed Action will not have reasonably foreseeable direct or indirect effects on any land use or resource of the State's designated zones.

Based on the review of potential environmental resource impacts, the construction and operation of the Proposed Action would not result in any significant environmental impacts. The vast majority of potential impacts can and will be fully mitigated with the use of proper planning, construction mitigation, and compliance with the rules and regulatory policies. Best Management Practices (BMPs) will be in place to govern such impacts and to ensure protection of the natural and human environment. Thus, the Proposed Action will not contribute to any significant cumulative impacts or reasonably foreseeable direct or indirect effects on any land use or resource of the State's designated zones.

## **SECTION ONE**

## LOCATION, PURPOSE OF, AND NEED FOR ACTION

### **PROJECT OVERVIEW**

# Table DA-1 Summary of Potential Environmental Resource Impacts and Proposed Mitigation Measures

Affected Environmental Resource	Level of Concern	Impact and Mitigation
Air Quality	No	Impact: Fugitive dust during construction
		Mitigation: Grading Permit to include Dust Control Plan
Noise	No	Impact: Additional noise during construction
		Mitigation: Noise negligible during operation and consistent with
		surrounding during construction
Infrastructure	Low	Impact: Additional traffic and utility connection
		Mitigation: Marginal increase in demand on transportation, storm
		water, and solid waste infrastructure
Climate	No	None
Visual Resources	No	There will be no change to scenic vistas or unique view
		planes
Hazardous Waste and Materials	Low	Impact: hazardous materials or wastes are discovered or released
		during construction or operations
		Mitigation: If discovered or released, they will be handled, removed,
		and disposed of in accordance with applicable state and federal laws,
		regulations, ordinances, and standards
Recreational Resources	No	None
		1000
Geology and Soil	Low	Impact: Soil erosion during construction
		Mitigation: Grading Permit to include Erosion Control Plan
Water Resources	Low	Impact: Potential stormwater runoff during construction
		Mitigation: NPDES construction permitting with best management
	3	practices
Biological Resources	Low	Impact: Area is previously disturbed with invasive vegetation
5.546 <b>%</b> 1373.1255.11523.		Mitigation: Restore indigneous vegetation where possible
Cultural Resources	Low	Impact: Possible discovery during construction, but not likely due to
		location
	-	Mitigation: Stop construction in the event of a discovery
Land Use	No	None: mo change
Socio-Economic	No	None
Cumulative Impacts	No	None
companye impacts		invite

WHALE Environmental Services LLC - November 2016

#### A. PROPERTY LOCATION, EXISTING USE, AND LAND OWNERSHIP

The DLNR - Division of Forestry and Wildlife (DOFAW) is proposing to implement trail

improvements and related observation platform improvements at the Waihe'e Ridge Trail, (TMK (2) 3-1-006:001) and (TMK (2)3-1- 001:028 (Parcel 28)) located at Kahakuloa, Maui, Hawai'i. See **Figure 1**.

This project will implement trail improvements for the Waihe'e Ridge Trail. Situated on the northeastern slopes of the West Maui Mountains, the trail is located within hilly, densely vegetated land which provides scenic views of the Kahakuloa area and the Pacific Ocean.

Land Ownership is the State of Hawai'i Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOF AW) and is utilized for outdoor wilderness hiking experiences.

There are no buildings on Parcel, although an existing water tank is located within this State-owned lot. A portion of the State-owned parcel is used for cattle grazing.

Existing use is for hikers utilizing the Waihe'e Ridge Trail (Trail) which originates on Parcel 1. Refer to **Figure 2**.



Figure 1

The Trail is an approximately 2.5 mile hike which climbs the windward slope of the West Maui Mountains and affords the hikers panoramic views of Wailuku and central Maui.

WHALE Environmental Services LLC – November 2016



Figure 2 - Waihe'e Ridge Trail and maintenance locations

#### **B. - PROJECT NEED**

Waihe'e Ridge Trail Improvements

The trail parcel is owned and operated by State of Hawai'i Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOF AW). The trail is operated as part of the state's Nā Ala Hele Trail & Access Program.







#### **Description**

Beginning at 1,000' elevation, trail climbs the windward slope of west Maui through a brushy guava thicket, a young stand of planted trees, and wet native scrub forest. Views of Waihe<u>'</u>e Gorge and Makamaka'ole Gulch can be seen along the way. On the peak, at 2,563' are panoramic views of Wailuku and central Maui, the Kahakuloa slopes, and Mount <u>'</u>Eke. Weather at the summit varies from clear to overcast with showers. No drinking water is available along the trail. Camping is not permitted.

#### **Special Conditions**

The gate at the bottom of the access road is opened at 7:00 AM and closed at 7:00 PM. The gate at the bottom of the road may be closed at any time. If so, park in the gravel area by the gate and walk up the road (approximately 1 mile) to the trail head. The road is steep with poor lines of sight so be sure to keep to the side to avoid oncoming traffic. Do not use any trail or access road that is not delineated by name and color and that may also be displayed on these maps. The marked features are managed for public recreational use. Other trails or roads that branch off from the public features may be on private property, and are not managed for any public recreational use. Access is subject to adjacent landowner approval, and if used without authorization, you will be trespassing and possibly putting yourself at risk.

The trail is one of Maui's most popular hiking trails and has been serving the public as well as other community organizations since it's original development.

Currently, the trail has issues with trail stability due to wetness and other drainage related issues and also contains erosive potentials. Viewpoints are also in need of enhancements.



Map 1 – Waihe e Ridge Trail

#### WHALE Environmental Services LLC – November 2016

#### C. - SUMMARY OF PROPOSED ACTION

The proposed project is to conduct a series of trail improvements along the 2.5 mile trail as shown in Figure 3. The varieties of implementation actions include surface stabilization, drainage improvements, and vegetative management. As well two (2) proposed observation structures will be created.



#### Waihe'e Ridge Trail Improvements

The series of improvements to be implemented are shown in the following charts. The actions correspond with the symbols shown in figure 3. These improvements range from rolling dips (re-directs runoff to side of trail minimizing erosion), vegetation management (i.e. – dead tree removal), re-routing (to minimize hiking hazards) or to railing installs (safety enhancements).

TRAIL PRESCRIPTION							
Trail Name	rail Name: Waihe'e Ridge Trail						
BEGIN STATION	END STATION	ACTIONS	TRAIL	SPECIAL FEATURES/COMMENTS	PHOTO ID / GPS COORDINATES		
0+00	00+56	Top of trail, 16'x16' Deck & BC fill		14" rise on platform for deck			
00+56	00+67	Water Control (WC)					
00+67	01+37	Rolling Dip (RD)					
01+37	02+19	Possible break rock					
02+19	02+44	Platform turn					
02+44	02+67	RD/WC					
02+67	02+74	Begin realignment					
02+74	03+46	End realignment					
03+46	04+00	RD					
04+00	04+35	Fil					
04+35	04+75	Possible reroute begin					
04+75	05+28	End reroute					
05+28	06+18	RD					
06+18	06+52	RD, Possible break rock					
06+52	06+88	Possible reroute begin					
06+88	07+23	RD					
07+23	07+85	WC/RD					
07+85	08+45	Possible reroute begin					
08+45	09+64	Possibe reroute					
09+64	10+15	RD					
10+15	11+20	WC/RD		-			
11+20	11+57	PRR begin					
11+57	12+26	PRR end					
12+26	12+78	RD					
12+78	13+10	RD					
13+10	13+44	RD					
13+44	13+85	RD	1				
13+85	14+31	Climbing turn					
14+31	14+71	RD					
14+71	15+16	RD					
15+16	15+76	Climbing turn					
15+76	16+33	RD					

#### Chart 1 – Improvements List

TRAIL PRESCRIPTION						
Frail Name: Waihe'e Ridge Trail						
BEGIN STATION	END STATION	ACTIONS	TRAIL	SPECIAL FEATURES/COMMENTS	PHOTO ID / GPS COORDINATES	
17+52	17+81	RD				
17+81	18+Z2	RD				
18+22	18+73	RD				
18+73	19+12	RD				
19+12	19+66	RD				
19+66	20+01	RD				
20+01	20+49	RD		Raise grade to 15%		
20+49	20+95	RD				
20+95	21+34	RD				
21+34	21+76	RD				
21+76	21+92	Climbing turn				
21+92	22+48	RD				
22+48	22+74	RD				
22+74	22+97	RD				
22+97	23+49	RD				
23+49	24+02	RD				
24+02	24+31	RD				
24+31	24+51	Reroute				
24+51	24+93	Reroute				
24+93	25+83	Begin Sheet Drain				
25+83	26+28	Sheet Drain				
26+28	26+79	Sheet Drain				
26+79	26+98	End Sheet Drain				
26+98	27+40	RD				
27+40	27+90	RD				
27+90	28+44	RD				
28+44	28+64	RD				
28+64	29+13	Cut roots				
29+13	31+93	RD				
31+93	32+71	RD				
32+71	33+21	RD				
33+21	33+92	RD				

Chart 2 – Improvements List

Frain NameWait>Ekige TrailBEGN BATIONENO ACTIONSTake PerformanceSPECIAL FEATURESCOMMENTSPhototip/ops Coordinates344836433694369410SPECIAL FEATURESCOMMENTSPhototip/ops Coordinates344836433694369410SPECIAL FEATURESCOMMENTSPhototip/ops Coordinates34483694369410InternationalInternationalInternational3448369410InternationalInternationalInternational3449369410InternationalInternationalInternational34403694InternationalInternationalInternationalInternational34413694InternationalInternationalInternationalInternational34453694InternationalInternationalInternationalInternational34464049InternationalInternationalInternationalInternational34474049InternationalInternationalInternationalInternational34484049InternationalInternationalInternationalInternational34494143InternationalInternationalInternationalInternational34444143InternationalInternationalInternationalInternational34444143InternationalInternationalInternationalInternational34444143InternationalInternationalInternation		TRAIL PRESCRIPTION							
BEGUN STATIONACTIONSTMAL SPECIAL FEATURES/COMMENTSPHOTO ID / GPS COORDINATES34:8036:41StepiC36:18StepiDC36:1937:31DOC37:3138:38AOC37:3138:43DOC38:44DOC38:4538:44DOC38:4638:44Ombing turnC38:44Ombing turnC38:44Ombing turnC39:47DOC39:48Sinder ConcernC39:44Binder ConcernC39:44DOC40:42DOC40:43BoC40:44BoC40:45BoC41:43BoC41:43BoC41:43BoC41:43BoC41:43BoC41:43BoC41:43BoC41:43BoC <td< th=""><th>Trail Name:</th><th colspan="7">Waihe'e Ridge Trail</th></td<>	Trail Name:	Waihe'e Ridge Trail							
34-8836-18Steps1Image: section of the sectio	BEGIN	END STATION	ACTIONS	TRAIL TYPE	SPECIAL FEATURES/COMMENTS	PHOTO ID / GPS COORDINATES			
36+37DDII36+3830-0II37-3139-38RDII38-3838-61RDII38-3439-44Inbing turnII38-4439-47RDII39-44Jose7RDII39-44Jose7RDII39-44Jose7RDII39-44Jose7RDII39-44Jose7RDII40-4240-68Brak rockII40-4240-68Brak rockII40-4340-99RDII41-24RDII41-25RDII41-3445-37RDI41-3445-37RDI41-3445-37RDI41-3445-37RDI41-3445-37RDI41-3445-37RDI41-3445-37RDI41-3445-37RDI41-35RDII41-3445-37RDI41-35RDII41-3445-37RDI41-35RDII41-3415-3RDI41-35RDII41-3415-3RDI41-35RDII	34+88	36+18	Steps						
36+8737+3180808137-3138+380616138+818060616138+8139+44Olmbing turn616138+4439+47Olmbing turn616139+44Johd80616139+44Johd80616139+4740+4280616140+4240+68Brak rock616140+4941+2480616140+4941+2480616141+3441+33Brak rock616141+3441+3480616141+3441+3480616141+3441+7180616141+3441+7180616141+358061616141+4745+37Relaining wall6141+4745+37Relaining wall6141+4745+37Relain	36+18	36+87	RD						
37+3138+3880AI38+3130AII38+3138+41Olmbing turnAI38+4439+44Olmbing turnAI39+4439+47R0AI39+4740+42R0AI40+4240+68RewtrockAI40+4440+69RoAI40+45RDAII40+4640+79RDAI40+4741+33BrokrockAI41+3441+33BrokrockAI41+3441+33BrokrockAI41+3441+33BrokrockAI41+3441+31RoAI41+3441+31RoAI41+3441+31RoAI41+3441+31RoAI41+3441+31RoAI41+3441+31RoAI41+3441+31RoAI41+3441+31RoAI41+3441+31RoAI41+3441+32RoII41+3441+31RoII41+3441+31RoII41+3414+37RoII41+3414+37RoII41+3414+37RoII41+3414	36+87	37+31	RD						
38+388880111138+4438+44Gimbing turn111138+4439+47Gimbing turn111139+4439+87RD111139+4740+42RD1011140+4240+68Brakrock111140+4240+68Brakrock111140+4440+70Rakrock111140+4941+21RD111141+34Rakrock1111141+34Rakrock1111141+34Rakrock1111141+34Rakrock1111141+34Rakrock1111141+34Rakrock1111141+34Rakrog and	37+31	38+38	RD						
384813844Clinking turnImage and the set of th	38+38	38+81	RD						
38:4439:44Cimbing turnImage: section of the section o	38+61	38+94	Climbing turn						
39:4439:47RDADADAD39:46740:42RDADADAD40:4240:48reak rockADADAD40:4840:49RDADADAD40:49041:42RDADADAD41:43Brak rockADADAD41:43Brak rockADADAD41:43A2:491RDADAD41:43A2:491RDADAD41:43RDADADAD41:43RDADADAD41:43RDADADAD41:43RDADADAD41:43RDADADAD41:43RDADADAD41:44RDRDADAD41:45RDADADAD41:47REsiming wallADAD41:47REsiming wallADAD41:48REsiming wallADAD <td>36+94</td> <td>39+44</td> <td>Climbing turn</td> <td></td> <td></td> <td></td>	36+94	39+44	Climbing turn						
39:4740:428DRDII40:4240:68Brak rockIII40:4840:99RDIII40:4941:24RDIII41:44RDIIII41:43Beak rockIII41:4342:91RDII41:4342:91RDII41:4343:71RDII43:4443:71RDII41:71Relatining wallII41:72Af-53Relatining wallI41:73Relatining wallII41:64Af-66Brak rockI41:64Af-66Brak rockI41:64Af-67RDI41:64Af-68RDI41:64Af-68RDI41:64Af-69Brak rockI41:65Af-720RDI41:64Af-85RDI41:64Af-85RDI41:64Af-85RDI41:64Af-85RDI41:64Af-85RDI41:64Af-85RDI41:65Af-85RDI41:65Af-85RDI41:65Af-85ROI41:65Af-85ROI41:65Af-85ROI41:65Af-85 <td>39+44</td> <td>39+87</td> <td>RD</td> <td></td> <td></td> <td></td>	39+44	39+87	RD						
40+4240+68heak rockII40+6640-99RDII40+6941+24RDII41+24RDIII41+33Heak rockIII41+3442+91RDIII41+35RDIII41+34RDIII41+35RDIII41+34RDIII41+35REIning wallII41+71Reising wallII41+73Reining wallII41+74RoRDII41+75Reining wallII41+76RORDI41+77Reining wallII41+78RoII41+79RoII41+70ROII41+71ROII41+71ROII41+71ROII41+71ROII41+71ROII41+71ROII41+71ROII41+71ROII41+71ROII41+71ROII41+71ROII41+72ROII41+74ROII41+75ROII	39+87	40+42	RD						
40-66         40-99         ND         Image: Marcia stress of the stress of t	40+42	40+68	Break rock						
40-9941+24RDIII41+2441+33Brak rockIII41+3342+91RDIII42+9143+34RDIII43+3443+71Rebarring wallIII41+71At+77Retaining wallIII41+7145+37Retaining wallIII41+7145+37Retaining wallIII45+37At+608RDIIII46+68RDIIIII46+68RDIIIII46+68RDIIIII47+20At+81RDIIII47+81RDIIIII48+35RDIIIII48+35RDIIIII49+44RDIIIII49+44RDIIIII49+44SD+45ROUIIII49+44SD+45ROUIIII49+44SD+45ROUIIII49+44SD+45ROUIIII49+44SD+45ROUIIII49+44SD+45ROUII<	40+68	40+99	RD						
41+2441+33Break rockImage: constraint of the sector of th	40+99	41+24	RD						
41+3342+91RDII42+9143+34RDII43+3443+71RDII43+3443+71Retaining wallII44+7145+37Retaining wallII44+7145+37Retaining wallII45+3746+08RDII45+6446+60Break rockII46+65RDIII46+64RDIII46+65RDIII47+61RDIII47+6148+35RDII48+3049+22RDII48+3049+22RDII49+44RDIII49+45S0+54RoII49+42S0+54ROII50+62S1+68ROII51+68S2+40RDII51+68S2+40RDII51+68S1+69S2+40II51+68S2+40RDII51+68S2+40RDII51+68S2+40RDII51+68S2+40RDII51+68S2+40RDII51+68S2+40RDII51+68S2+40RDII51+68S2+40RD<	41+24	41+33	Break rock						
42:9143:93RDII43:4343:71RDII43:4343:71Retaining wallII44:7144:47Retaining wallII44:73Retaining wallII45:3746:08RDII46:08d6:60Break rockII46:46046:45RDII46:46147:420RDII47:42147:43RDII47:45148:35RDII48:45049:42RDII48:45049:42RDII49:44RDIII49:45280:4II49:453RDII49:454RDII49:455RDII49:455RDII49:455RDII49:455RDII49:44RDII49:45RDII49:44RDII50:455S0:48RouteI50:452S1:48RDI51:493S2:40RDI51:494S2:40RDI51:495S2:40RDI51:495S2:40RDI51:495S2:40RDI51:495S2:40RDI51:495S2:40<	41+33	42+91	RD						
43+3443+71RDImage: constraint of the section of the s	42+91	43+34	RD						
43+7144+71Retaining wallImage: constraint of the sector o	43+34	43+71	RD						
44+7145+37Retaining wallII45+3746+08RDII46+0846+60break rockII46+0646+85RDII46+6046+85RDII46+6247+20RDII47+2047+81RDII47+8148+35RDII48+3548+90RDII48+36494-92RDII49+4249-42RDII50+4550+62RerouteII50+4551+48RDII51+4952+40RDII51+4952+40RDII	43+71	44+71	Retaining wall						
45+3746+08RDRDII46+0846+60Break rockII46+0446+65RDII46+6547+20RDII46+6547+20RDII47+2047+81RDII47+8148+35RDII48+3548+90RDII48+3548+90RDII48+3548+90RDII49+2249+44RDII49+4450+45RDII50+4550+62RerouteII50+4551+48RDII51+8952+40RDII51+8952+40RDII	44+71	45+37	Retaining wall						
46+08         46+60         Break rock         Image: Constraint of the state of the	45+37	46+08	RD						
46+60         46+85         RD         Image: constraint of the system of the	46+08	46+60	Break rock						
46+65         47+20         RD         Image: Constraint of the system of the	46+60	46+85	RD						
47+2047+81RDImage: Constraint of the cons	46+85	47+20	RD						
47+8148+35RDImage: Constraint of the cons	47+20	47+81	RD						
48+35         48+90         RD         Image: Constraint of the system of the	47+81	48+35	RD						
48+90         49+22         RD         Image: Constraint of the system         Image: Constem         Image: Constra	48+35	48+90	RD						
49+22         49+44         RD         Image: Constraint of the system         Image: Constem         Image: Constra	48+90	49+22	RD						
49+44         50+45         RD         Image: Constraint of the system         Image: Constem         Image: Constra	49+22	49+44	RD						
50+45         50+82         Reroute         Image: Constraint of the system         Image: Constand of the system	49+44	50+45	RD						
50+82         51+48         RD         Image: Constraint of the state of	50+45	50+82	Reroute						
51+48         51+89         RD         Image: Constraint of the second	50+82	51+48	RD						
51+89 52+40 RD	51+48	51+89	RD						
	51+89	52+40	RD						

#### Chart 3 – Improvements List

# Final Environment Assessment - Waihe'e Ridge Trail Improvement WHALE Environmental Services LLC – November 2016

		TR	AIL PRE	SCRIPTION			
Trail Name:	Waihe'e Ridge Trail						
BEGIN	END STATION	ACTIONS	TRAIL TYPE	SPECIAL FEATURES/COMMENTS	PHOTO ID / GPS COORDINATES		
00+90	01+52	RD					
01+52	02+10	RD					
02+10	02+61	RD					
02+61	03+23	RD					
03+23	03+48	RD					
03+48	04+15	RD					
04+15	04+63	RD					
04+63	05+72	RD					
05+72	06+06	RD					
06+06	06+51	RD					
06+51	07+45	RD					
07+45	07+90	RD					
07+90	08+86	RD					
08+85	09+78	RD		At tree			
09+78	10+50	Knick					
10+50	11+21	Base course 40 ft.					
11+21	11+87	RD					
11+87	12+83	RD					
12+83	13+92	Base course 40 ft.					
13+92	14+14	Reroute begin					
14+14	15+90	Possible reroute end			-		
15+90	18+65	Knick with BC fill					
18+65	19+71	Base course 40 ft.					
19+71	20+27	16'x8' deck					
20+27	20+64	Base course 40 ft.			2		
20+64	21+15	RD					
21+15	21+62	RD					
21+62	22+78	Sheet Drain					
22+78	24+68	Block illegal trail					
24+68	24+13	Possible reroute					
24+13	25+80	Possible reroute begin					
25+80	26+93	Possible reroute end					

#### Chart 4 – Improvements List

WHALE Environmental Services LLC – November 2016

		TR	AIL PRE	SCRIPTION			
Trail Name:	Waihe'e Ridge Trail						
BEGIN STATION	END STATION	ACTIONS	TRAIL	SPECIAL FEATURES/COMMENTS	PHOTO ID / GPS COORDINATES		
28+35	29+08	RD					
29+08	29+45	RD					
29+45	30+07	Climbing turn		Retaining wall			
30+07	30+68	RD			1		
30+68	33+04	RD					
33+04	33+66	RD			l.		
33+66	34+56	RD					
34+56	35+17	RD					
35+17	35+93	RD					
35+93	37+25	RD					
37+25	38+41	RD					
38+41	47+25	End of trail at gate					
00+00	00+50	RD		Road			
00+50	01+52	RD with BC 20 ft.					
01+52	03+09	RD					
03+09	04+95	RD					
04+95	05+88	RD					
05+88	06+70	End of road					

Chart 5 – Improvements List

#### **Structural Components**

As well, the project's *Proposed Action* calls for the creation of new observation platforms at key viewpoints. These platforms are designed to enhance the trail experience and offer the hiker/trail user a venue for vista and view plane observations.

The design drawings for the observation platforms follow.

WHALE Environmental Services LLC – November 2016





WHALE Environmental Services LLC – November 2016





WHALE Environmental Services LLC – November 2016





WHALE Environmental Services LLC - November 2016



#### D. - APPLICABLE REGULATORY REQUIREMENTS OVERVIEW

The proposed trail improvements at the <u>Waihe'e Ridge Trail</u> will use State and County funds, as well as State lands. As such, compliance with Chapter 343, Hawai<u>'</u>i Revised Statutes (HRS) is triggered. Therefore, this Environmental Assessment (EA) has been prepared pursuant to Title 11, Chapter 200, Hawai'i Administrative Rules (HAR), Environmental Impact Statement Rules to evaluate the proposed action's technical characteristics, environmental and socio-economic impacts, and alternatives, as well as to advance findings relative to the significance of the project's potential impacts and proposed mitigation measures. The Approving Agency for the EA is the Department of Land and Natural Resources – Chairperson Office.

#### Land Designations of Project Area Parcels

It is noted that the underlying land use designations for one parcel (028) is:

- State Land Use Classification: Agricultural
- Maui Island Plan: Outside Growth Boundaries

WHALE Environmental Services LLC – November 2016

- Wailuku-Kahului Community Agriculture Plan: Agricultural
- County Zoning: Agricultural

And furthermore noted that the underlying land use designations for the other parcel (001) are:

- State Land Use Classification: Agriculture/Conservation
- Maui Island Plan: Outside Growth Boundaries
- Wailuku-Kahului Community Plan: Conservation/Agriculture
- County Zoning: Agriculture/Interim

The Waihe'e Ridge Trail is considered a permitted use under Chapter 205, Hawaii Revised Statutes (HRS). As well, under Maui County Code (MCC) Chapter 19.30A relating to the County's Agricultural zoning district, the trail is deemed to be an existing nonconforming use. In the Final Environmental Assessment for the Boy Scouts of America Base Yard Improvements and Parking Area creation, the trail itself was stated to be a permitted, non-conforming use under Maui County Code. For this reason, a request for the applicability of the need for a County Special Use Permit for the trail upgrades, improvements and structures will be filed for review and determination by the Maui Planning Commission prior to construction beginning. The trail originates on Parcel 1, which is on the leased land of the Boy Scouts of America and was the subject noted in the prior filed Final EA by the Boy Scouts of America.

The Applicant will coordinate with the Maui Planning Commission to address applicable regulatory requirements to ensure that Waihe'e Ridge Trail\_improvements needs are appropriately addressed.

After reviewing the EA, the County of Maui, and the Department of Land and Natural Resources shall provide a notice of determination pursuant to Chapter 343, HRS. An action shall be determined to have a finding of no significant impact (FONSI) on the environment if it does not:

- Involve an irrevocable commitment to loss or destruction of any natural or cultural resource;
- (2) Curtail the range of beneficial uses of the environment;
- (3) Conflict with the state's long term environmental policies or goals and guidelines as expressed in Chapter 343, HRS, and any revisions thereto, court decisions, or executive orders;

WHALE Environmental Services LLC - November 2016

- (4) Substantially affects the economic welfare, social welfare, and cultural practices of the community or State;
- (5) Substantially affects public health;
- (6) Involve substantial secondary impacts, such as population changes or affects public facilities;
- (7) Involve a substantial degradation of environmental quality;
- (8) Is individually limited by cumulatively considerable effect upon the environment or involves a commitment for larger actions;
- (9) Substantially affects a rare, threatened, or endangered species, or its habitat;
- (10) Detrimentally affects air or water quality or ambient noise levels;
- (11) Affect or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;
- (12) Substantially affects scenic vistas and view planes identified in county or state plans or studies

OR

(13) Require substantial energy consumption.

As this project does not trigger any of these conditions which would deny a FONSI, it is believed that the Waihe'e Ridge Trail improvements project would be issued a finding of no significant impact (FONSI).

## **SECTION TWO**

# DESCRIPTION OF THE EXISTING ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION MEASURES

WHALE Environmental Services LLC – November 2016

# AFFECTED ENVIRONMENT

This section describes the existing environmental setting and baseline conditions in the areas that would be affected by the Proposed Action and alternatives under consideration. The description of the affected environment serves as the basis of comparison for analysis of potential environmental effects of the Proposed Action.

# Waihe'e Ridge Trail Improvements – Description of the Existing Environment, Potential Impacts, and Mitigation Measures

#### **Physical Setting**

- 1. Surrounding Land Uses
  - Definition of Resource

Land use includes the past, present, and planned land uses and government policies governing the preservation and development of land.

a. Existing Conditions

The project site is located 7.4 miles northwest of Wailuku Town, on the windward slopes of the West Maui Mountains in Kahakuloa, Maui, Hawai'i. (*Refer to Figure 1*). The area surrounding the trail and trailhead is characterized as agricultural and conservation lands. Lands have open vistas and view planes making this an ideal location for recreation amenities such as the trail. The surrounding agricultural grasslands are also used for cattle ranching purposes. Residential uses are non-existent in keeping with the area's agricultural and conservation land use context.

#### b. Potential Impacts and Mitigation Measures

The proposed trail improvements will be located throughout the entire 2.5 mile trail length; with the proposed observation platform improvements also will be located on the existing trail. These improvements are compatible with the existing uses of the properties and are not anticipated to create adverse impacts to the surrounding community.

#### 2. Climate

#### Definition of Resource

Climate refers to meteorological conditions, such as the temperature range, precipitation levels, and wind conditions in a particular region, and is addressed under climate for purposes of this EA.

#### a. Existing Conditions

Like most areas in Hawai'i, the climate in the Wailuku region is relatively uniform year-round. Characteristic of the island's climate, the project site experiences mild and uniform temperatures, moderate humidity, and relatively consistent northeasterly trade winds. This climatic stability is due to Maui's tropical latitude, its location relative to the Pacific anticyclone and storm tracts, and the surrounding ocean currents. Variations in climate among the different regions in Maui are largely due to local terrain.

Historically, August is the warmest month with an average temperature in the high 80 degrees Fahrenheit (measured at the Kahului Airport), while the coolest month is February with an average in the low 60s. Rainfall in the region is seasonal, with the most precipitation occurring between October and March. Annual rainfall data for nearby Waihe'e Valley shows an average of 44.65 inches (Maui County Data Book, 2012).

#### b. Potential Impacts and Mitigation Measures

The proposed project has been affected by climate conditions (increased rainfall creating wet conditions on existing trail); but with drainage improvements and upgrades during the trail improvement phase and new trail stability measures, future use of the trail is not anticipated to affect or be affected by future climatic conditions in the area.

Specific mitigations (Best Management Plans – BMPs) has been provided and can be found in the appendixes. These mitigations are specially geared to address potential climate change effects such as stormwater flow increases, erosion, increased rainfall and other measures. The trail improvements are specifically designed to bring
the trail into a compliance standard that includes addressing potential climate changes.

#### 3. Agricultural Productivity Considerations

a. Existing Conditions

In 1977, the State of Hawai'i, Department of Agriculture developed a classification system to identify Agricultural Lands of Importance to the State of Hawai'i (ALISH), based primarily, though not exclusively, on soil characteristics of the underlying land. The three (3) classes of ALISH lands are "Prime", "Unique", and "Other Important" agricultural lands, with the remaining non-classified lands termed "Unclassified". When utilized with modern farming methods, "Prime" agricultural lands have soil quality, growing season, and moisture supply needed to produce sustained crop yields economically; "Unique" agricultural lands contain a combination of soil quality, growing season, and moisture supply to produce sustained yields of a specific crop. "Other Important" agricultural lands include those important lands that have not been rated as "Prime" or "Unique".

The Waihe'e Ridge Trail, as reflected by the ALISH map, is located on lands designated as "Unclassified" and "Other" agricultural lands. Additionally, the trail also lies on lands zoned "conservation".

Additionally, the University of Hawai'i, Land Study Bureau (LSB) developed the Overall Productivity rating, which classified soils according to five (5) levels, with "A" representing the class of highest productivity soils and "E" representing the lowest. These letters are followed by numbers which further classify the soil types by conveying such information as texture, drainage, and stoniness.

The LSB classifications for the proposed project area are "DI3" and "E96" with the majority of the trail in E96. The "D 13" classification (beginning of trail – parking) reflects an Overall Productivity Rating of D, the second lowest possible rating. The soils are characterized as non-stony. Soil depths are over 30 inches, with an average slope of 21 to 35 percent. The soil is of fine grain and well-drained. This land is typically found at an elevation of 0 to 1,000 feet, and experiences

a mean annual rainfall of 30 to 50 inches. The soils are dark reddish brown in color. The "E96" classification reflects an Overall Productivity rating of E, the lowest possible rating. The soils are characterized as non-stony to rocky. Soil depths are variable, and with an average slope of 36 to 80 percent. The soil is of moderately fine to medium grain and well-drained.

The land is typically found at an elevation of 100 to 5,000 feet, and experiences a mean annual rainfall of 40 to 60 inches. The soils are dark brown to dark reddish-brown in color. Both D and E rated lands are suitable for grazing (University of Hawai'i, Land Study Bureau, 1967).

## b. Potential Impacts and Mitigation Measures

While the site has relatively low productivity ratings, a portion of the State-owned parcel is used for cattle grazing purposes. The trail itself is used for outdoor recreational purposes. Adverse impacts to agricultural productivity are not anticipated as a result of the proposed action.

## 4. Topography/Geology and Soils Characteristics

## Definition of Resource

Geology refers to the surface and subsurface materials of which a land area is composed, including soils and rocks. Important geologic characteristics of soils and underlying rocks include stability, slope, compatibility, shear strength, and productivity. Discussions of geology and soils typically identify existing conditions and determine how the Proposed Action and alternatives under consideration would likely affect, and be affected by, geology and soils.

## a. Existing Conditions

Elevations at the project site range from approximately 1,050 feet above mean sea level (amsl) to 1,110 feet (amsl). The site generally slopes in a south to north direction, ranging from 6 to 50 percent.

The project site consists of soils within the Honolua-Olelo association, which is found on intermediate uplands and is characterized by deep, gently sloping to moderately steep, welldrained soils that have a fine textured subsoil (U.S. Department of Agriculture (USDA), 1972). Underlying the project site are both Honolua Silty Clay, 15 to 25 percent slopes (HwD), and Rock Land (rRK). See Figure 11. Honolua Silty Clay, 15 to 25 percent slopes (HwD) is a dark brown silty clay about 12 inches thick. Permeability is moderately rapid, runoff is medium, and the erosion hazard is slight to moderate. Rock Land (rRK) is made up of areas where exposed bedrock covers 25 to 90 percent of the surface. The rock outcrops and very shallow soils are the main characteristics of this soil type. In many places, the soil material is very sticky and very plastic, and has high shrink-swell potential (USDA, 1972).

b. Potential Impacts and Mitigation Measures

The proposed project is not anticipated to affect or be affected by underlying soil or topographic conditions in the area. The slope at the site ranges from approximately 6 to 50 percent, and does not pose constraints on project constructability. BMP(s) to prevent soil erosion are found in the appendixes.

5. Flood and Tsunami Hazards

According to the Hawai'i - National Flood Insurance Program Flood Hazard Assessment Tool, the areas that would be affected by the Proposed Action and alternative under consideration are not designated 100 Year Floodplain Zones. (Hawai'i National Flood Insurance Program, 2011).

Additionally, the Proposed Action is not located within the tsunami hazard zone identified by the Maui Civil Defense Agency.

a. Existing Conditions

The project site is located on the windward slopes of the West Maui Mountains at an elevation of approximately 1,100 feet above mean sea level. As indicated by the Flood Insurance Rate Map for the County of Maui, the project site is located within Zone X. Zone X is the flood insurance rate zone that corresponds to areas of minimal flooding or areas determined to be outside the 0.2 percent annual chance flood plain.

Additionally, the project is located inland and outside the tsunami inundation zone.

#### b. Potential Impacts and Mitigation Measures

Given the location of the project site within Flood Zone X and outside of the tsunami inundation zone, there are no anticipated adverse effects to the proposed project from flooding or tsunami related events.

## 6. Streams and Wetlands

#### Definition of Resource

Water resources is a broad term that encompasses surface water, groundwater, near-shore water, wetlands, and other sources of water that support a variety of human activities, plant and wildlife species, habitats, and ecosystems. Surface water resources typically include stormwater, lakes, streams, and rivers, while water located beneath the ground surface within soil pore spaces or the fractures of rock formations is known as groundwater. Near-shore water is generally considered the area extending seaward from the shoreline beyond the surf zone. A wetland is an area of land that is saturated with water either permanently or seasonally. Water within wetlands can be saltwater, freshwater, or brackish. Examples of wetlands include marshes and swamps. Services performed by wetlands include water purification, shoreline stability, and habitat for plant and wildlife species.

## a. Existing Conditions

There are two (2) streams on the State-owned parcel that are within the vicinity of the proposed project. The Makamaka'ole Stream is located approximately 1,500 feet to the north of the proposed trail improvement activities, and the Maluhia Stream is approximately 900 feet east of the site of the trail parking lot. Along the Waihe'e Ridge Trail, there is one intermittent flow that originates below the ridge trail at about the 2.0 mile point from the base. It is not impacted and starts about 300' below the ridge line trail.

## b. Potential Impacts and Mitigation Measures

The project will utilize Best Management Practices (BMPs) to minimize soil erosion attributed to construction. Runoff will be managed so as not to affect downstream properties, resources, or nearby stream systems. In this regard, the proposed project is not anticipated to affect stream and wetland conditions in the area. BMP narratives may be found in the appendixes.

In addition, the project will address the program standards of the Maui District Health Office - Environmental Planning Office planning and programs that addresses strategic plans, supports land use reviews and helps to get new programs underway. That office has been instrumental in developing the polluted runoff control program and is involved in coordinating watershed management projects that can be seen in the BMPs offered for runoff control in the appendixes.

#### 7. Flora and Fauna

#### Definition of Resource

Biological resources include species of vegetation, wildlife, fisheries, and habitat. Biological resources discussed in this section include botanical, avian, or mammalian resources of special concern, particularly species listed under federal or state endangered species law. Also discussed are species considered sensitive, protected, or proposed for protection.

#### Affected Environment

The affected environment for biological resources described below is based on the biological resources survey report prepared for this EA unless otherwise noted (DLNR, April 2015). This report may be found in the appendixes.

#### a. Existing Conditions

A flora and fauna field survey of the Waihe'e Ridge trail corridor was undertaken. The results of this study are documented in the report

entitled "DESCRIPTION OF THE FLORA AND FAUNA – Biological impact of the Waihe'e Ridge trail corridor improvements" which is incorporated in this EA document as Appendix "A".

## b. Potential Impacts and Mitigation Measures

The flora and fauna report concludes that there are no endangered or threatened species of plant life and animal life which will be impacted by the project. More particularly, there will be no adverse impacts to these resources as a result of the proposed action.

Consultation with the U.S. Department of Interior – Fish and Wildlife Service indicates that three species of concern, the endangered Hawaiian hoary bat, the Hawaiian petrel, (and a related species – the band-rumped storm petrel), and the threatened Newell's Shearwater; as well federally designated habitat near the top of the trail exist – but will not be impacted by the proposed activities.

Consultation with the contractor indicated that the USFW's mitigation suggestions will be implemented such as:

- No barbed wire used,
- No artificial structures above the 15' tree line height,
- No nighttime operation or lights,
- No work during the seabird fledging season (Sept 15 to December 15), and
- Notification to USFW if listed species are sighted or encountered.

## 8. Archaeological and Cultural Resources

## Definition of Resource

Significant cultural resources are defined by the National Historic Preservation Act and Chapter 343 of the Hawai'i Revised Statutes (HRS). According to the National Historic Preservation Act (NHPA), a historic resource is defined as, "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register..." According to Chapter 343 of the HRS, cultural resources are defined as "cultural beliefs, practices, and resources of native Hawaiians

and other ethnic groups." Chapter 343 requires that the environmental assessment process account for cultural resources in determining the significance of impacts that could occur as a result of a proposed action.

a. Existing Conditions

An archaeological assessment of the project area was undertaken, together with associated archival investigations. See Appendix "B".

## b. Potential Impacts and Mitigation Measures

The archaeological assessment report explains that it is unlikely that the trail area was a major permanent settlement in the precontact era. Refer to Appendix "B". No surface cultural remains or historic surface features were identified. The report notes that modern era clearing and grading on the parcel associated with the development of the trail have likely disturbed any previously existing sites or surface deposits. Based on the foregoing, the report concludes that the proposed project will not have an adverse impact on any significant sites in the project area or nearby the project area. As such, we have conducted further archaeological work to verify that archival sources do not indicate pre-contact use of the area. See Appendix "B".

9. Additional Cultural Resources

To better understand the relationship between the proposed action and cultural resources and practices in the immediate vicinity of the project site, an extensive consultation process with individuals who have knowledge of the area was undertaken by Dr. Chris Monahan. Refer to Appendix "C".

#### a. Existing Conditions

A Cultural Impact Assessment (CIA) was prepared for the project area. See Appendix "C". From a cultural context perspective, the CIA notes that the project area is situated on a rugged slope and unsuitable for wetland taro cultivation. Instead, a limited degree of dry land crop cultivation was likely practiced on the flatter and more gradually sloping coastal bluffs. (See appendix)

#### b. Potential Impacts and Mitigation Measures

This process included oral interviews, via telephone interviews, archival research, and email correspondences. Based on results of the consultation process, it has been determined that the area of the proposed improvements have not been used for traditional cultural purposes within recent times. It is reasonably concluded, therefore, that the proposed actions will not affect the exercise of Native Hawaiian rights, or the rights of any other ethnic group, as it relates to gathering, access, or other customary activities.

In the event that cultural sites/indicators are detected in previously unknown areas within the project site, the project contractor will promptly notify the DLNR project manager, Ms. Torrie Nohara. DLNR will then assembled the proper cultural researchers to assess the find, stop all work in the discovery zone, and consult with known authorities such as SHPD and OHA to determine a course of action. An expanded Archaeological Assessment (AA) and/or Archaeological Inventory Survey (AIS) as deemed necessary to identified the cultural discoveries will be conducted as well as any required Burial Treatment Plan (BTP).

#### 10. Air Quality

#### Definition of Resource

Air quality is defined by the concentrations of specific pollutants of concern in the general outdoor atmosphere to which the public has access, with respect to the health and welfare of the general public. These pollutants are generated by many direct and indirect sources such as: Factories and power plants (stationary); automobiles, buses and planes (mobile); windblown dust and volcanic eruptions (natural), construction and site preparation (fugitive dust).

The United State Environmental Protection Agency (EPA) administers and enforces the Clean Air Act, a federal law that regulates air emissions from stationary and mobile sources. Passed by Congress in 1970, and later amended in 1977 and 1990, this law authorizes EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and public

welfare and to regulate emissions of hazardous, commonly occurring pollutants known as "criteria" pollutants. Thus far NAAQS have been set for six criteria pollutants (40 Code of Federal Regulations [CFR] 50): carbon monoxide (CO); nitrogen dioxides (NO2); ozone (O3) with nitrogen oxides [NOX] and volatile organic compounds [VOCs] as precursors; particulate matter (PM) PM10 – less than 10 microns in particle diameter and PM2.5 – less than 2.5 microns in particle diameter; lead (Pb); and sulfur dioxide (SO2). Two types of standards have been established. "Primary standards" set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. "Secondary standards" set limits to protect public welfare which includes protection against decreased visibility, and damage to animals, crops, vegetation, and buildings. The EPA requires that states monitor the ambient air to determine attainment of the NAAQS and regulate industries that emit these and other pollutants.

In addition to NAAQS, the Hawai'i DOH has established State ambient air quality standards (SAAQS) to further protect human health. SAAQS exist for the following pollutants: CO, NO2, O3, PM10, Pb, hydrogen sulfide (H2S), and SO2. Performance standards exist for volatile organic compounds (VOC) and total suspended particulates (TSP) within HAR and are controlled by permit.

a. Existing Conditions

Given the project area's location in a relatively remote and heavily vegetated area, it does not, in general, experience adverse air quality conditions. There are no point sources of airborne emissions within close proximity to the project site. Point sources in the Central Maui region include the Māalaea Power Plant, Puunēnē Sugar Mill, and the rock quarry at Puunēnē, all of which are well over five (5) miles from the project site.

A non-point source of pollution in the vicinity of the project site is vehicular exhaust from Kahekili Highway and other nearby roadways. Emissions from these sources, however, are quickly dispersed by

prevailing trade winds. Overall, Maui's air quality index is rated good,

with 97 percent of days with good air quality and three (3) percent with moderate air quality (Scorecard, 2011).

## b. Potential Impacts and Mitigation Measures

During construction, airborne particulates as a result of construction related activities may temporarily affect the ambient air quality within the immediate vicinity of the project site. Mitigation measures may include utilization of watering work areas to control dust, as well as other appropriate BMPs to ensure that fugitive dust from the project area is minimized. By effectively employing these mitigation measures, construction-related activities are not anticipated to pose a significant impact to the air quality in the surrounding area.

## 11. Noise

## Definition of Resource

Noise is defined by the EPA as "unwanted or disturbing sound", and in the HAR as "any sound that may produce adverse physiological or psychological effects or interfere with individual or group activities, including but not limited to communication, work, rest, recreation, or sleep".

While the typical human response to noise pollution is annoyance, Noise pollution can cause stress related illnesses (eg. high blood pressure, sleep disruption, and lost productivity) and potentially hearing loss, with prolonged exposure. The response of individuals to similar noise events is diverse and influenced by the type of noise; the perceived importance of the noise, and its appropriateness in the setting; the time of day and the type of activity during which the noise occurs; and the sensitivity of the individual. Most environmental noise includes a mixture of noise from distant sources that creates a relatively steady background noise in which no particular source is identifiable.

Sound is generally characterized by several variables, including frequency and intensity. Frequency describes the pitch of the sound and is measured in Hertz (Hz), while intensity describes the sound's loudness and is measured in decibels (dB). Normal speech has a sound level of approximately 60 dB. For the purpose of quantify sound for ordinance, sound level is usually expressed by reference to a known standard. Because the human ear is less sensitive to low audio frequencies, a table of octave values are added to the dB sound pressure level to make the Aweighted scale (dBA). The result is a standard scale relative to the loudness perceived by the human ear, which incorporates both sound intensity and frequency.

In 1970 under the CAA, the EPA established the Office of Noise Abatement and Control (ONAC) with the purpose of performing studies on noise and its effect on the public health and welfare. In 1972 Congress passed the Noise Control Act, followed by the Quiet Communities Act in 1978. By 1981 the EPA concluded that noise issues were best handled at the State and local level. The Hawai'i DOH is the State administrator of noise control ordinance in Hawai'i. The DOH has set maximum permissible sound levels (specified in HAR §11-46-4), which cannot be exceeded beyond the source's property line. These maximums vary based on zoning district, being the highest for industrially zoned parcels. These noise limits apply to "stationary noise sources; and equipment related to agricultural, construction, and industrial activities". "Construction equipment" means any device designed and intended for use in construction, including but not limited to any air compressor, pile driver, bulldozer, pneumatic hammer, steam shovel, derrick, crane, tractor, grader, loader, power saw, pump, pneumatic drill, compactor, on-site vehicle, and power hand tool (HAR §11-46-4(a)).

a. Existing Conditions

The predominant source of noise in the vicinity of the project site stems from traffic traveling along Kahekili Highway. The lands adjacent to the trail parcel are State-owned lands and are used, in

part, for cattle grazing. Agricultural home sites located along Kahekili Highway and north of Camp Maluhia and the trail across Makamaka'ole Gulch are not major noise generators.

### b. Potential Impacts and Mitigation Measures

Ambient noise conditions may be temporarily affected by construction related activities. Construction machinery and activities are anticipated to be the dominant noise-generating sources during the construction period though most of the construction will likely be limited to hand tools due to the ruggedness of the trail terrain. Mitigation measures for construction-related activities may include equipment mufflers or other noise attenuating equipment.

Construction activities are anticipated to occur during daylight hours, Monday through Friday, excluding holidays. The use of BMPs for construction, combined with the area's remote location, will ensure that noise impacts associated with construction are appropriately mitigated. In the long term, the trail improvement will not create noise conditions different from those associated with current operations.

## 12. Scenic and Open Space Resources

#### Definition of Resource

Visual resources are public in nature and include views of a project to and from neighboring scenic resources. When evaluating scenic quality, both natural and manmade components of the existing visual environment should be collectively considered. These components may be evaluated in terms of whether each contributes or detracts to the overall scenic landscape character. In turn, this evaluation contributes to the assessment of scenic quality levels, which are established by evaluating the distinctiveness and diversity of a particular landscape setting. Public concern over adverse visual impacts is also an important part of the visual impact assessment process. Public concerns over the visual impacts associated with a project are often directly connected to the size and scale of a project. Additionally, the number and presence of people or activities nearby will further inform the level of concern for impacts to the existing scenic quality of the area. Visual impacts associated with a project can be evaluated in the following objective terms: form, line, color and texture.

Such terms are used to measure the existing scenic quality and proposed scenic quality with the addition of the project. This methodology allows for an objective assessment of visual resources. The visibility of a project determines how the Project will be seen from particular viewing areas, which directly relates to the level of concern nearby viewers will have. In general, however, perception of details relating to form, line, color, and texture diminishes with increasing distance.

a. Existing Conditions

The project site's location, nestled against the windward slopes of the West Maui Mountains, provides picturesque views of the Pacific Ocean and the Kahakuloa region with the mountains as a backdrop to the trail experience.

Kahekili Highway is noted by the County as possessing a high, significant scenic-resource value. It provides ocean, mountain, agricultural, and island-wide views. The slopes of the West Maui Mountains provide for open space resources to the region as well.

## b. Potential Impacts and Mitigation Measures

The proposed project will not obstruct views from the trail or from Kahekili Highway. As such, the proposed project will not adversely affect scenic resources.

## 13. Beach and Mountain Access

a. Existing Conditions

The project site is located approximately one (I) mile from the coastline. The driveway to the camp also provides access to the Waihe'e Ridge Trail used by hikers and the trail is the only access higher on the mountain.

b. Potential Impacts and Mitigation Measures

The proposed trail improvement projects are not anticipated to affect beach access conditions in the area. In addition, the proposed trail improvements are intended to improve access and use thereof to the Waihe'e Ridge Trail for hikers.

#### **Socio-Economic Environment**

Socioeconomic resources refer to the social and economic qualities of the human environment, such as demographic characteristics, employment and income-generating activities, and the ways in which people live, relate to one another, organize to meet their needs, and engage in leisurely activities.

- 1. Population
  - a. Existing Conditions

The population of the County of Maui has exhibited relatively strong growth over the past decade. The County's resident population grew by 20.9 percent between 2000 and 2010, compared to a 12.3 percent increase in the State of Hawai'i as a whole during the same time period. Maui County's population increased from 128,094 residents in 2000 to 154,834 residents in 2010. Population on the island of Maui exhibited even stronger growth than the County as a whole, with a 22.8 percent population increase over the decade. Approximately 144,444 residents lived on the island of Maui in 2010 (U.S. Census Bureau, 2000 and 2010).

Maui County's resident population is projected to rise to 174,450 people in 2020 and to 199,550 people in 2030 (SMS, 2006). The proposed project is located on the northwestern coast of Maui, within the Wailuku-Kahului Community Plan region. Just as Maui County and Maui Island's populations have grown, the resident population of the Central Maui region has also increased. The estimated population of the Wailuku-Kahului region in 2000 was 41,503 (SMS, June 2006), which comprised 35.3 percent of the island's population. In 2010, the region's population stood at approximately 54,400 residents, a 31.2 percent increase over 10 years (U.S. Census Bureau, 2010). The population of the Wailuku-Kahului region is projected to increase to 60,877 people in 2020 and to 71,223 people in 2030 (SMS, June 2006).

b. Potential Impacts and Mitigation Measures

The proposed trail improvements are intended to provide upgraded trail structure and enhanced safety factors for hiking use, as well as non-hiking trail users. The improvements are not considered a population generator. Accordingly, the proposed actions will not affect the island's population.

## 2. Economy

a. Existing Conditions

The Wailuku region is Maui County's center of governmental activity. Along with neighboring Kahului, the region encompasses a broad range of commercial, service, and public sector activities. In addition, the region is surrounded by approximately 32,000 acres of sugar cane. This vast expanse of agricultural land is managed by Hawai'ian Commercial & Sugar Company (HC&S), and was a key contributor to the local economy, though HC&S recently closed sugar harvesting activities and replacement revenue has not been identified.

Non-seasonally-adjusted unemployment rates for both Maui County and the Island of Maui in December 2014 were 3.8 percent and 3.6 percent, respectively. These rates both decreased from the December 2013 unemployment rates of 4.7 percent and 4.5 percent (Department of Labor and Industrial Relations, March 2015).

## b. Potential Impacts and Mitigation Measures

In the short term, the proposed project will provide constructionrelated revenue and employment. Accordingly, the project will have a beneficial impact on the local economy during the construction phase.

In the long term, the proposed actions are not anticipated to have a significant impact on the economy of Maui County.

#### **Public services**

- 1. Police and Fire Protection
  - a. Existing Conditions

Police protection for the Wailuku region is provided by the Maui County Police Department headquartered on Mahalani Street, approximately 9.1 miles southeast of the project site. The region is served by the Department's Central Maui station, which is divided into three (3) sectors. Each sector is divided into three (3) beats, each patrolled by a single officer.

Fire prevention, suppression, and protection services for the Waiehu, Waihe'e, and Wailuku regions are provided by the County Department of Fire and Public Safety's Wailuku station, located on Kinipopo Street in Wailuku, approximately 7.8 miles southeast of the project site. The region is also served by the Department's Kahului station, located on Dairy Road in Kahului, approximately 10.0 miles southeast of the project site.

b. Potential and Impacts and Mitigation Measures

The proposed projects will not affect the service area limits or personnel for police and fire protection.

- 2. Medical Services
  - a. Existing Conditions

The island's major medical facility is Maui Memorial Medical Center, located approximately nine (9) miles southeast of the project site, midway between Wailuku and Kahului. Acute, general, and emergency care services are provided at the facility. Other private medical service providers in the Central Maui region, which have regular hours, include Maui Medical Group and Kaiser Permanente.

b. Potential Impacts and Mitigation Measures

The proposed projects will not affect requirements for medical services. As with police and fire protection services, service area limits for medical emergency responders will not be affected by the proposed project.

## 3. Solid Waste

a. Existing Conditions

Single-family residential solid waste collection service is provided by the County of Maui. Residential solid waste collected by County crews is disposed at the County's Central Maui Landfill, located four (4) miles southeast of the Kahului Airport. Commercial waste from private collection companies is also disposed at the Central Maui Landfill. A County-operated green waste recycling facility is also located at the Central Maui Landfill.

Maui Demolition and Construction Landfill, a privately owned facility, accepts solid waste and concrete from demolition and construction activities. This facility is located at Māalaea, approximately 14.2 miles south of the project site, near Honoapi'ilani Highway's junction with North Kīhei Road and Kūihelani Highway.

#### b. Potential Impacts and Mitigation Measures

Construction waste which may be generated from implementation of the project will be recycled or disposed at an appropriate construction waste disposal location following trail guidelines of "carry in, carry out". After project construction, the proposed actions will not result in the generation of additional solid waste. With these solid waste management measures, the contribution of construction waste to landfills will be minimized. Thus, the proposed actions are not anticipated to adversely affect capacity parameters of the County's solid waste system.

Specifically, there will be no construction waste left on site by the contractor. Residue trim wood pieces and empty concrete bags are the expected waste to be removed daily. DLNR has a dumpster at the base yard that will be used for that purpose of daily disposal. As a result, there is no need for a project number application to the Central Landfill for disposal.

#### 4. Recreational Resources

a. Existing Conditions

There are a number of public recreational facilities in the Central Maui region, including the War Memorial complex and the adjacent Keōpūolani Park. The Waihe'e Ridge Trail itself is considered a recreational opportunity, as various open land recreation activities such as hiking are carried out on this trail.

b. Potential Impacts and Mitigation Measures

The proposed projects are not anticipated to adversely impact the trails' existing recreational purposes, nor will it adversely affect use of the Waihe'e Ridge Trail or other recreational facilities/opportunities in Central Maui.

## 5. Schools

a. Existing Conditions

The Wailuku-Kahului region is served by the State Department of Education's (DOE) public school system and by several privately operated schools. Public schools operated by the DOE in the Kahului area include Lihikai, Kahului, and Pomaika'i Elementary Schools (Grades K to 5); Maui Waena Intermediate School (Grades 6 to 8); and Maui High School (Grades 9 to 12). Public schools operated by the DOE in the Wailuku area include Wailuku, Waihe'e, and Pu'u Kukui Elementary Schools (Grades K to 5); 'lao Intermediate School (Grades 6 to 8); and Baldwin High School (Grades 9 to 12). The University of Hawai'i - Maui College, located southeast of the project site in Kahului, serves as the island's primary higher education institution.

 b. Potential Impacts and Mitigation Measures
 The proposed projects are not anticipated to impact school enrollments or facility requirements.

#### Infrastructure

Infrastructure is the basic structure of the affected environment, including utilities, transportation facilities, drinking water, and wastewater systems.

## 1. Roadways

a. Existing Conditions

The project site is located to the "mauka" (mountain) side of Kahekili Highway in Kahakuloa, Maui, Hawai'i. Access to the site is provided by a one-lane paved driveway off of Kahekili Highway. Kahekili Highway is a two-way, two-lane, undivided State-owned roadway that serves as the primary roadway throughout the north Wailuku region encompassed by Waiehu, Waihe'e, and Kahakuloa. Kahekili Highway begins in the "Happy Valley" district of Wailuku,

where North Market Street, Mokuhau Road and Piihana Road converge, and continues north and around the West Maui Mountains where it eventually becomes Honoapi'ilani Highway near Honokōhau Bay.

## b. Potential Impacts and Mitigation Measures

There will be a short-term increase in traffic along Kahekili Highway associated with construction workers and equipment entering and leaving the project site. Parking for construction workers will be onsite at the base parking lot to minimize additional traffic impacts. Trail or parking area closures as safety dictates will be in place during the approximate six (6) week to eight (8) week trail improvement project conducted by the contractor, so there will no intermingling of trail users and rehabilitation contractors. There are no anticipated long-term traffic impacts as there are no changes in trail capacity and operations resulting from the proposed action. No adverse impacts to traffic are anticipated as a result.

## 2. Water

## a. Existing Conditions

Water to the Wailuku-Kahului region is provided by the Maui County, Department of Water Supply (DWS) Central Maui System which also serves the South Maui and Pāia areas. The main sources of water for this system include the 'lao and Waihe'e aquifers, the 'lao Tunnel, and the 'lao Waikapu ditch.

The project site is located within the Waihe'e Aquifer System, which has a sustainable yield of eight (8) million gallons per day (MGD). The current withdrawal from the Waihe'e Aquifer system is approximately six (6) MGD on a 12-month moving average basis.

The location currently receives water from the Kahakuloa Acres Private Water Company (KAPWC) through a 5/8-inch meter located in the Maluhia Country Ranches (MCR) subdivision. A 2-inch transmission pipeline runs from the meter through an easement on one of the MCR lots, traverses the Makamaka'ole Gulch Stateowned parcel, and enters the lower end of the camp near the Rotary

campsite. The only source of water is at the lower trailhead, the trail itself has no water facilities.

### b. Potential Impacts and Mitigation Measures

The trail parking lot does not require domestic water service. In this regard, appropriate construction mitigation measures will be implemented to ensure the protection of the underlying aquifer. Such measures may include, as applicable, management of hazardous onsite materials to ensure proper security and handling, and the proper maintenance of construction vehicles and stationary equipment to ensure that there is no leakage of fuel and other petroleum-based fluids.

## 3. Wastewater

a. Existing Conditions

Wastewater from the Wailuku-Kahului region is treated at the Wailuku Kahului Wastewater Reclamation Facility (WKWWRF). The WKWWRF also receives flow from Kuau, Pāia, Skill Village, and Spreckelsville. Currently, the WKWWRF has a design capacity of 7.9 MGD and average dry weather flow of 4.4 MGD. Effluent disposal from the WKWWRF is via eight (8) gravity injection wells. Principal solids from the WKWWRF are treated, processed and digested, dewatered and then composted at the Central Maui Landfill. There are 15 major wastewater pump stations which are part of the WKWWRF system.

There are no existing County sewer system facilities at the work site.

b. Potential Impacts and Mitigation Measures

The proposed trail improvements will not require wastewater connections or service. In this regard, there will be no impacts to County collection, transmission and treatment systems.

## 4. Drainage

a. Existing Conditions

The proposed project site is located on the slopes of the West Maui Mountains at approximately 1,200-2000 feet above mean sea level (amsl). There are no drainageways at the site. Runoff currently sheet flows through the site and eventually enters a tributary of Makamaka'ole Gulch. A ridge borders the southwesterly portion of the property, preventing off-site runoff from entering the site.

## b. Potential Impacts and Mitigation Measures

The increase in runoff resulting from the proposed trail improvements will be mitigated by drainage improvements outlines earlier such as rolling dips. The BMPs will collect runoff and implement control of the outflow of runoff. As such, there are no anticipated adverse effects on adjacent or downstream properties as a result of this project. A full BMP narrative is found in the appendixes.

- 5. Energy and Communication Systems
  - a. Existing Conditions

There are no electrical or telephone utilities provided to the trail.

b. Potential Impacts and Mitigation Measures

While the majority of construction-related activities utilize hand or battery-powered operated construction equipment, there may be short-term electrical energy needs while the project is in construction. After construction is completed, all equipment will be removed and energy consumption will be reduced again to nongeneration. The proposed actions are not expected to have any longterm adverse effects on the energy and communication systems in the area.

#### Cumulative and Secondary Impacts

Cumulative effects are defined by Title 11, Chapter 200, Hawai'i Administrative Rules (HAR), Environmental Impact Statement Rules as impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions.

Cumulative impacts can result from individually minor but collectively "significant actions taking place over a period of time".

A "secondary impact" or "indirect effect" from the proposed action is defined by Title 11, Chapter 200, HAR, as "effects which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. "

As mentioned previously, the proposed trail improvements are intended to enhance the existing trail system and add safety and environmental improvement factors. In this regard, the proposed trail improvements are not anticipated to cumulatively have a negative effect on the environment.

In addition, there are no reasonably foreseeable effects associated with the proposed action(s) which would be deemed a secondary impact.

# <u>Waihe'e Ridge Trail Improvements – Relationship to Land Use</u> <u>Plans, Policies, and Controls</u>

A. STATE LAND USE DISTRICTS

Pursuant to Chapter 205, Hawai'i Revised Statutes (HRS), all lands in the State have been placed into one (1) of four (4) land use districts by the State Land Use Commission.

These land use districts have been designated "Urban", "Rural", "Agricultural", and "Conservation". The project site is classified "Agricultural" and "Conservation" with a Land Study Bureau soil classification of "D" and "E", which allows for open land recreational facilities.

## B. CHAPTER 226, HRS, HAWAI'I STATE PLAN

Chapter 226, HRS, also known as the Hawai'i State Plan, is a long-range comprehensive plan which serves as a guide for the future long-range development of the State by identifying goals, objectives, policies, and priorities, as well as implementation mechanisms. The proposed action is consistent with the following goals of the Hawai'i State Plan:

• A desired physical environment, characterized by beauty,

cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.

- Physical, social, and economic well-being, for individuals and families in Hawai'i, that nourishes a sense of community responsibility, of caring, and of participation in community life.
- 1. Objectives and Policies of the Hawai'i State Plan

The proposed action is consistent with the following objectives and policies of the Hawai'i State Plan:

- Chapter 226-11, HRS, Objectives and Policies for the Physical Environment Land-Based, Shoreline, and Marine Resources.
- 226-11(b)(1), HRS: Exercise an overall conservation ethic in use of Hawai'i's natural resources.
- 226-11(b)(3), HRS: Take into account the physical attributes of areas when planning and designing activities and facilities.
- 226-11(b)(4), HRS: Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.
- 226-11(b)(8), HRS: Pursue compatible relationships among activities, facilities, and natural resources.
- 226-11(b)(9), HRS: Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.
  - Chapter 226-12, HRS, Objectives and Policies for the Physical Environment Scenic, Natural Beauty, and Historic Resources.
- 226-12(b)(3), HRS: Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.
- 226-12(b)(S), HRS: Encourage the design of developments and activities that complement the natural beauty of the islands.
- Chapter 226-23, HRS, Objectives and Policies for Socio-Cultural Advancement - Leisure.

- 226-23(b)(I), HRS Foster and preserve Hawai'i's multi-cultural heritage through supportive cultural, artistic, recreational, and humanities-oriented programs and activities.
- 226-23(b)(2), HRS: Promote a wide range of activities and facilities to fulfill the cultural, artistic, and recreational needs of all diverse and special groups effectively and efficiently.
- 226-23(b)(3), HRS: Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.
- 226-23(b)(4), HRS: Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.
- 226-23(b)(5), HRS: Ensure opportunities for everyone to use and enjoy Hawai'i's recreational resources.
- 226-23(b)(10), HRS: Assure adequate access to significant natural and cultural resources in public ownership.

## C. GENERAL PLAN OF THE COUNTY OF MAU

As indicated by the Maui County Charter, the purpose of the general plan shall be to: ... indicate the desired population and physical development patterns for each island and region within the county; shall address the unique problems and needs of each island and region; shall explain opportunities and the social, economic, and environmental consequences related to potential developments; and shall set forth the desired sequence, patterns and characteristics of future developments. The general plan shall identify objectives to be achieved, and priorities, policies, and implementing actions to be pursued with respect to population density; land use maps, land use regulations, transportation systems, public and community facility locations, water and sewage systems, visitor destinations, urban design, and other matters related to development.

Chapter 2.80B of the Maui County Code, relating to the General Plan and Community Plans, implements the foregoing Charter provision through enabling legislation which calls for a Countywide Policy Plan and a Maui Island Plan (MIP). The Countywide Policy Plan was adopted as Ordinance No. 3732 on March 24,

2010, while the Maui Island Plan, which delineates areas for future urban and rural growth as part of a Directed Growth Strategy, was adopted as Ordinance No. 4004 on December 21, 2012.

The following sections identify pertinent objectives, policies, implementing actions and related provisions set forth in the Countywide Policy Plan and the Maui Island Plan. It is recognized that both documents are comprehensive in nature and address a number of functional planning areas which apply to all programs, plans, and projects. However, for purposes of addressing General Plan compliance requirements, policy considerations which are deemed most relevant in terms of compatibility and consistency are addressed in this report section.

1. Countywide Policy Plan

With regard to the Countywide Policy Plan, Section 2.80B.030 of the Maui County Code states the following.

The countywide policy plan shall provide broad policies and objectives which portray the desired direction of the County's future. The countywide policy plan shall include:

1. A vision for the County;

2. A statement of core themes or principles for the County; and

3. A list of countywide objectives and policies for population, land use, the environment, the economy, and housing.

Core principles set forth in the Countywide Policy Plan are listed as follows:

- 1. Excellence in the stewardship of the natural environment and cultural resources;
- 2. Compassion for and understanding of others;
- 3. Respect for diversity;
- 4. Engagement and empowerment of Maui County residents;
- 5. Honor for all cultural traditions and histories;
- 6. Consideration of the contributions of past generations as well as the needs of future generations;
- 7. Commitment to self-sufficiency;
- 8. Wisdom and balance in decision making;
- 9. Thoughtful, island appropriate innovation; and
- 10. Nurturance of the health and well-being of our families and our communities.

Congruent with these core principles, the Countywide Policy Plan identifies goals objectives, policies and implementing actions for pertinent functional planning categories, which are identified as follows:

- 1. Natural environment
- 2. Local cultures and traditions
- 3. Education
- 4. Social and healthcare services
- 5. Housing opportunities for residents
- 6. Local economy
- 7. Parks and public facilities
- 8. Transportation options
- 9. Physical infrastructure
- 10. Sustainable land use and growth management
- 11. Good governance

With respect to the proposed actions, the following goals, objectives, policies and implementing actions are illustrative of the project's compliance with the Countywide Policy Plan.

#### PROTECT THE NATURAL ENVIRONMENT

Goal: Maui County's natural environment and distinctive open spaces will be preserved, managed and cared for in perpetuity.

- Objective 1: Improve the opportunity to experience the natural beauty and native biodiversity of the islands for present and future generations.
  - Policy: Preserve and provide ongoing care for important scenic vistas, view planes, landscapes, and open-space resources.
- Objective 2: Improve the quality of environmentally sensitive, locally valued natural resources and native ecology of each island.
  - Policy: Improve the connection between urban environments and the natural landscape, and incorporate natural features of the land into urban design.
- Objective 3: Improve the stewardship of the natural environment.
  - Policies:

WHALE Environmental Services LLC – November 2016

- a. Preserve and protect natural resources with significant scenic, economic, cultural, environmental, or recreational value.
- b. Improve enforcement activities relating to the natural environment.

## IMPROVE PARKS AND PUBLIC FACILITIES

Goal: A full range of island-appropriate public facilities and recreational opportunities will be provided to improve the quality of life for residents and visitors.

- Objective 1: Expand access to recreational opportunities and community facilities to meet the present and future needs of residents of all ages and physical abilities.
  - Policies:
    - a. Protect, enhance, and expand access to public shoreline and mountain resources.
    - b. Promote the development and enhancement of community centers, civic spaces, and gathering places throughout our communities.
- Objective 2: Improve the quality and adequacy of community facilities.
  - Policies:
    - c. Ensure that parks and public facilities are safe and adequately equipped for the needs of all ages and physical abilities to the extent reasonable.
    - d. Maintain, enhance, expand, and provide new active and passive recreational facilities in ways that preserve the natural beauty of their locations.
- Objective 3: Enhance the funding, management, and planning of public facilities and park lands.
  - Policy: Develop partnerships to ensure proper

## 2. Maui Island Plan

The MIP is applicable to the island of Maui only, providing more specific policy based strategies for population, land use, transportation, public and community facilities, water and sewage systems, visitor destinations, urban design, and other matters related to future growth.

As provided by Chapter 2.80B, the MIP shall include the following components:

1. An island-wide land use strategy, including a managed and directed growth plan.

2. A water element addressing supply, demand and quality parameters.

3. A nearshore ecosystem element addressing nearshore waters and requirements for preservation and restoration.

4. An implementation program which addresses the County's 20 - year capital improvement requirements, financial program for implementation, and action implementation schedule.

5. Milestone indicators designed to measure implementation progress of the MIP.

It is noted that Ordinance No. 4004 does not address the component relating to the implementation program. Chapter 2.80B of the Maui County Code, relating to the General Plan, was amended via Ordinance No. 3979 on October 5, 2012, to provide that the implementation program component be adopted no later than one (1) year following the effective date of Ordinance No. 4004. In December 2013 and March 2014, the Maui County Council approved the extensions for approval and adoption of the implementation chapter. At its meeting of May 27, 2014, the Council approved the MIP's implementation component.

The MIP addresses a number of planning categories with detailed policy analysis and recommendations which are framed in terms of goals, objectives, policies, and implementing actions.

These planning categories address the following areas:

- 1. Population
- 2. Heritage Resources
- 3. Natural Hazards
- 4. Economic Development
- 5. Housing
- 6. Infrastructure and Public Facilities

## 7. Land Use

Additionally, an essential element of the MIP is its directed growth plan which provides a management framework for future growth in a manner that is fiscally, environmentally, and culturally prudent. Among the directed growth management tools developed through the MIP process are maps delineating urban growth boundaries (UGB), small town boundaries (SRB) and rural growth boundaries (RGB). The respective boundaries identify areas appropriate for growth and their corresponding intent with respect to development character.

The proposed actions are located on Agricultural and Conservation lands and are not within a growth boundary area. In addition, the proposed trail improvements, and have been reviewed with respect to pertinent goals, objectives, policies and implementing actions of the MIP. A summary of these policy statements are provided below:

## Heritage Resources-Scenic Resources

Goal: 2.5 Maui will continue to be a beautiful island steeped in coastal, mountain, open space, and historically significant views that are preserved to enrich the residents' quality of life, attract visitors, provide a connection to the past, and promote a sense of place.

Objective:

2.5.1 a: greater level of protection for scenic resources.

#### Policy:

2.S.1.b: Identify, preserve, and provide ongoing management of important scenic vistas and open space resources, including mauka-to-makai and makai-to-mauka view planes.

## Infrastructure and Public Facilities-Parks

Goal: 6.6 Maui will have a diverse range of active and passive recreational parks, wilderness areas, and other natural-resource areas linked, where feasible, by a network of greenways, bikeways, pathways, and roads that are accessible to all.

Objective:

6.6.1 more effective, long-range planning of parks and recreation programs able to meet community needs.

Infrastructure and Public Facilities-Water

Goal: 6.3 Maui will have an environmentally sustainable, reliable, safe, and efficient water system.

Objective:

6.3.2 Increase the efficiency and capacity of the water systems in striving to meet the needs and balance the island's water needs.

Policies:

6.3.2.a Ensure the efficiency of all water system elements including well and stream intakes, water catchment, transmission lines, reservoirs, and all other system infrastructure.

In summary, the proposed action is consistent with the above-noted themes and principles of the Countywide Policy Plan and Maui Island Plan.

## D. WAILUKU-KAHULUI COMMUNITY PLAN

The project site is located within the Wailuku-Kahului Community Plan region, one (1) of nine (9) community plan regions established in the County of Maui. Planning for each region is guided by the respective community plan, which is designed to implement the Maui County General Plan. Each community plan contains recommendations and standards which guide the sequencing, patterns and characteristics of future development in the region.

The Wailuku-Kahului Community Plan was adopted by the County of Maui and took effect in 2002. Land use guidelines are set forth by the Wailuku-Kahului Community Plan Land Use Map. The project area is designated within the Agriculture and Conservation land use categories by the Wailuku-Kahului Community Plan Map. The Agriculture category is defined as including uses indicative of areas for agricultural activity which would be in keeping with the economic base of the County and the requirements and procedures of Chapter 205, HRS, as amended. The proposed actions are consistent with the following goals, objectives, and policies of the Wailuku-Kahului Community Plan.

#### ENVIRONMENT

Goal: A clean and attractive physical and natural environment in which manmade developments or alterations to the natural environment relate to sound environmental and ecological practices, and important scenic and open space resources are maintained for public use and enjoyment.

Objective and Policy: Preserve agricultural lands as a major element of the open space setting which borders the various communities within the planning region. The close relationship between open space and developed areas is an important characteristic of community form.

#### CULTURAL RESOURCES

Goal: Identification, protection, preservation, enhancement, and where appropriate, use of cultural practices and sites, historic sites and structures, and cultural landscapes and view planes that:

1. Provide a sense of history and define a sense of place for the Wailuku-Kahului region.

**Objectives and Policies:** 

- Recognize the importance of historically and archaeologically sensitive sites and encourage their preservation through development project review.
- Require development projects to identify all cultural resources located within the project area as part of initial project studies. Further, require that all proposed activity include recommendations to mitigate potential adverse impacts on cultural resources.

#### E. COUNTY ZONING

1. County Special Use Permit Requirement

The project site is designated "Agricultural" and "Conservation" according to Maui County zoning. The purpose of this category is to provide areas for agricultural activity and conservation venues which would be in keeping with the economic base of the Maui County Zoning; and furthermore the requirements and procedures of Chapter 205, Hawai'i Revised Statutes, as amended. For Maui County Zoning, in a phone conversation with the County of Maui, Department of Planning on 8/3/2016, they responded to a question from the consultant regarding allowable uses within Agricultural and Conservation lands. The Department of Planning cited Chapter 205- 2.d.12 as regulating conservation and agricultural land with an soil classification of C, D, E, and/or U and allowing for open area recreational facilities.

Because the project site has a soil classification of both D and E, open area recreational facilities are deemed an allowable use. Similarly, the Maui County Code (MCC) Section 19.30A.050.B.II also allows for open land recreation.

"Open Land Recreation" is defined in Section 19.04.040, MCC, as: "... public or private recreational use or enjoyment, including, but not limited to, parks, picnic grounds, beaches, beach accesses, greenways and **areas for hiking**, fishing, hunting, camping, equestrian activities, and other scenic interests, on a parcel or area of land or water which may be improved but which contains no buildings and which is set, aside, designated, or reserved for such purposes".

The Department of Planning has opinioned previously that the Waihe'e Ridge Trail improvements are a permitted use under the Chapter 205, HRS, and a non-conforming use under the Maui County Code, Chapter 19.30A. As such, no County Special Use Permit is not to be required for the trail improvements since no buildings are proposed.

The Waihe'e Ridge Trail is considered a permitted use under Chapter 205, Hawaii Revised Statutes (HRS). As well, under Maui County Code (MCC) Chapter 19.30A relating to the County's Agricultural zoning district, the trail is deemed to be an existing nonconforming use. In the Final Environmental Assessment for the Boy Scouts of America Base Yard Improvements and Parking Area creation, the trail itself was stated to be a permitted, non-conforming use under Maui County Code. For this reason, a request for the applicability of the need for a County Special Use Permit for the trail upgrades, improvements and structures will be filed for review and determination by the Maui Planning Commission prior to construction beginning. The trail originates on Parcel 1, which is on the leased land of the Boy Scouts of America and was the subject noted in the prior filed Final EA by the Boy Scouts of America.

The underlying land use designations for Parcel are as follows:

- State Land Use Classification: Agricultural/Conservation
- Maui Island Plan: Outside Growth Boundaries
- Wailuku-Kahului Community Plan: Agriculture/Conservation
- County Zoning: Agricultural/Interim

The trail itself is considered a permitted use under Chapter 205, HRS, as well as MCC 19.30A as open area recreation and normally improvements are considered an ancillary use. The Maui Planning Commission will be asked if the improvements are an ancillary use or require a SUP.

## F. COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES

Pursuant to Chapter 20S-A, Hawai'i Revised Statutes, projects should be evaluated with respect to Coastal Zone Management (CZM) objectives, policies and guidelines. The project site is approximately one (1) mile away from the coastline and will not involve work within the County of Maui's Special Management Area (SMA). However, coastal zone management considerations have been reviewed and assessed.

1. Recreational Resources

Objective: Provide coastal recreational opportunities accessible to the public.

a. Improve coordination and funding of coastal recreational planning and management; andb. Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

i. Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

ii. Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;

iii. Providing and managing adequate public access consistent with conservation of natural resources, to and along shorelines with recreational value;

iv. Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

v. Ensuring public recreational use of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources; vi. Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters; vii. Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and viii. Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS

Response: The project site is located inland, approximately one (1) mile from the coastline. Based on the limited scope of the project, there are no anticipated impacts on coastal recreational opportunities or existing public access to the shoreline.

#### 2. Historic Resources

Objective: Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

#### Policies:

a. Identify and analyze significant archeological resources;
b. Maximize information retention through preservation of remains and artifacts or salvage operations,' and
c. Support state goals for protection, restoration, interpretation, and display of historic resources.

Response: A Cultural Impact Assessment (CIA) and an Archaeological Review have been completed for the project. The Cultural Impact Assessment reported that the project area has not been used for traditional cultural purposes within recent times. Similarly, the Archaeological Review concluded that no surface cultural remains or historic surface features were identified. As such, the proposed project is not anticipated to have an adverse effect on any cultural or customary traditions, or on any significant historic properties.

3. Scenic and Open Space Resources

Objective: Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

a. Identify valued scenic resources in the coastal zone management area,'

b. Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline,'
c. Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources,' and d. Encourage those developments which are not coastal dependent to locate in inland areas.

Response: The project site itself is afforded scenic ocean, mountain, and open-space views. The Waihe'e Ridge Trail is surrounded by heavy vegetation which limits its visibility from Kahekili Highway. The Waihe'e Ridge Trail also offers the hikers panoramic views of the Central Maui region and West Maui Mountains. The trail improvement elements of the project will not have an adverse effect on scenic and open space resources.

## 4. Coastal Ecosystems

Objective: Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

a. Improve the technical basis for natural resource management;

b. Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

c. Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and

d. Promote water quantity and quality planning and management practices which reflect the tolerance of fresh
water and marine ecosystems and prohibit land and water uses which violate state water quality standards.

Response: The proposed project involves minimal grading to accommodate the trail improvements. Best Management Practices (BMPs) will be implemented during construction to mitigate potential erosion-related impacts.

#### 5. Economic Uses

Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations. Policies:

a. Concentrate coastal dependent development in appropriate areas;

b. Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area,' and

c. Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:

i. Use of presently designated locations is not feasible,

ii. Adverse environmental effects are minimized, and

iii. The development is important to the State's economy.

Response: The proposed improvements will generate shortterm construction related employment and spending which will benefit the local economy. The proposed actions do not contradict the objectives and policies for economic uses.

6. Coastal Hazards

Objective: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.

Policies:

a. Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards,

b. Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards,

c. Ensure that developments comply with requirements of the Federal Flood Insurance Program,

d. Prevent coastal flooding from inland projects, and

e. Develop a coastal point and nonpoint source pollution control program.

Response: The project site falls within Zone X, an area of minimal flooding, as indicated by the Flood Insurance Rate Map for the County of Maui. BMPs will be implemented during construction to mitigate potential erosion and stormwater impacts.

#### 7. Managing Development

Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

a. Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development,

 b. Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements, and

c. Communicate the potential short and long-term impacts of proposed significant coastal developments early in their lifecycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Response: The Chapter 343, HRS EA involves review by governmental agencies and provides for public comment opportunity

on the project. Applicable State and County requirements will be adhered to in the design and construction of the project.

8. Public Participation

Objective: Stimulate public awareness, education, and participation in coastal management.

Policies:

a. Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;
b. Disseminate information on coastal management issues by means of' educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and

c. Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Response: The project will meet County public awareness, education and participation objectives. Opportunities for agency and public review will be provided as part of the notification, review and comment process required for the EA.

9. Beach Protection

Objective: Protect beaches for public use and recreation. Policies:

a. Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;

b. Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and

c. Minimize the construction of public erosion-protection structures seaward of the shoreline.

Response: The Waihe'e Ridge Trail is located inland, approximately one (1) mile from the shoreline. As a result, there are no anticipated adverse impacts on beach resources.

#### 10. Marine Resources

Objective: Implement the State's ocean resources management plan.

Policies:

a. Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

b. Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

c. Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;

d. Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;

e. Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

f. Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Response: As previously stated, the project site is located inland and away from the ocean. Adverse impacts on marine and coastal resources are not anticipated from the proposed trail improvements.

# IV. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS AND IRREVERSIBLE AND IRRETRIVEABLE COMMITMENT OF RESOURCES

In the short term, the proposed trail improvements project will result in unavoidable construction-related impacts, including light noise impacts generated by construction equipment and activities. In addition, there may be temporary air quality impacts associated with dust generated from site work and exhaust emissions from construction material delivery equipment and vehicles. These noise and air quality impacts will be temporary in nature, occurring only during the construction period, and will be mitigated to the extent practicable through implementation of Best Management Practices (BMPs).

The proposed actions commit a defined area of land for improvements which is already in use for similar activities. Other resources which will be committed in the implementation of the proposed actions include material and fuel resources. The projects will result in short-term beneficial impacts related to temporary construction employment and spending.

#### V. ALTERNATIVES TO THE PROPOSED ACTION

Alternatives to the preferred alternative, which is the proposed action, include the "no action" alternative.

#### A. NO ACTION ALTERNATIVE

As one of the most popular hiking trails on Maui, the Waihe'e Ridge Trail is heavily hiked and utilized. As such, the trail is exhibiting signs of its usage, including but not limited to surface damage, drainage failures, over-vegetation and other factor which pose impact to hiking safety and the environment.

A no action alternative would deny the Division of Forestry and Wildlife the opportunity to Improve the trail for hikers and other users. Similarly, continued use of the trail in its current state represents potential future safety hazards for users of the trail and an economic and liability burden for the County and State.

#### VI. SIGNIFICANCE CRITERIA ASSESSMENT

The proposed actions involve improvements to the Waihe'e Ridge Trail on the Stateowned parcel in Kahakuloa, Maui, Hawai'i. Since the proposed actions will involve the use of County and State funds with improvements and observation platform construction undertaken on State lands, compliance with Chapter 343, Hawai'i Revised Statutes (HRS), and Chapter 200 (Title 11), Hawai'i Administrative Rules, Environmental Impact Statement Rules is necessary. Every aspect of the proposed action, expected primary and secondary consequences, and the cumulative as well as the short-term and longterm effects of the action have been evaluated in accordance with the Significance Criteria of Section 11-200-12 of the Administrative Rules. Discussion of project conformance to the Significance Criteria follows:

# <u>1. Involves all irrevocable commitment to loss or destruction of any natural or cultural resource.</u>

The remote, densely vegetated nature and general topography of the trail results in an area conducive to recreational activities. There are no adverse effects to natural resources anticipated as a result of the project.

Similarly, the mountainous nature of the region provides for a unique and scenic trail experience for hikers who travel from outside the Kahakuloa region to utilize the trail.

As discussed previously in Chapter II, a Cultural Impact Assessment and Archaeological Review has been completed for the proposed project and may be found in the appendixes.

The Cultural Impact Assessment reported that the project area has not been used for traditional cultural purposes within recent times. Similarly, the Archaeological Review concluded that no surface cultural remains or historic surface features were identified. As such, the proposed project is not anticipated to have an adverse effect on any cultural or customary traditions, or on any significant historic properties.

#### 2. Curtails the range of beneficial uses of the environment.

The proposed actions involve lands designated as "Agricultural" and "Conservation" at the State and County levels. As the site contains soils with relatively low productivity ratings, the lands have not been used for agricultural

production apart from cattle grazing on a portion of the State-owned parcel (Parcel).

The proposed improvements are limited in scope and are intended to enhance the existing trail facilities. Based on the foregoing facts, the proposed project will not curtail the beneficial use of the site.

<u>3. Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.</u>

The proposed improvements do not conflict with the State's Environmental Policy and Guidelines as set forth in Chapter 344, Hawai'i Revised Statutes (HRS).

# <u>4. Substantially affects the economic welfare, social welfare, and cultural practices of the community or State.</u>

The proposed improvements will directly benefit the local economy by providing construction and construction-related employment. Therefore, the proposed actions will have a positive short-term effect on the economy. The proposed actions will result in improved trail components for the hikers and other users, as well as improved trail amenities to all who utilize it. These improvements contribute, in a positive way, to the social welfare of the island. Long-term adverse impacts to social welfare and cultural practices are not anticipated.

#### 5. Substantially affects public health.

During the construction period, appropriate best management practices will be implemented to mitigate potential air quality and noise impacts. Following construction, there will be no long-term public health impacts resulting from the proposed actions.

<u>6. Involves substantial secondary impacts, such as population changes or effects</u> <u>on public facilities.</u>

The proposed actions are not anticipated to result in significant adverse secondary impacts. No significant population changes are anticipated as a result of the proposed project. There are no anticipated adverse effects on public

services, such as police, fire, medical, educational, or solid waste collection, as service limits and service capacities will not be affected. <u>7. Involves a substantial degradation of environmental quality.</u>

Construction activities will create temporary short-term nuisances related to noise and dust. Appropriate dust control and noise mitigation measures will be implemented by the contractor to ensure that fugitive dust and noise generated in connection with construction is minimized.

As previously discussed in Chapter II of this EA document, adverse impacts to natural resources and the natural environment are not anticipated.

# 8. Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.

The proposed trail improvements and upgrades are standalone projects to improve the existing trail facilities. As such, the project is not anticipated to cumulatively have a considerable effect upon the environment or involve a commitment for larger actions.

#### 9. Substantially affects a rare; threatened, or endangered species, or its habitat.

As discussed previously in Chapter II, a flora/fauna study has been completed. And may be found in the appendixes.

Based on the results of this study, the project is not expected to have an adverse effect on rare, threatened, or endangered species of flora, fauna, avifauna, or their habitats.

#### 10. Detrimentally affects air or water quality or ambient noise levels.

Construction activities will result in short-term air quality and noise impacts. Best Management Practices (BMPs) for dust control will be implemented to minimize construction-related air quality impacts. Short-term noise impacts will occur primarily from construction material delivery equipment. Noise attenuating equipment, as well as proper equipment and vehicle maintenance and

other BMPs are anticipated to mitigate adverse noise conditions from construction of trail improvement activities. Erosion control measures will mitigate silt and stormwater runoff flowing into downstream properties.

Based on the discussion provided above, the proposed actions are not anticipated to detrimentally affect air, water quality or ambient noise levels.

<u>11. Affects or is likely to suffer damage by being located in an environmentally</u> sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

The project area is not located within any environmentally sensitive areas and, as such, there are no anticipated hazard-related effects as a result of the proposed actions.

<u>12. Substantially affects scenic vistas and view planes identified in county or state plans or studies.</u>

The project site's location, nestled against the windward slopes of the West Maui Mountains, provides picturesque views of the Pacific Ocean and Kahakuloa region with the mountains as a backdrop to the camp. Kahekili Highway is noted by the County as possessing a high significant scenic-resource value. It provides ocean, mountain, agricultural, and island-wide views. The proposed actions will not obstruct views from the trail or from Kahekili Highway. The dense vegetation surrounding the area provides visual screening from Kahekili Highway. As such, the proposed project will not adversely affect scenic view corridors.

#### 13. Requires substantial energy consumption.

The majority of construction-related activities utilize hand operated construction equipment, but there may be short-term electrical energy needs while the projects are in construction for specialized equipment for the platform building. After construction is complete, all equipment will be removed and there will be no energy consumption while the trail is being utilized. As such, this project component is not expected to require substantial energy consumption.

Based on the aforementioned findings, the proposed project will result in a **Finding of No Significant Impact (FONSI)** determination.

#### **VII. LIST OF PERMITS AND APPROVALS**

The following permits and approvals will be required prior to the implementation of the project:

State of Hawai'i

- 1. Chapter 343, HRS compliance
- 2. National Pollutant Discharge Elimination System (NPDES) Permit, as applicable
- 3. Community Noise Permit, as applicable

County of Maui

1. Construction Permits (i.e., grading permit, building permit)

VIII. DISTRIBUTION LIST OF PARTIES TO BE CONSULTED FOR THE DRAFT ENVIRONMENTAL ASSESSMENT;

The following agencies constitute the distribution list for the Draft Environmental Assessment (EA) in order to solicit comments and responses. Agency comments and responses to substantive comments are included in this Final EA.

Office of Conservation and Coastal Lands Kalanimoku Building 1151 Punchbowl St., Room 131 Honolulu, HI 96813

State Conservationist U.S. Department of Agriculture Natural Resources Conservation Service P.O. Box 50004 Honolulu, Hawai'i 96850-0001

Soil Conservationist Natural Resources Conservation Service U.S. Department of Agriculture 77 Hookele Street, Suite 202 Kahului, Hawai'i 96732

Regulatory Branch U.S. Department of the Army U.S. Army Engineer District, Honolulu Regulatory Branch, Building 230 Fort Shafter, Hawai'i 96858-5440

U. S. Fish and Wildlife Service 300 Ala Moana Blvd., Rrn. 3-122 Box 50088 Honolulu, Hawai'i 96813

Comptroller Department of Accounting and General Services 1151 Punchbowl Street, #426 Honolulu, Hawai'i 96813

Department of Agriculture 1428 South King Street Honolulu, Hawai'i 96814-2512

State of Hawai'i Department of Education P.O. Box 2360 Honolulu, Hawai'i 96804

Office of Business Services Department of Education c/o Kalani High School, 4680 Kalanianaole Highway, #T-BIA Honolulu, Hawai'i 96821

Clean Water Branch State of Hawai'i Department of Health 919 Ala Moana Blvd., Room 300 Honolulu, Hawai'i 96814

Health Program Chief State of Hawai'i Department of Health 54 High Street Wailuku, Hawai'i 96793

Environmental Planning Office State of Hawai'i Department of Health Office of Planning 919 Ala Moana Blvd., Suite 312 P. O. Box 2359 Honolulu, Hawai'i 96814

Department of Land and Natural Resources P. O. Box 621 Wailuku, Hawai'i 96793

Fire Department County of Maui Administrator Department of Fire and Public Safety 200 Dairy Road Kahului, Hawai'i 96732

State Historic Preservation Division 601 Kamokila Blvd., Room 555 Kapolei, Hawai'i 96707

County of Maui Department of Housing and Human Concerns One Main Plaza 2200 Main Street, Suite 546 Wailuku, HI. 96793

Department of Parks and Recreation 700 Halia Nakoa Street, Unit 2 Wailuku, Hawai'i 96793

County of Maui Department of Planning 250 South High Street Wailuku, Hawai'i 96793

Office of Environmental Quality Control 235 S. Beretania Street, Suite 702 Honolulu, Hawai'i 96813

County of Maui Police Department 55 Mahalani Street Wailuku, Hawai'i 96793

Office of Hawaiian Affairs 711 Kapiolani Boulevard, Suite 500 Honolulu, Hawai'i 96813

County of Maui Department of Public Works 200 South High Street Wailuku, Hawai'i 96793

County of Maui Department of Environmental Management 2050 Main Street, suite 2B Wailuku, Hawai'i 96793

County of Maui Department of Transportation 200 South High Street Wailuku, Hawai'i 96793

County of Maui Department of Water Supply 200 South High Street Wailuku, Hawai'i 96793

Maui Electric Company, Ltd. P.O. Box 398 Kahului, Hawai'i 96733

Hawaiian Telcom 60 South Church Street Wailuku, Hawai'i 96793

#### x. REFERENCES

County of Maui, 2030 General Plan, Countywide Policy Plan, March 2010.

County of Maui Charter (2003 Edition).

County of Maui, Maui Island Plan, December 2012.

County of Maui, Office of Economic Development, Maui County Data Book 2011.

County of Maui, Wailuku-Kahului Community Plan, December 1987.

Federal Emergency Management Agency, Flood Insurance Rate Map, Community Panel No. 150003 0377E, September 2009.

Hawaii Cooperative Park Unit, Western Region Natural Resources and Research Division,

National Park Service, Hawaii Stream Assessment, A Preliminary Appraisal of Hawaii's Stream Resources, prepared for Commission on Water Management, State of Hawaii, December 1990.

Scorecard, Criteria Air Pollutant Report: Maui County, HI, Available at

http://www.scorecard.org/env-releases/cap/county.tel?fips County Code=15009#air rankings. Accessed 14 December 2012.

SMS, Socio-Economic Forecast: The Economic Projections for Maui County General Plan 2030, Maui County Planning Department, June 2006.

State of Hawaii, Department of Agriculture, Agricultural Lands of Importance to the State of Hawaii, January 1977.

State of Hawaii, Department of Labor and Industrial Relations (DLIR), <u>http://www.hjiwi.org</u>, March 2015.

State of Hawaii, Land Use Commission, Title 15, Chapter 15, Hawaii Administrative Rules, 1997, as amended 2000.

State of Hawaii, Office of State Planning, The Hawaii State Plan, 1991.

University of Hawaii (UH), Land Study Bureau, Detailed Land Classification Island of Maui, May 1967.

University of Hawaii at Hilo, Department of Geography, Atlas of Hawaii, Third Edition, 1998.

U.S. Census Bureau, Census 2010 Redistricting Data, Detailed Tables, Table H-I, Maui County and Maui County Block Groups. Retrieved from http://factfinder2.census.gov/main.html.

U.S. Department of Agriculture (USDA), Soil Conservation Service, Soil Survey of Islands of Kauai, Oahu, Maui, Moloka'i and Lanai, State of Hawaii, August 1972.

## **SECTION THREE**

## COMMENT LETTERS RECEIVED,

## **AND RESPONSES**



DOUGLAS MURDOCK COMPTROLLER

AUDREY HIDANO Deputy Comptroller

#### STATE OF HAWAII DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES

(P)1263.6

P.O BOX 119, HONOLULU, HAWAII 96810-0119

#### SEP 1 4 2016

Mr. Mark Howland WHALE Environmental Services LLC P.O. Box 455 Kahuku, Hawai'i 96731

Dear Mr. Howland:

Subject: Draft Environmental Assessment Waihee Ridge Trail Improvements Kahakuloa, Maui, Hawaii TMK: (2) 3-1-001:001 (2) 3-1-001:028 (2) 3-1-006:001

Thank you for the opportunity to comment on the subject project. We have no comment to offer at this time as the proposed project does not impact any of the Department of Accounting and General Services' projects or existing facilities.

If you have any questions, your staff may call Ms. Dora Choy of the Public Works Division at 586-0488.

Sincerely.

DOUGLAS MURDOCK

c: Ms. Torrie Nohara, DOFAW Mr. Wade Shimabukuro, District Engineer, MDO

DAVID Y. IGE GOVERNOR

## **Response to Comment**

### STATE OF HAWAII – Department of Accounting and General Services

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on September 14<sup>th</sup>, 2016.

We appreciate your support of the project and understand you have no comments at this point. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

Sincerely yours,

Mark Howland COO & Chief Biologist WHALE Environmental Services LLC PO Box 455, Kahuku HI 96731 808-294-9254 www.whalees.com markahowland@hawaii.rr.com DAVID Y. IGE GOVERNOR OF HAWAII

(P)



VIRGINIA PRESSLER, M.D. DIRECTOR OF HEALTH

STATE OF HAWAII DEPARTMENT OF HEALTH P. O. BOX 3378 HONOLULU, HI 96801-3378

In reply, please refer to: EMD/CWB

09012PMHK.16

September 14, 2016

Ms. Torrie Nohara Division of Forestry and Wildlife Department of Land and Natural Resources 1955 Main Street, Room 301 Wailuku, Hawaii 96793

Dear Ms. Nohara:

SUBJECT: Comments on the Draft Environmental Assessment for the Waihee Ridge Trail Improvement TMKs: (2) 3-1-006:001, 3-1-001:028, and 3-1-001:001 Kahakuloa, Island of Maui, Hawaii

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated September 6, 2016, requesting comments on the subject project. The DOH-CWB has reviewed the document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that they also read our standard comments on our website at: http://health.hawaii.gov/epo/files/2013/05/Clean-Water-Branch-Std-Comments.pdf.

- 1. Any project and its potential impacts to State waters must meet the following criteria:
  - a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.
  - b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.
  - c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).
- 2. You may be required to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55).

Ms. Torrie Nohara September 14, 2016 Page 2

Trans.

For NPDES general permit coverage, a Notice of Intent (NOI) form must be submitted at least 30 calendar days before the commencement of the discharge. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the applicable form ("CWB Individual NPDES Form" or "CWB NOI Form") through the e-Permitting Portal and the hard copy certification statement with the respective filing fee (\$1,000 for an individual NPDES permit or \$500 for a Notice of General Permit Coverage). You can open the e-Permitting Portal website located at: <a href="https://eha-cloud.doh.hawaii.gov/epermit/">https://eha-cloud.doh.hawaii.gov/epermit/</a>. You will be asked to do a one-time registration to obtain your login and password. After you register, you can click on the Application Finder tool and locate the appropriate form. You can then follow the instructions to complete and submit the form.

3. If your project involves work in, over, or under waters of the United States, it is highly recommended that you contact the Army Corp of Engineers, Regulatory Branch (Tel: 835-4303) regarding their permitting requirements.

Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may <u>result</u> in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and HAR, Chapter 11-54.

- 4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation.
- 5. It is the State's position that all projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters. Project planning should:

Ms. Torrie Nohara September 14, 2016 Page 3

- a. Treat storm water as a resource to be protected by integrating it into project planning and permitting. Storm water has long been recognized as a source of irrigation that will not deplete potable water resources. What is often overlooked is that storm water recharges ground water supplies and feeds streams and estuaries; to ensure that these water cycles are not disrupted, storm water cannot be relegated as a waste product of impervious surfaces. Any project planning must recognize storm water as an asset that sustains and protects natural ecosystems and traditional beneficial uses of State waters, like community beautification, beach going, swimming, and fishing. The approaches necessary to do so, including low impact development methods or ecological bio-engineering of drainage ways must be identified in the planning stages to allow designers opportunity to include those approaches up front, prior to seeking zoning, construction, or building permits.
- b. Clearly articulate the State's position on water quality and the beneficial uses of State waters. The plan should include statements regarding the implementation of methods to conserve natural resources (e.g., minimizing potable water for irrigation, gray water re-use options, energy conservation through smart design) and improve water quality.
- c. Consider storm water Best Management Practice (BMP) approaches that minimize the use of potable water for irrigation through storm water storage and reuse, percolate storm water to recharge groundwater to revitalize natural hydrology, and treat storm water which is to be discharged.
- d. Consider the use of green building practices, such as pervious pavement and landscaping with native vegetation, to improve water quality by reducing excessive runoff and the need for excessive fertilization, respectively.
- e. Identify opportunities for retrofitting or bio-engineering existing storm water infrastructure to restore ecological function while maintaining, or even enhancing, hydraulic capacity. Particular consideration should be given to areas prone to flooding, or where the infrastructure is aged and will need to be rehabilitated.

Ms. Torrie Nohara September 14, 2016 Page 4

If you have any questions, please visit our website at: <u>http://health.hawaii.gov/cwb</u>, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

alm Wong

ALEC WONG, P.E., CHIEF Clean Water Branch

MHK

 Mark Howland, WHALE Environmental Services LLC [via e-mail <u>markahowland@hawaii.rr.com</u> only]
 DOH-EPO [via e-mail <u>Noella.Narimatsu@doh.hawaii.gov</u> only]

## <u>Response to Comment</u>

#### STATE OF HAWAII – Department of Health

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on September 14<sup>th</sup>, 2016.

We appreciate your support of the project and understand you have comments for us to consider. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

We have included responses to your comments in the Final Ea document and have summarized them here in this response:

- We have addressed the anti-degradation Policy of the State of Hawai'i. Consideration of adherence to that policy can be seen in the Best Management Practices (BMP) document located in the appendixes of the Final EA.
- As there are no receiving waters for discharges in the project area, we do not have a designated use for this project.
- Likewise, since the final point of exit for runoff is percolation within the project area and not reaching any state-listed waters, water quality criteria is met and/or exceeded.
- A NPDES permit will not be required for this project since there are no discharges of wastewater including storm water runoff from the project area to State surface waters. Therefore, there are no requirements for a NOI (notice of Intent) or other forms for this project to be filed with the Department of Health.
- As well, the project does not include work in, over, or under waters of the United States. As such, ACOE Regulatory permits are not required.
- In review of our plans, documents, and BMPS, it should be evident that the project is in compliance with Water Quality Standards. As well, since this is a trail

improvement project of Hawaii's sixth most popular hiking trials, this is a reuse and recycle project that will sustain those water quality standards.

- Stormwater treatment is the vital improvement factor of this project as evident by the plan, the Trail Projection Charts, and the BMPs listed. LIDs and BioEngineering techniques have been featured in this improvement design.
- Our BMP appendix clearly articulate compliance with the State's position on water quality.
- The BMP appendix lists selected and specific approaches that address stormwater treatment standards. These include green building practices and bio-engineering opportunities.

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

Sincerely yours,

Mark Howland COO & Chief Biologist WHALE Environmental Services LLC PO Box 455, Kahuku HI 96731 808-294-9254 www.whalees.com markahowland@hawaii.rr.com

#### STATE OF HAWAI`I DEPARTMENT OF EDUCATION P.O. BOX 2360 HONOLULU, HAWAI`I 96804

OFFICE OF SCHOOL FACILITIES AND SUPPORT SERVICES

September 19, 2016

Mr. Mark Howland WHALE Environmental Services LLC P.O. Box 455 Kahuku, Hawaii 96731

Dear Mr. Howland:

Re: Draft Environmental Assessment Waihee Ridge Trail Improvements

Thank you for the opportunity to comment on the Draft Environmental Assessment (DEA) dated August 2016 for trail improvements to Waihee Ridge on the island of Maui affecting TMK Nos. (2) 3-1-006:001, (2) 3-1-001:028, and 2) 3-1-001:001. Based on our review of the DEA provided, the Department of Education has no comment or concern to offer about the proposed project.

Should you have any questions, please call Roy Ikeda of the Planning Section, Facilities Development Branch at 784-5094.

Respectfully,

Kenneth G. Masden II Public Works Manager

KGM:jmb

c: Torrie Nohara, Division of Forestry and Wildlife, DLNR

## **Response to Comment**

#### STATE OF HAWAII – Department of Education

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on September 19<sup>th</sup>, 2016.

We appreciate your support of the project and understand you have no comments at this point. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

Sincerely yours,

Mark Howland COO & Chief Biologist WHALE Environmental Services LLC PO Box 455, Kahuku HI 96731 808-294-9254 www.whalees.com markahowland@hawaii.rr.com



### DEPARTMENT OF HOUSING AND HUMAN CONCERNS HOUSING DIVISION

ALAN M. ARAKAWA Mayor CAROL K. REIMANN Director JAN SHISHIDO Deputy Director

COUNTY OF MAUI

INC

35 LUNALILO STREET, SUITE 102 • WAILUKU, HAWAII 96793 • PHONE (808) 270-7351 • FAX (808) 270-6284

September 19, 2016

Ms. Torrie Nohara Project Lead DOFAW Trails and Access Specialist 1955 Main Street, Room 301 Wailuku, Hawaii 96793

Dear Ms. Nohara:

#### Subject: Draft Environmental Assessment (DEA) for Waihe'e Ridge Trail, Maui, Hawaii, TMKs: (2) 3-1-006:001, (2) 3-1-001:028 (Parcel 28), and (2) 3-1-001:001 (Parcel)

The Department has reviewed the request for Draft Environmental Assessment (DEA) for the above subject project. Based on our review, we have determined that the subject project is not subject to Chapter 2.96, Maui County Code. At the present time, the Department has no additional comments to offer.

Please call Mr. Veranio Tongson Jr. of our Housing Division at (808) 270-1741 if you have any questions.

Sincerely

BUDDY A. ALMEIDA Housing Administrator

cc: Director of Housing and Human Concerns WHALE Environmental Services LLC

### **Response to Comment**

### COUNTY OF MAUI – Housing Division Department of Housing and Human Concerns

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on September 19<sup>th</sup>, 2016.

We appreciate your support of the project and understand you have no comments at this point. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

Sincerely yours,

Mark Howland COO & Chief Biologist WHALE Environmental Services LLC PO Box 455, Kahuku HI 96731 808-294-9254 www.whalees.com markahowland@hawaii.rr.com DAVID Y. IGE GOVERNOR OF HAWAII



STATE OF HAWAII DEPARTMENT OF HEALTH MAUI DISTRICT HEALTH OFFICE 54 HIGH STREET WAILUKU, HAWAII 96793-3378

September 21, 2016

Ms. Torrie Nohara Trail & Access Specialist Division of Forestry & Wildlife Department of Land & Natural Resources 1955 Main Street, Room 301 Wailuku, Hawaii 96793

Dear Ms. Nohara:

Subject:

Draft Environmental Assessment, Waihee Ridge Trail Improvements Kahakuloa, Maui, Hawaii TMK: (2) 3-1-001:001

Thank you for the opportunity to review this project. We have no comments to offer. It is strongly recommended that the Standard Comments found at the Department's website: <u>http://health.hawaii.gov/epo/home/landuse-planning-review-program/</u> be reviewed and any comments specifically applicable to this project should be adhered to.

Should you have any questions, please contact me at 808 984-8230 or email me at patricia.kitkowski@doh.hawaii.gov.

Sincerely,

atti Kitlenvelei

Patti Kitkowski District Environmental Health Program Chief

c EPO

VIRGINIA PRESSLER, M.D. DIRECTOR OF HEALTH

LORRIN W. PANG, M.D., M.P.H.. DISTRICT HEALTH OFFICER

2

## **Response to Comment**

### STATE OF HAWAII – Department of Health Maui District Health Office

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on September 21<sup>st</sup>, 2016.

We appreciate your support of the project and understand you have no comments at this point. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

Sincerely yours,

Mark Howland COO & Chief Biologist WHALE Environmental Services LLC PO Box 455, Kahuku HI 96731 808-294-9254 www.whalees.com markahowland@hawaii.rr.com ALAN M. ARAKAWA Mayor

WILLIAM R. SPENCE Director

MICHELE CHOUTEAU McLEAN Deputy Director



# COUNTY OF MAUI

September 23, 2016

Mr. Mark Howland WHALE Environmental Services LLC P.O. Box 455 Kahuku, Hawaii 96731

Dear Mr. Howland:

#### SUBJECT: COMMENTS ON DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR THE PROPOSED WAIHE'E RIDGE TRAIL IMPROVEMENTS, WAIHE'E, ISLAND OF MAUI, HAWAII; TMK: (2) 3-1-006:001 & (2) 3-1-001:028 (EAC 2016/0014)

The Department of Planning (Department) is in receipt of the above-referenced document for the proposed Waihe'e Ridge Trail Improvements. The Department understands the proposed action involves upgrades to the trail that will include the following:

- Surface improvements
- Drainage Upgrades
- Vegetative Management
- Upgrades to the existing trail viewing platforms, including the construction of two (2) new observation platforms, and associated structures

Based on the foregoing, the Department provides the following comments in preparation of the Final EA.

- 1. The land use designations for parcel (2) 3-1-001:028
  - a. State Land Use Agriculture
  - b. Maui Island Plan Outside Growth Boundaries
  - c. Community Plan Agriculture
  - d. County Zoning Agriculture

The land use designations for the parcel located at (2) 3-1-006:001, which is found on page 2 of the "Executive Summary," are incorrect. I am attaching the completed Zoning and Flood Confirmation Forms for your reference. For the Final EA, please revise the land use designations throughout the entire document for parcel (2) 3-1-006:001 to reflect the following:

Mr. Mark Howland September 23, 2016 Page 2

The land use designations for parcel (2) 3-1-006:001 are as follows:

- a. State Land Use Agriculture/Conservation
- b. Maui Island Plan Outside Growth Boundaries
- c. Community Plan Conservation/Agriculture
- d. County Zoning Agriculture/Interim
- 2. On page 47, under, "E. County Zoning," there is discussion about the County Special Use Permit Requirement; however, there is also mention about the requirements and procedures of Chapter 205, Hawaii Revised Statutes. Please note that Maui County Zoning is distinct from Chapter 205, Hawaii Revised Statutes. In the Final EA, please correctly identify which permits are under whose jurisdiction.
- 3. The paragraph at the bottom of page 47 says that the Department of Planning opined that the Waihe'e Ridge Trail improvements are a permitted, non-conforming use and as such no County Special Use Permit will be required. Please provide anything to substantiate that determination. Also, if this is in reference to the trail itself, in the Final EA, please make it clear that the trail alone is a non-conforming use.
- 4. On page 14, it says that "the application for County Special Use Permit will be limited to and for the new observation platform(s), as well as all other structural improvements (i.e. railings) on the Waihe'e Ridge Trail, will be filed for review and consideration by the Maui Planning Commission." This conflicts with what was stated on page 47. If this is in reference to the platform structures, please clearly state that a County Special Use Permit will be required for them.
- 5. There appears to be a discrepancy in the project description with regard to the viewing platforms. On page 2 of the "Executive Summary," there is mention of "upgrades to the viewing platforms"; however, on page 2, under, "A. Property Location, Existing Uses, and Land Ownership," there is no mention of existing viewing platforms. In addition, in the "Trail Prescription," on page 6, there is mention of a 40' x 30' viewing platform and on page 9, there is mention of a 20' x 20' viewing platform; however, the plans on page 12 show a 16' x 8' and 16' x 16' viewing platform. For the Final EA, please clarify what is currently present onsite, and what is being proposed with regard to viewing platforms.
- 6. On page 7, in the "Trail Prescription," at begin station 24+51, there is mention of a possible 80-100 foot boardwalk; yet, there is no detail on the boardwalk in the "Summary of Proposed Action." At 21+62, it says boardwalk; however, there is no detail or plans. For the Final EA, please clarify whether there will be boardwalks and include plans.

Mr. Mark Howland September 22, 2016 Page 3

- 7. On page 5, there is a map with abbreviations for proposed trail improvements that are only explained in further detail toward the bottom of the page. For the Final EA, please include a legend for the map to make it much easier to determine what is being proposed.
- 8. In the "Summary of Proposed Action," there is no mention of who will be doing the project improvements. For the Final EA, please indicate whether the proposed trail improvements will be worked on by Department of Land and Natural Resources staff, or will the project go out for bid.
- 9. On page 34, under "Roadways," there is no mention of whether trail-goers will still be allowed to access the park, along with construction workers, or whether they will need to park along the road. In order to gauge whether there will be any impact to roadways please also include an estimated project timeline, any staging information, and whether the trail or parking lot will be closed for a specific period of time.
- 10. Currently, only a summary of the Cultural Impact Assessment (CIA) appears to have been included with the Draft EA. The CIA consists of two (2) interviews, by someone whose family ranched in the area, and by someone who worked at Camp Maluhia nearby. To better determine whether there will be any cultural impacts as a result of the proposed action, for the Final EA, please include the full CIA, which should include any materials reviewed and analyzed that pertain to the study area. Please also include more interviews, specifically conducted with established cultural practitioners and/or natives of the area to be potentially affected by the proposed action.
  - 11. On page 23, an archaeological assessment was to be included as Appendix B; however, the report was not included with the Draft EA. For the Final EA, please include the report. Also include that in their letter dated May 16, 2016, the State Historic Preservation Division commented on the proposed project and determined that no historic properties are affected.
  - 12. There is a discrepancy on how the proposed project will be impacted by climate. On page 4, it says that there are trail stability issues due to the wet climate. On page 17, under "Climate," the average annual rainfall for Waihe'e is 44.65 inches; however, it is concluded that there will be no impact to the proposed project as a result of climate. Please discuss how rain will impact the proposed project, and any erosion control measures to be implemented.
  - 13. On pages 21 and 36, it says that Best Management Practices (BMPs) will be implemented to minimize soil erosion and ensure runoff control. For the Final EA, please discuss what types of BMPs will be utilized.

16/4642 SN

COUNTY OF MAUL DEPARTMENT OF PLANNING One Main Plaza Building 2200 Main Street, Suite 335 Wailuku, Hawaii 96793



DEPT. OF PLANNING Zoning Administration and

Enforcement Division (ZAED) Telephone: (808) 270-7253 SEP 1 2 2016 Facsimile: (808) 270-7634 E-mail: planning@mauicounty.gorRECEIVED

#### ZONING AND FLOOD CONFIRMATION FORM (This section

APPLICANT NAME Tara Furukawa	<b>TELEPHONE 270-7520</b>
PROJECT NAME Proposed Waihe'e Ridge Trail Improvements	E-MAIL tara.furukawa@mauicounty.gov
PROPERTY ADDRESS Waihe'e, Maui, Hawaii	TAX MAP KEY (2) 3-1-001:028
Yes V No Will this Zoning & Flood Confirmation Form be used with a Subdivision Application? IF <u>YES</u> , answer questions A and B below and comply with instructions 2 & 3 below: A) Yes V No Will it be processed under a consistency exemption from Section 10.04 000(D) theorem.	
IF <u>YES</u> , which exemption? (No. 1, 2, 3, 4 or 5)	
<ul> <li>if this will be used with a subdivision application AND the subject property contains multiple districts/designations of (1) State Land Use Districts, (2) Maui Island Plan Growth Boundaries, (3) Community Plan Designations, or (4) County Zoning Districts; submit a signed and dated Land Use Designations Map, prepared by a licensed surveyor, showing the metes &amp; bounds of the subject parcel and of each district/designation including any subdistricts.</li> <li>if this will be used with a subdivision application AND the subject property contains multiple State Land Use Districts; submit a signed and of each district/designation including any subdistricts.</li> <li>if this will be used with a subdivision application AND the subject property contains multiple State Land Use Districts; submit an approved District Boundary Interpretation from the State Land Use Commission.</li> </ul>	
(This section to be completed by ZAF	0)
LAND USE DISTRICTS/DESIGNATIONS (LUD) AND OTHER INFORMA	
STATE DISTRICT: Urban Rural Agriculture Conser	rvation Special Management Area
MAUI	d Growth Area DOutside Growth Boundaries
PLAN Protected Area: 2 Preservation Park Greenbelt Greenv	way Sensitive Land Outside Protected Areas
COMMUNITY PLAN:2 AQORDITURE	(PD)
COUNTY ZONING: And the Distant	Planned
OTHER/COMMENTS:	
FEMA FLOOD INFORMATION:	Project District
FLOOD HAZARD AREA ZONES 3 7 AL	
& BASE FLOOD ELEVATIONS: LONG	Comments (Pg.2)
FI OOD DEVELOPMENT PEDMIT PEOLIPED (7000 ZONE AC	D, FLOOD DEPTH: See
SUBDIVISION LAND USE CONSISTENCY: D Not Consistent (LUDe approacts have NO accessing duranted LUD Map	
(Signature) Not Applicable, (Due to processing under consistency exemption No. [1, [2, [3, [4, [5]).	
Consistent, (LUDs appear to have ALL permitted uses in common).	
Consistent, upon obtaining an SMA, PD, or PH subdivision approval from Planning.	
Consistent, upon recording a permissible uses unilateral agreement processed by Public Works (See Pg.2). NOTES:	
<ol> <li>The conditions and/or representations made in the approval of a State District Boundary Amendment, Community Plan Amendment, County Change In Zoning, SMA Permit, Planned Development, Project District and/or a previous subdivision, may affect building permits, subdivisions, and uses on the land.</li> <li>Please review the Maui Island Plan and the Community Plan document for any goals, objectives, policies or actions that may affect this parcel.</li> <li>Flood development permits might be required in zones X and XS for any work done in streams, gulches, low-lying areas, or any type of drainageway; Flood development permits are required for work in all other zones. Subdivisions that include/adjoin streams, gulches, low-lying areas, or any type of drainageway might require the following designations to be shown on the subdivision map: 100-year flood inundation limits; base flood elevations; drainage reserves.</li> </ol>	
A Subdivisions will be further reviewed during the subdivision application process to verify consistency, unilateral agreement requirements, and the conditions associated with a unitateral agreement [Section 18.04.030.D, Maui County Code]. REVIEWED & CONFIRMED BY:	
Signature)	9/14/16
For: John & Rapacz, Planning Program Administrator, Zoning Administration and Enforcement Division	
S. VALLIFORMISZAED/ZoneFidConf/ZonFidConf_Rev12-13.doc Page 13 of 13	
COUNTY OF MAUL DEPARTMENT OF PLANNING **One Main Plaza Building** 2200 Main Street, Suite 335 Wailuku, Hawaii 96793

6/464 L SN



DEPT. OF PLANNING Zoning Administration and Enforcement Division (ZAED) Telephone: (808) 270-7253 SEP 1 2 2016 Facsimile: (808) 270-7634 E-mail: planning@mauicounty.gov ECEIVED

#### ZONING AND FLOOD CONFIRMATION FORM

	TELEPHONE 270-7520		
Proposed Waihe'e Ridge Trail Improvements	E-MAIL tara.furukawa@mauicounty.gov		
PROPERTY ADDRESS Waihe'e, Maui, Hawaii	TAX MAP KEY (2) 3-1-006:001		
<ul> <li>Yes</li></ul>	be used with a Subdivision Application? tions 2 & 3 below: exemption from <u>Section 18.04.030(B), MCC</u> ? ie 1-lot into 2-lots for all land uses allowed by law):		
<ol> <li>Please use a separate Zoning &amp; Flood Confirmation Form for ea</li> <li>If this will be used with a subdivision application AND the subject (1) State Land Use Districts, (2) Maui Island Plan Growth Bound Zoning Districts; submit a signed and dated Land Use Designation the metes &amp; bounds of the subject parcel and of each district/de submit an approved District Boundary Interpretation from the S</li> </ol>	ch Tax Map Key (TMK) number. act property contains multiple districts/designations laries, (3) Community Plan Designations, or (4) Coun ations Map, prepared by a licensed surveyor, showir signation including any subdistricts. ct property contains multiple State Land Use Districts tate Land Use Commission.		
(This section to be completed b	y ZAED)		
LAND USE DISTRICTS/DESIGNATIONS (LUD) AND OTHER INF	ORMATION: 1 (SMA) Special		
STATE DISTRICT: Urban Rural Agriculture	Conservation Management Area		
MAUI ISLAND Growth Boundary: <sup>2</sup> Urban Small Town Rural D PLAN Protected Area: <sup>2</sup> Preservation Park Greenbelt	Planned Growth Area Qutside Growth Boundaries Greenway Sensitive Land Qutside Protected Are		
COMMUNITY PLAN:2 Conservation / Agri	culture [PD] Planned		
OTHER/COMMENTS:	DISTRICTS Development		
COUNTY ZONING: HONOLOHOVE/ LAFEA M OTHER/COMMENTS: FEMA FLOOD INFORMATION: FLOOD HAZARD AREA ZONES <sup>3</sup> & BASE FLOOD ELEVATIONS: ZONE X FEMA DESIGNATED FLOODWAY For Flood Z FLOOD DEVELOPMENT PERMIT REQUIRED (Zones V, VE	DISTRICTS Development Developm		
COUNTY ZONING: HONOLONE TANK	Development		
COUNTY ZONING:       Hardward Participation         OTHER/COMMENTS:         FEMA FLOOD INFORMATION:         FLOOD HAZARD AREA ZONES         & BASE FLOOD ELEVATIONS:         ZONE         FEMA DESIGNATED FLOODWAY         FOR Flood Z         FLOOD DEVELOPMENT PERMIT REQUIRED (Zones V, VE)         SUBDIVISION LAND USE CONSISTENCY:         Not Applicable, (Due to processing under cr         (Signature)         Interim Zoning, (The parcel or portion of the         4 Consistent, (LUDs appear to have ALL permitted uses in col         4 Consistent, upon obtaining an SMA, PD, or PH subdivision a         4 Consistent, upon recording a permissible uses unilateral agr         NOTES:         1 The conditions and/or representations made in the approval of a State District Bot Zoning, SMA Permit, Planned Development, Project District and/or a previous subdivizion a         2 Please review the Maui Island Plan and the Community Plan document for any goals	Development		
COUNTY ZONING: HONOR TO THER/COMMENTS: FEMA FLOOD INFORMATION: FLOOD HAZARD AREA ZONES <sup>3</sup> ZONE X & BASE FLOOD ELEVATIONS: ZONE X   FEMA DESIGNATED FLOODWAY For Flood Z   FLOOD DEVELOPMENT PERMIT REQUIRED (Zones V, VE SUBDIVISION LAND USE CONSISTENCY: Not Consistent,   Not Applicable, (Due to processing under co (Signature)   Interim Zoning, (The parcel or portion of the   <sup>4</sup> Consistent, (LUDs appear to have ALL permitted uses in cor   <sup>6</sup> Consistent, upon obtaining an SMA, PD, or PH subdivision as   <sup>4</sup> Consistent, upon recording a permissible uses unilateral agr NOTES: 1 The conditions and/or representations made in the approval of a State District Boo Zoning, SMA Permit, Planned Development, Project District and/or a previous subdivi 2 Please review the Maui Island Plan and the Community Plan document for any goals 3 Flood development permits might be required in zones X and XS for any work done development permits might be required in zones X and XS for any work done development permits might be subdivision application process to ve associated with a unilateral agreement [Section 18.04.030.D, Maui County Code]. REVIEWED CONFIRMED BY:	Development		

# COUNTY OF MAUI Department of Planning

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on September 23<sup>th</sup>, 2016.

We appreciate your support of the project and understand you have comments for us to consider. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

We have included responses to your comments in the Final Ea document and have summarized them here in this response:

- Corrections have been made to land use designations in the Final EA. We appreciate the provision of the completed Zoning and Flood Coordination Forms.
- County Zoning corrections have been made as to permit jurisdiction.
- In the prior Final EA filed (Final Environmental Assessment, Camp Maluhia and Related Area Improvements' Kahakuloa, Maui, TMK (2) 3-1-001 :00 1 (por.) and 028 ); the Waihe'e Ridge Trail was listed as a permitting non-conformed use. If in the Final EA application, the minor accessory use of observation platforms is considered by the Department of Planning to rise to the level requiring a Special Use Permit, one will be applied for.
- Corrections regarding the platforms and the suggested boardwalk that was replaced by a sheet drain was upgrade din the trail prescription, document, and drawings.
- Platform sizing has been corrected in the document, trail prescription and drawings to be consistent.
- The trail improvement map has had a legend added.

WHALE Environmental Services LLC – November 2016

- We have indicated in the Summary of Proposed Action that Trails Unlimited LLC will be doing the construction.
- Construction sequencing under Roadways have been detailed.
- Advice under Cultural Impact Assessments has been taken into consideration.
- The archaeological assessment has been added to the Final Ea document.
- We have expanded our discussion on climate effect. As well, the Final Ea includes an appendix containing BMPs.

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

Sincerely yours,



# United States Department of the Interior

FISH AND WILDLIFE SERVICE Pacific Islands Fish and Wildlife Office 300 Ala Moana Boulevard, Room 3-122 Honolulu, Hawaii 96850

In Reply Refer To: 01EPIF00-2016-TA-0505

Ms. Torrie Nohara Trails and Access Specialist Hawaii Department of Land and Natural Resources Division of Forestry and Wildlife 1955 Main Street, Room 301 Wailuku, Hawaii 96793

SEP 2 3 2016

Subject:

Technical Assistance for the Draft Environmental Assessment for Trail Improvements on the Waihee Ridge Trail, Maui

Dear Ms. Nohara:

The U.S. Fish and Wildlife Service (Service) received your letter on September 9, 2016, requesting comments for the draft environmental assessment for the proposed trail improvements on the Waihee Ridge Trail, Maui. The trail improvements address public safety concerns related to hikers and other trail users. Trail improvements associated with the project include surface improvements, vegetative management, upgrading two viewing platforms, trail reroutes, and railing installations all within the current trail corridor.

Based on information you provided and pertinent information in our files, including data compiled by the Hawaii Biodiversity and Mapping Project, there are three federally listed species in the vicinity of the project area: the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), Hawaiian petrel (*Pterodroma sandwichensis*), the threatened Newell's shearwater (*Puffinus newelli*); and a species proposed for listing as endangered, the band-rumped stormpetrel (*Oceanodroma castro*). There is federally designated critical habitat for *Bidens conjunctica and Cyanea asplenifolia* near the top portion of the trail but will not be impacted by this project. The Service recommends the following measures to avoid and minimize project

### Hawaiian hoary bat

The Hawaiian hoary bat is known to occur across a broad range of habitats throughout the State of Hawaii. This bat roosts in both exotic and native woody vegetation and, while foraging, leaves young unattended in "nursery" trees and shrubs. If trees or shrubs suitable for bat roosting are cleared during the Hawaiian hoary bat breeding season (June 1 to September 15), there is a risk that young bats that cannot yet fly on their own could inadvertently be harmed or killed. The Service recommends that woody plants greater than 15 feet tall should not be removed or trimmed during the Hawaiian hoary bat breeding season. Additionally, Hawaiian hoary bats forage for insects from as low as three feet to higher than 500 feet above the ground. When



### Ms. Torrie Nohara

barbed wire is used in fencing, Hawaiian hoary bats can become entangled. The Service therefore recommends that barbed wire not be used for fencing as part of this proposed action.

#### Seabirds

Hawaiian petrels, Newell's shearwaters, and band-rumped storm-petrels (collectively known as seabirds) may transit over the project area when flying between the ocean and nesting sites in the mountains during their breeding season (March through November). Seabird fatalities resulting from collisions with artificial structures that extend above the surrounding vegetation have been documented in Hawaii where high densities of transiting seabirds occur. Additionally, artificial lighting such as flood lighting or for construction work and site security, can adversely impact seabirds by causing disorientation which may result in collision with utility lines, buildings, fences and vehicles. Fledging seabirds are especially affected by artificial lighting and may exhaust themselves while circling the light sources and become grounded. Too weak to fly, these birds become vulnerable to depredation by feral predators such as small Indian mongoose (*Herpestes auropunctatus*), cats (*Felis catus*), and dogs (*Canis familiaris*). We therefore recommend that night work requiring artificial illumination be avoided during the seabird fledging season (September 15 through December 15). Additionally, any external lights associated with the project should be full cut-off, equipped with a motion sensor, or fully shielded so that the light cannot be seen from above.

Implementation of these measures will minimize but does not ensure that take of listed species associated with this proposed action will be fully avoided. If there is a federal action agency funding, permitting, or assisting in the implementation of this project, we recommend that agency consult with the Service to address potential project impacts to listed species pursuant to section 7 (a)(2) of the Endangered Species Act. If there is no federal action agency associated with the project, but impacts to listed species cannot be fully avoided, the project should coordinate with the Service directly pursuant to section 10 (a)(1)(B) of the Endangered Species Act.

Thank you for your efforts to conserve listed species and native habitats. Please contact Fish and Wildlife Biologist William O'Neill (phone: 808-792-9451, email: william\_oneill@fws.gov) if you have any questions or for further guidance.

Sincerely,

Michelle Bogardus Island Team Leader Maui Nui and Hawaii Island

cc: Mr. Mark Howland

## UNITED STATES DEPARTMENT OF THE INTERIOR Fish and Wildlife Service

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on September 23<sup>th</sup>, 2016.

We appreciate your support of the project and understand you have comments for us to consider. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

We have included responses to your comments in the Final Ea document and have summarized them here in this response:

We understand that there is federally designated critical habitat at the top of the trail project area. We recognized that there are three species of concern – the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), Hawaiian petrel (*Pterodroma sandwicensis*), and the threatened Newell's shearwater (*Puffinus newelli*). Additionally we recognize that an additional species proposed for listing as endangered, the band-rumped storm petrel (*Oceanodroma castro*) may be near the project area. And, we understand that the federally designated critical plant habitat for bog beggarticks (*Bidens conjunctica*), and haha ferns (*Cyanea asplenifolia*) exists near the project site.

As such, in the unlikely event any of these species are encountered, the work project will cease operations immediately and advise DOFAW project managers to consult with USFW for proper mitigation approaches.

• There are no plans at this time to remove any trees or shrubs taller than fifteen (15) feet on the project trail during improvement events.

- WHALE Environmental Services LLC November 2016
- There is no barbed wire fencing planned for the project.
- The construction season for this project will be outside the seabird breeding season of March through November.
- There are no artificial structures expanding above the tree line and no artificial lighting will be used for the project. There will be no nighttime construction.

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

Sincerely yours,

Mark Howland COO & Chief Biologist WHALE Environmental Services LLC PO Box 455, Kahuku HI 96731 808-294-9254 www.whalees.com

markahowland@hawaii.rr.com

ALAN M. ARAKAWA Mayor STEWART STANT Director MICHAEL M. MIYAMOTO Deputy Director



MICHAEL RATTE Solid Waste Division ERIC NAKAGAWA, P.E. Wastewater Reclamation Division

#### COUNTY OF MAUI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

2050 MAIN STREET, SUITE 2B WAILUKU, MAUI, HAWAII 96793

September 23, 2016

Ms. Torrie Nohara DOFAW Trails and Access Specialist 1955 Main Street, Room 301 Wailuku, Hawaii 9 6793

#### SUBJECT: WAIHE'E RIDGE TRAIL IMPROVEMENT DRAFT ENVIRONMENTAL ASSESSMENT TMK (2) 3-1-006:001, (2) 3-1-001:028, (2) 3-1-001:001 WAIHEE, WAILUKU, MAUI

We reviewed the subject application and have the following comments:

- 1. Solid Waste Division comments:
  - a. The contractor must apply to the Central Maui Landfill to dispose of construction waste and obtain a project number. Information is available at <u>www.mauicounty.gov</u> or from the web with the inquiry, "Maui County C&D."
- 2. Wastewater Reclamation Division (WWRD) comments:
  - a. There is no County wastewater system in the area of the subject project.

If you have any questions regarding this letter, please contact Michael Miyamoto at 270-8230.

Sincerel

STEWART STANT Director of Environmental Management

xc: Mr. Mark Howland WHALE Environmental Services LLC P,O. Box 455 Kahuku, Hawaii 96731

### COUNTY OF MAUI – Department of Environmental Management Solid Waste Division and Wastewater Reclamation Division

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on September 23<sup>th</sup>, 2016.

We appreciate your support of the project and understand you have comments for us to consider. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

We have included responses to your comments in the Final Ea document and have summarized them here in this response:

- Regarding the Central Maui Landfill project number requirement, please be advise that both the contractor (Trails Unlimited LLC) and the project manager (Nohara, DOFAW) have been consulted on this matter. There will be no construction waste left on site or brought to the landfill for disposal. Waste will consist of empty concrete bags and small trim pieces of wood. DOFAW has a dumpster on site for disposal of those materials.
- As there are no County Wastewater system in the area of the site, porti-johns will be utilized by the contractor if needed.

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

Sincerely yours,

Mark Howland COO & Chief Biologist

WHALE Environmental Services LLC – November 2016

WHALE Environmental Services LLC PO Box 455, Kahuku HI 96731 808-294-9254

www.whalees.com

markahowland@hawaii.rr.com

DAVID Y. IGE GOVERNOR OF HAWAII	ADTE OF HAWA	SUZANNE D. CASE CHARPFRSON DOARD OF LAND AND NATURAL RESOURCES COMMISSION ON WATER RESOURCE MANAGEMENT
	( ) and a	KEKOA KALUHIWA FIRST DEPUTY
of Land and Natural		JEFFREY T. PEARSON, P.E. DEPUTY DIRECTOR - WATER
Departu	SE S	AQUATIC RESOURCES BOATING AND OCEAN RECREATION BUREAU OF CONVEY ANCES COMMISSION ON WATER RESOURCE MANAGEMENT
State of Hawaii	STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES	CONSERVATION AND COASTAL LANDS CONSERVATION AND RESOURCES ENFORCEMENT FORISERING FORESTRY AND WILDLIFE HISTORIC PRESERVATION KAHOOLAWE ISLAND RESERVE COMMISSION
	POST OFFICE BOX 621 HONOLULU, HAWAII 96809	LAND STATE PARKS
Ref: OCCL:LY		CORR: 0A 17-55
MEMORAND	<u>UM</u>	SEP/2 8 2016
TO:	Torrie Nohara, DOFAW Trails and Access Specialist, Maui	
FROM:	Samuel J. Lemmo, Administrator	SIMMO
	Office of Conservation and Coastal Lands	FVIIIC
SUBJECT:	Request for Comments – Draft Environmental Assessment (EA) for Improvements	or the Waihe'e Ridge Trail
TMK:	(2) 3-1-006:001 and 3-1-001:028	

LOCATION: Kahakuloa, Maui, Hawai'i

The OCCL notes that the proposed project appears to be located in the Resource Subzone of the State Land Use Conservation District, however, it is also possible that the proposed project may be located in the Protective Subzone. Further, the proposed project area is located within a portion of the West Maui Forest Reserve. According to the Hawai'i Territory Survey Plat Map No.1008, the West Maui Forest Reserve has been existence since 1915 and therefore, the Waihe'e Ridge Trail could be considered a non-conforming use.

After review of the project, we have preliminarily determined that the proposed improvements related to the repair and maintenance (surface improvements, drainage upgrades, and vegetation management) of the existing Waihe'e Ridge Trail and the installation of new elements (retaining walls, hand rails, and two (2), new viewing platforms) will require a Site Plan Approval (SPA) pursuant to HAR §13-5-22, P-8 STRUCTURES AND LAND USES, EXISTING (B-1) *Demolition, removal, or minor alteration of existing structures, facilities, land, and equipment. Any historic property shall be evaluated by the department for historical significance* and HAR §13-5-22, P-9 STRUCTURES, ACCESSORY (B-1) *Construction or placement of structures accessory to existing facilities or uses.* While we understand that the majority of the improvements are for the maintenance of the trail, we believe that the addition of retaining walls, hand rails, and viewing platforms to an existing, non-conforming trail raises this project up to the level of an SPA. Please keep in mind that this letter does not constitute the Department's final decision regarding the preliminary level of permitting required for the various projects described within the Draft EA. We reserve the right to modify our decision dependent on the actual SPA application that you submit for our review and processing.

Further, it appears that the project may be considered an exempt action pursuant to Hawai'i Revised Statues (HRS), Chapter 343, as amended, and HAR §11-200-8(a)(4) "*Minor alteration in the conditions of land, water, or vegetation.*" Specifically the Exemption List for the Department allows for the following under Exemption Class 4:

- 2. Construction of walkways and pathways, and installation of guard rails, handrails, ramps, and other similar items; and
- 3. *Improvement of existing trails and construction or improvement of boardwalks on existing trails for recreation, education, and management.*

We note that Draft EA has been prepared, however, we believe that it is not adequate for publication at this time. Should you wish to continue pursuing the Environmental Assessment, we would be amendable to enumerating further on this matter if requested.

Should you have any questions regarding this correspondence, please contact Lauren Yasaka of our Office at (808) 587-0386.

cc: Mark Howland, WHALE Environmental Services LLC Chairperson

2

# STATE OF HAWAII Department of Land and Natural Resources – Office of Conservation and Coastal Lands

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on September 28<sup>th</sup>, 2016.

We appreciate your support of the project and understand you have comments for us to consider. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

We have included responses to your comments in the Final Ea document and have summarized them here in this response:

- According to the Department of Planning, County of Maui, the project area is not in a Protective Subzone.
- In the prior Final EA filed (Final Environmental Assessment, Camp Maluhia and Related Area Improvements' Kahakuloa, Maui, TMK (2) 3-1-001 :00 1 (por.) and 028 ); the Waihe'e Ridge Trail was listed as a permitting non-conformed use. If in the Final EA application, the minor accessory use of observation platforms is considered by the Department of Planning to rise to the level requiring a Special Use Permit, one will be applied for.
- After consultation with DOFAW, we are of the opinion that the project is an exempt action under HRS Chapter 343 and HA 11-200-8(a)(4) as *minor alterations in the condition of land, water, or vegetation.* Exemption class 4 allows these activities under item 3.
- We have expanded our discussion on climate effect. As well, the Final EA includes an appendix containing BMPs.

WHALE Environmental Services LLC – November 2016

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

Sincerely yours,

ALAN M. ARAKAWA Mayor

DAVID C. GOODE Director

ROWENA M. DAGDAG-ANDAYA Deputy Director

Telephone: (808) 270-7845 Fax: (808) 270-7955



GLEN A. UENO, P.E., P.L.S. Development Services Administration

> CARY YAMASHITA, P.E. Engineering Division

LESLI L. OTANI, P.E., L.S. Highways Division

COUNTY OF MAUI DEPARTMENT OF PUBLIC WORKS 200 SOUTH HIGH STREET, ROOM NO. 434 WAILUKU, MAUI, HAWAII 96793

October 4, 2016

Ms. Torrie Nohara DOFAW Trails and Access Specialist 1955 Main Street, Room 301 Wailuku, Maui, Hawaii 96793

Dear Ms. Nohara:

#### SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR WAIHE'E RIDGE TRAIL IMPROVEMENT; TMK: (2) 3-1-006:001 AND (2) 3-1-001:028

We reviewed the subject application and have no comments at this time.

If you have any questions regarding this memorandum, please call Rowena Dagdag-Andaya at 270-7845.

Sincerely, ID C. GOODE

Director of Public Works

#### DCG:RMDA:da

xc: Mark Howland, WHALE Environmental Services LLC Engineering Division

S:\DSA\Engr\CZM\Draft Comments\31006001\_31001028\_waihee\_ridge\_trail\_imp\_dea.doc

### COUNTY OF MAUI – Department of Public Works

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on October 4th, 2016.

We appreciate your support of the project and understand you have no comments at this point. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

Sincerely yours,

ALAN M. ARAKAWA Mayor



KA'ALA BUENCONSEJO Director

> BRIANNE L. SAVAGE Deputy Director

**DEPARTMENT OF PARKS & RECREATION** 

700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawaii 96793

(808) 270-7230 FAX (808) 270-7934

October 5, 2016

Ms. Torrie Nohara DOFAW Trails and Access Specialist 1955 Main Street, Room 301 Wailuku, Hawaii 96793

Dear Ms. Nohara:

### SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT – WAIHE'E RIDGE TRAIL (WAILUKU, MAUI, HAWAII)

Thank you for the opportunity to review and comment on the subject project. The Department of Parks and Recreation has no comment at this time, and looks forward to reviewing the Environmental Assessment when it is available.

Should you have any questions or concerns, please feel free to contact me or Robert Halvorson, Chief of Planning and Development, at (808) 270-7931.

Sincerely,

KA'ALA BUENCONSEJO Director of Parks & Recreation

C:

Mark Howland, WHALE Environmental Services, LLC Robert Halvorson, Chief of Planning and Development

KB:RH:csa

### COUNTY OF MAUI – Department of Parks and Recreation

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on October 5<sup>th</sup>, 2016.

We appreciate your support of the project and understand you have no comments at this point. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

Sincerely yours,

ALAN M. ARAKAWA Mayor



DAVID TAYLOR, P.E. Director

> PAUL J. MEYER Deputy Director

#### DEPARTMENT OF WATER SUPPLY COUNTY OF MAUI

200 SOUTH HIGH STREET WAILUKU, MAUI, HAWAII 96793-2155 www.mauiwater.org

October 10, 2016

Ms. Torrie Nohara, Trails and Access Specialist Division of Forestry and Wildlife Department of Land and Natural Resources, State of Hawaii 1955 Main Street, Room 301 Wailuku, Hawaii 96793

Subject: Draft Environmental Assessment (DEA), Waihee Ridge Trail Improvements TMK (2) 3-1-001:001, 3-1-001:028, 3-1-006:001

Dear Ms. Nohara,

Thank you for the opportunity to comment on the Waihee Ridge Trail Improvements DEA. We are pleased to support and endorse the improvement of the Waihee Ridge Trail located within the Central Maui System Waihe'e Aquifer. Protecting the watersheds is a primary concern and the proposed improvements will contribute to watershed preservation.

The detailed trail improvements identified will reduce trail erosion and runoff allowing for a more natural transfer of flowing storm water and a greater contribution to ground water recharge. We are confident that Best Management Practices (including 5 site specific planned BMPs designed to minimize disturbance to the altered areas, required special care with larger equipment, restricted use of herbicides, stabilized grades, created sediment basins, utilized energy dissipaters and constructed other structures designed to divert water) are applied to prevent possible ground water contamination in this Department of Water Supply source and wellhead protection area.

Should you have any questions, contact Audrey Dack at (808) 463-3109 or audrey.dack@mauicounty.gov.

Sincerely,

Dave Taylor, P.E. Director apd

"By Water All Things Find Life"

### COUNTY OF MAUI – Department of Water Supply

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on October 10<sup>th</sup>, 2016.

We appreciate your support of the project and understand you have no comments at this point. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

Sincerely yours,



# OFFICE OF ENVIRONMENTAL QUALITY CONTROL

DAVID Y. IGE GOVERNOR

SCOTT GLENN DIRECTOR

DEPARTMENT OF HEALTH | 235 South Beretania Street, Suite 702, Honolulu, HI 96813 | oeqchawaii@doh.hawaii.gov

(808) 586-4185

October 14, 2016

Torrie Nohara State of Hawai'i Department of Land and Natural Resources Division of Forestry and Wildlife 54 South High Street Wailuku, HI 96793

Dear Ms. Nohara,

SUBJECT: Draft Environmental Assessment (EA) for Waihe'e Ridge Trail

The Office of Environmental Quality Control (OEQC) has reviewed the Draft EA for the subject project and offers the following comments:

- 1. Page 23 notes that "no surface cultural remains or historic surface features were identified." In the Final EA, please include mitigation measures in the event that remains or other culturally significant artifacts are encountered on site.
- 2. The OEQC recommends considering climate change for this and all future projects. Climate change is accompanied by dangerous conditions such as drought, extreme rainfall, flooding, increasingly violent hurricanes, sea level rise, coastal and streambank erosion, immense winter waves, rising ocean temperatures, ocean acidification, and coral bleaching. In the Final EA, as appropriate, please detail any impacts these conditions may have on the project and identify relevant mitigation measures. In particular, show how the proposed improvements will manage extreme stormwater flows. More information can be found at https://www3.epa.gov/climatechange/impacts/islands.html.

Thank you for the opportunity to comment on the Draft EA. We look forward to a response that will also be included in the Final EA. If you have any questions, please contact our office at (808) 586-4185.

Sincerely,

Scott J. Slen

Scott Glenn, Director

cc: Mark Howland, WHALE Environmental Services, LLC

# STATE OF HAWAII Office of Environmental Quality Control

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on October 14<sup>th</sup>, 2016.

We appreciate your support of the project and understand you have comments for us to consider. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

We have included responses to your comments in the Final Ea document and have summarized them here in this response:

- Mitigation measures in the event unreported or undetected cultural remains and historic surface features have been added in the Cultural section.
- We have expanded our discussion on climate effect. As well, the Final EA includes an appendix containing BMPs.

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

Sincerely yours,

DAVID Y. IGE GOVERNOR OF HAWAII



VIRGINIA PRESSLER, M.D. DIRECTOR OF HEALTH

STATE OF HAWAII DEPARTMENT OF HEALTH P. O. BOX 3378 HONOLULU, HI 96801-3378

In reply, please refer to: File:

EPO 16-351

October 17, 2016

Mr. Mark Howland Whale Environmental Services, LLC P.O. Box 455 Kahuku, Hawaii 96731 Email: markahowland@hawaii.rr.com

Dear Mr. Howland:

#### SUBJECT: Draft Environmental Assessment (DEA) for Waihee Ridge Trail Improvements TMK: (2) 3-1-006:001, (2) 3-1-001:028 (Parcel 28)

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your DEA to our office via the OEQC link:

http://oeqc.doh.hawaii.gov/Shared%20Documents/EA\_and\_EIS\_Online\_Library/Maui/2010s/2016-10-08-MA-5B-DEA-Waihee-Ridge-Trail.pdf

We understand from the OEQC publication form project summary that these trail improvements are intended to update the trail to address public safety concerns as related to hikers and/or other trail users through surface improvements, drainage upgrades, and vegetative management.

Related improvements include upgrades to the viewing platforms from the trail, including the construction of two (2) new observation platforms, and associated support structures which are intended to enhance the existing trail system experience and bring the trail up to current trail improvement design standards.

In the development and implementation of all projects, EPO strongly recommends regular review of State and Federal environmental health land use guidance and laws. State standard comments and available strategies to support sustainable and healthy design are provided at: <u>http://health.hawaii.gov/epo/landuse</u>. Projects are required to adhere to all applicable standard comments.

Hawaii's climate is changing. Sea level rise and the associated coastal impacts have the potential to harm an array of natural and built environments in Hawaii. For additional information on projected sea level rise in Hawaii, EPO recommends that you visit the following informative links.

- 1. State of Hawaii Climate Adaptation Portal: <u>http://climateadaptation.hawaii.gov</u>
- 2. University of Hawaii, Manoa, School of Ocean and Earth Sciences and Technology, Coastal Geology Group: http://www.soest.hawaii.edu/coasts/index.html
- 3. US Environmental Protection Agency Climate Impacts on Coastal Areas: <u>https://www.epa.gov/climate-impacts/climate-impacts-coastal-areas</u>

EPO has recently updated the environmental Geographic Information System (GIS) website page. It now compiles various maps and viewers from our environmental health programs. The eGIS website page is continually updated so please visit it regularly at: <u>http://health.hawaii.gov/epo/egis</u>.

Mr. Mark Howland Page 2 October 17, 2016

EPO also encourages you to examine and utilize the Hawaii Environmental Health Portal at: <u>https://eha-cloud.doh.hawaii.gov</u>. This site provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings.

We suggest you review the requirements of the Clean Water Branch (HAR, Section 11-54-1.1, -3, 4-8) and/or the National Pollutant Discharge Elimination System (NPDES) permit (HAR, Chapter 11-55) at: <a href="http://health.hawaii.gov/cwb">http://health.hawaii.gov/cwb</a>. If you have any questions, please contact the Clean Water Branch, Engineering Section at (808) 586-4309 or <a href="http://cleanwaterbranch@doh.hawaii.gov">cleanwaterbranch@doh.hawaii.gov</a>. If your project involves waters of the U.S., it is highly recommended that you contact the Army Corps of Engineers, Regulatory Branch at: (808) 835-4303.

In order to better protect public health and the environment, the U.S. Environmental Protection Agency (EPA) has developed a new environmental justice (EJ) mapping and screening tool called EJSCREEN. It is based on nationally consistent data and combines environmental and demographic indicators in maps and reports. EPO encourages you to explore, launch and utilize this powerful tool in planning your project. The EPA EJSCREEN tool is available at: http://www.epa.gov/ejscreen.

We request that you utilize all of this information on your proposed project to increase sustainable, innovative, inspirational, transparent and healthy design. Thank you for the opportunity to comment.

Mahalo nui loa,

Laura Leialoha Phillips McIntyre, AICP Program Manager, Environmental Planning Office

LM:nn

Attachment 1: Environmental Health Management Web App Snipit of Project Area: <u>http://health.hawaii.gov/epo/egis</u> Attachment 2: Clean Water Branch: Water Quality Standards Map – Maui Attachment 3: Wastewater Branch: Recycled Water Use Map of Project Area Attachment 4: U.S. EPA EJSCREEN Report for Project Area

c: Torrie Nohara, {via email: <u>torrie.l.nohara@hawaii.gov</u>} DOH: DHO Maui {via email only}



Attachment 1: Environmental Health Management Web App Snipit of Project Area: http://health.hawaii.gov/epo/egis





Attachment 4: U.S. EPA EJSCREEN Report for Project Area



#### EJSCREEN Report (Version 2016)



1 mile Ring Centered at 20.957556,-156.527863, HAWAII, EPA Region 9

### Approximate Population: 29

Input Area (sq. miles): 3.14

Waihee Ridge Trail

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile	
EJ Indexes				
EJ Index for PM2.5	N/A	N/A	N/A	
EJ Index for Ozone	N/A	N/A	N/A	
EJ Index for NATA <sup>®</sup> Diesel PM	65	43	64	
EJ Index for NATA <sup>®</sup> Air Toxics Cancer Risk	61	58	77	
EJ Index for NATA' Respiratory Hazard Index	54	49	70	
EJ Index for Traffic Proximity and Volume	13	36	59	
EJ Index for Lead Paint Indicator	52	59	74	
EJ Index for Superfund Proximity	35	44	65	
EJ Index for RMP Proximity	90	73	86	
EJ Index for Hazardous Waste Proximity*	N/A	N/A	N/A	
EJ Index for Water Discharger Proximity	57	74	82	



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

October 17, 2016



.

### EJSCREEN Report (Version 2016)



#### 1 mile Ring Centered at 20.957556,-156.527863, HAWAII, EPA Region 9

Approximate Population: 29 Input Area (sq. miles): 3.14 Waihee Ridge Trail



Sites reporting to EPA			
Superfund NPL	0		
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0		
National Pollutant Discharge Elimination System (NPDES)	0		

October 17, 2016

2/3



#### EJSCREEN Report (Version 2016)



1 mile Ring Centered at 20.957556,-156.527863, HAWAII, EPA Region 9

**Approximate Population: 29** 

Input Area (sq. miles): 3.14

#### Waihee Ridge Trail

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators	1.19						
Particulate Matter (PM 2.5 in µg/m <sup>3</sup> )	N/A	N/A	N/A	9.37	N/A	9.32	N/A
Ozone (ppb)	N/A	N/A	N/A	51	N/A	47.4	N/A
NATA <sup>*</sup> Diesel PM (µg/m <sup>3</sup> )	0.0978	0.149	54	0.978	<50th	0.937	<50th
NATA* Cancer Risk (lifetime risk per million)	28	34	29	43	<50th	40	<50th
NATA <sup>®</sup> Respiratory Hazard Index	0.68	1	28	2	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	0	990	4	1100	2	590	2
Lead Paint Indicator (% Pre-1960 Housing)	0.063	0.16	40	0.24	39	0.3	29
Superfund Proximity (site count/km distance)	0	0.098	29	0.15	13	0.13	16
RMP Proximity (facility count/km distance)	0.41	0.19	89	0.57	65	0.43	72
Hazardous Waste Proximity* (facility count/km distance)	N/A	0.14	N/A	0.14	N/A	0.11	N/A
Water Discharger Proximity (facility count/km distance)	0.16	0.34	39	0.2	64	0.31	53
Demographic Indicators							
Demographic Index	52%	52%	52	47%	59	36%	75
Minority Population	82%	77%	50	58%	73	37%	86
Low Income Population	22%	26%	45	36%	32	35%	33
Linguistically Isolated Population	1%	6%	26	9%	20	5%	47
Population With Less Than High School Education	8%	9%	57	17%	36	14%	41
Population Under 5 years of age	8%	6%	69	7%	64	6%	68
Population over 64 years of age	9%	15%	23	13%	42	14%	32

\* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

+ The hazardous waste environmental indicator and the corresponding EJ index will appear as N/A if there are no hazardous waste facilities within 50 km of a selected location.

#### For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

October 17, 2016

# STATE OF HAWAII Department of Health

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on October 17<sup>th</sup>, 2016.

We appreciate your support of the project and understand you have comments for us to consider. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

We have included responses to your comments in the Final Ea document and have summarized them here in this response:

- We have reviewed the Department's Guideline to Land Use and those recommendations can be found throughout the document.
- We have expanded our discussion on climate effect. As well, the Final EA includes an appendix containing BMPs.

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

Sincerely yours,

Subject: REQUEST for COMMENTS for Draft EA for Waihee Ridge Trail Improvements, Island of Maui, Hawaii
From: "Paahana, Jessie K POH" <Jessie.K.Paahana@usace.army.mil>
Date: 11/7/2016 11:47 AM
To: "torrie.l.nohara@hawaii.gov" <torrie.l.nohara@hawaii.gov>,

"markahowland@hawaii.rr.com" <markahowland@hawaii.rr.com>

Good Morning,

You requested comments on the State EA for the DOFAW proposed Waihee Ridge Trail Improvements, Island of Maui, Hawaii dated September 6, 2016. Page 21 indicates the presence of an intermittent stream crossing the Waihee Trail at the 2.0 mile point. Please be advised that Section 404 of the Clean Water Act requires that a DA permit be obtained for the discharge of dredged and/or fill material into waters of the U.S., including wetlands and navigable waters of the U.S, prior to conducting the work (33 U.S.C. 1344).

If you would like substantive comments from this agency, please provide information regarding potential waters of the U.S. including wetlands that may be impacted as a result of the proposed trail improvements. Your project has been assigned Dept of the Army file no. POH-2016-00207. Please reference this number in all future correspondence with this office concerning your project.

Mahalo, Jessie

----

Jessie K Paahana, Biologist Honolulu District, US Army Corps of Engineers Regulatory Office Building 230 Fort Shafter, Hawaii 96858-5440 ph: 808.835.4107

For more information regarding the Regulatory Program at the Honolulu District, please visit our website at <a href="http://www.poh.usace.army.mil/Missions/">http://www.poh.usace.army.mil/Missions/</a> /Regulatory.aspx. Please direct all general inquiries to the Regulatory Office central email account at <a href="http://www.poh.usace.army.mil">CEPOH-RO@usace.army.mil</a> or via phone at (808) 835-4303.

You are encouraged to provide comments on your experience with the Honolulu District Regulatory Office by accessing our web-based customer survey form at <a href="http://corpsmapu.usace.army.mil/cm\_apex/f?p=136:4:0">http://corpsmapu.usace.army.mil/cm\_apex/f?p=136:4:0</a>.

No virus found in this message. Checked by AVG - <u>www.avg.com</u> Version: 2015.0.6201 / Virus Database: 4664/13371 - Release Date: 11/08/16

# HONOLULU DISTRICT, US ARMY CORPS OF ENGINEERS Regulatory Office – file # POH-2016-00207

On behalf of the State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife; as their consultants for the trail components on the Waihe'e Ridge Trail – WHALE Environmental Resources LLC thanks you for responding to the DRAFT Environmental Assessment on November 8<sup>th</sup>, 2016.

We appreciate your support of the project and understand you have comments for us to consider. Please be assured that your letter is included in the FINAL Environmental Assessment document slated for release after November 8<sup>th</sup>. At that time, a copy of the FINAL EA will be transmitted to you, or may be viewed in the Office of Environmental Quality Control's *Environmental Notice*, in which a link to view the Final EA will be available to download the document.

We have included responses to your comments in the Final EA document and have summarized them here in this response:

- We have corrected our narrative on page 21-22 on the intermittent stream presence. Our information from the USGS maps was incorrect and from field examination, it is obvious as a ridge trail (on the backbone of a ridge) that the intermittent stream shown on USGS maps is indeed from field inspection 250' 300' below the ridge line so the statement that there was a crossing is incorrect and has been revised in the final EA submission.
- As such, no DA permit is required. The BMP narrative and plans shown in the appendix demonstrate that no discharge to navigable waters of the US is proposed and that no runoff will reach the intermittent stream below the work area.
- As well, though WHALE Environmental Services LLC is limited in its contract to the State of Hawaii DOFAW to assembling documentation for the EA permit; we would like to offer that our firm and its predecessor are premier wetlands biologists. We do not write EA documentation without having working field knowledge of sites.

We have visited the work area and would like to confirm that there are no discharges to any wetlands or waters of the U.S. Our comments follow:

- We have delineated over 20,000 wetland areas on our 35+ year career as environmental consultants. Our experience ranges over 43 states including many areas in Hawaii. One project in fact was to represent the Maui Audubon Society to protect the wetlands of the lower reaches of the Waihe'e Stream environ during the application of the Waihe'e Golf Course to expand from 9 holes to 18 holes.
- Our inspection that supplements DOFAW's evaluation of the work area for fauna and flora. Their report indicates no presence of wetlands or navigable waters. As one of the nation's leading wetlands biologists, our inspection detected no hydric soils, hydrophilic vegetation or stationary hydrology or within 150' of the work area. Our comment from a past EA done for site was brought forward and is indeed an error that there is a crossing.
- Our field inspection complements DOFAW. This is a ridge trail from which dikes that hold water are 250'-500' below a top of the ridge trail. Dikes may overfill during rainfall periods and develop downstream intermittent flows.
- Univocally, we would like to have the ACOE note that there are not any defined channels, no defined banks, no sustained rainfall, no hydrophilic vegetation, no hydric soils, no presence of hydrology that would meet the ACOE 3-parameter wetlands delineation approach for the work area,

Univocally, we have included our Chief Biologist – Mark Howland's 2016 resume which should demonstrate the expertise of the review above. WE state that no waters of the US will be affected by this project which is exhibited in our BMP narrative found in the Final EA submission.

Again, our *Mahalo nui loa* for your response. If you have any questions, please do not hesitate to contact us.

WHALE Environmental Services LLC – November 2016

Sincerely yours,

# Mark Howland Principal Program Manager

57-101 Kuilima Drive #23W Kahuku HI 96731 808-294-9254

markahowland@hawaii.rr.com

### **Education**

B.S. Biology – Southeastern Massachusetts University (now UMASS Dartmouth) M.S. Public Affairs with concentration in Environmental Policy – UMASS Boston

### **Certifications/Professional Training**

<u>Certified Project Manager</u>, Natural Resource Management and Land Rehabilitation; NEPA Specialist and Pollution Investigator under 21E, Phase Levels 1-3; Wetlands and Wildlife Biologist; EA, EIR, and EIS development; BioMimicry Designer; Erosion Control Professional, Stormwater Mitigation Expert; Aquaculture and Hydroponics Specialist, Senior Principal Engineer- Environment, Senior Program Manager/Group Leader; CEO, COO and Principal Office Manager.

### Awards/Recognition

Winner of EPA Environmental Technology Innovator Award for erosion control product development in 1999 and stormwater mitigation design in 1998. EPA Environmental Merit Award in 2000. Business Development Leader selected by State and Federal Government for Trade Missions to France, England, Northern Ireland, Ireland, Germany, Japan, China and Australia to represent the environmental industry. ACECH Design Award 2012 for pollution mitigation design.

### Years of Experience

30+

### **Security Clearance**

LEVEL: Confidential, DoD CAD card issued for Army/Air Force work

#### **Professional Summary**

Technical, Management and Cooperative Abilities and Skills

#### Staff Management, Contracts and Budgets

Office management, executive policies, budgetary planning and processing, grant and contract development, employee hiring and staff supervision. Familiarity with Army, Marine, and Air Force contracting. Current responsibility includes performance management of staff of 14, development of materials, documents, briefs and handouts, as well as equipment, and budgets. Immediate past budgetary responsibility was in excess of \$22 million. Have managed staffs as large as 33 employees, and projects with \$25-100 million budgets. Public Policy experience (State Representative) in the Legislature (\$30 billion budget) and Municipal (Selectman) levels (\$18 million budget). Program Management with both immediate staff supervision and with remote located technical teams/individuals for assembling projects for client fulfillment. Interactive environmental contract experience with the military (Army, Air Force, Marines) and decades of experience in the environmental field.

#### **NEPA Experience**

NEPA documentation, permit application and investigative studies with preparation and review. Federal work with the USDA/NRCS, DoD/Army, Air Force, ACOE, EPA and other federal agencies. State Agencies work in the Northeast U.S., Florida and Hawai'i such as here in Hawai'i with the HDOT, HDOH CWB, HDOH HEER, DNLR, CZM, and ENV. Private NEPA work for utility companies such as L3 Communications, MFS Network Technologies, Verizon, ComElectric and others. Local work with C&C of Honolulu agencies such as HART, DPP, ENV. Comparable experience with counterpart agencies in states from Maryland to Maine (Northeast corridor) and Florida. Environmental Compliance (Qa/Qc) for base operations with the Army and Air Force.
### Natural Resource Management

Natural resource management, wetland delineations, wildlife habitat studies, environmental impact studies, environmental assessments, environmental baseline studies, coastal studies, wetland replication and restoration services, wetland species nursery management, wetland and wildlife protection products, experience in land rehabilitation practices, wildlife biology, botany, forestry and other types of applied ecology. All work environments from tropics to alpine. Ability to work in rough terrain under extreme weather conditions. Project count over the last three decades in this field in excess of 25,000 studies conducted by self or under my direction as owner of firm(s).

#### **Communications and Public Relations**

Ability to make public presentations on technical issues and policy directives. As a Selectman and State Representative, attended, conducted, organized and presented public hearings, seminars, organizational forums and Q & A sessions. As a Manager, Business Owner and Corporate Group Leader, responsibility was for client interactions, client presentations, public presentations, community outreach and technical presentations. Interaction with community groups, federal, state and local agencies, DoD decision makers, State and Federal legislative bodies and committees. Example is the presentation of a Lesson Learned PowerPoint demonstration to the North Shore Neighborhood Board on behalf of the U.S. Army U.S. Garrison Hawai'i on advances in stormwater and erosion control methods used during Army land rehabilitation efforts.

#### Hazardous Materials Coordination

Spill prevention plans, along with pollution prevention studies, and hazardous materials and waste mitigation. 21Es, Phase I and Phase II hazardous materials studies and worked on projects where environmental remediation activities were conducted serving as the site overseer and controlling the hazardous materials testing regime. Experienced in characterizing soil, air and water HazMat incidents.

#### **Stormwater Mitigation and Erosion Control**

Drainage calculations, erosion control designs and products, stormwater mitigation designs and products, slope and bank stabilization designs and products, Master Stormwater Mitigation Plans, Storm Water Pollution Prevention Plans (SWPPP), erosion control monitoring plans, mitigation monitoring plans (MMP), Best Management Practices (BMP) plans.

#### **Sustainability**

Environmental audits, energy audits and lighting inventories, lumen analysis, sustainability studies, baseline environmental management systems, identify and research sustainability initiatives as related to energy, water, waste, design, sourcing, decision-making and marketing/education. Prioritized implementation of sustainability projects to maximize cost savings and green marketing promotion. Developed grant application to support sustainability initiatives.

#### Renewable Energy – Wind, Solar, Biomass and innovations

Experience in renewable energy source selection of wind, solar or biomass based on need, client preference and siting. Familiar with large wind and small wind systems as well as solar thermal and solar photovoltaic. Environmental permitting, environmental impacts and regulatory compliance. Work with energy balancing systems such as harmonic filters, sensors, timers, etc...Fatal Flaw or Critical Issues Analysis and siting reviews. Onshore and Offshore experience. Public involvement and baseline studies for wildlife issues, habitat mapping, modeling, visual impact analysis and mitigation and monitoring plans.

# **Permitting**

Prepared applications and support documentation for all environmental permits such as shoreline setback variances, noise permits, special management area permits, CZM and floodplain permits, 404/401 permits, MS4 approvals, NPDES applications, Notice of Intents, Records of Environmental Consideration, Requests for Determinations, EA, EIR and EIS etc...

# Horticulture and Crop Technology

Experience with a variety of crop technologies. Expertise in aquaculture, hydroponics and traditional greenhouse operations. Grew up in traditional greenhouse operations business with a wide variety of plant and shrub species such as geraniums, poinsettias, chrysanthemums, annuals, perennials, herbs and more. Owner and Operator of New England's largest wetland plant nursery with over 400 species cultivated from seed or cuttings. Owner and Operator of aquaculture operations for trout and prawn species. Owner and operator of hydroponics facilities often integrated with aquaculture operations in an aquaponics setting with species such as strawberries, mache lettuce, haricot vert green beans, oyster mushrooms and over 500 other cultivars. Experienced with Green Roof Technology, diverse growing systems, water management and a host of other operational parameters of growing systems.

#### **Biomimicry Design**

Biomimicry principles offer "fresh architectural solutions" for landscapes such as coastal areas susceptible to flooding. Biomimicry is using designs that draw inspiration from the intricate ways that plants and animals have adapted to their situations over hundreds of millions of years. Award-winning ecodesigns expertise using Biomimicry principles. Award winning designer of BioFence <sup>™</sup> – the biodegradable siltation fence and the Howland Swale <sup>™</sup> – the EPA award winning stormwater mitigation design presented by VP AI Gore. 2013 ACECH award for pollution mitigation design in Hawaii for dry dock copper and zinc discharges mitigation.

# **Geographical Information Systems**

Experience with geographical information systems such as ESRI/ArcMap, GPS usage of (GIS) and GPS (Trimble) equipment. Have a working knowledge and experience with a variety of computer software and technologies, including GIS software. Developed skills in data collection, use of geographical position systems (GPS), and database development.

# Marine Environment Experience

Experience with coastal environs such as dock and pier studies, shellfish inventories, beach erosion mitigation designs. Associate member of New England Fisheries Development Council and Aquaculture Coordinator and Public Outreach Coordinator for the New England Fisheries Steering Committee. Worked with many fisheries trade groups, fishermen organizations, fish processors, vessel operators, Coast Guard, NMFS, NOAA and state agencies. Sample project was an EIS for the undersea fiber optic cable from Green Hill Beach in Rhode Island to London for habitat impact, current impact, vessel interference, maintenance issues and more...

# Aquaculture and Hydroponic Experience

Operator and Manager of Aquaculture and Hydroponics operations. Experience with the culture of over 400 species including but not limited to trout, prawns, oysters, mussels, haricot vert, mache lettuce, strawberries, etc... all with integrated aquaponic systems.

#### Greenscaping and BioEngineering

Experience with environmental appraisal and design enhancement of land and properties. Designed environmental improvements for water management, land maintenance, aesthetics appeal and environmental correctness. Work on resort properties such as hotels and golf courses to design green roofs, songbird gardens, stormwater gardens, porous pavements, wildlife buffer and research zones and greenscaping maintenance alternatives to grass. Considered one of the nation's top experts in stormwater bioengineering designs for pollution mitigation at residential, commercial and governmental facilities. Complete project management from visionary design to concept development to implementation to post-construction review. Cost appraisal of both implementation costs and value-added bioengineering's present and future values. Sample project was as the lead design consultant for WED Enterprises (Disney) for "*The Land*" exhibit at EPCOT Center, Florida and environmental assessment consultant for Disney Imagineering in Tokyo Disney, Japan; EuroDisney, France and future hotel/resort sites in Kauai and South Carolina.

#### **Policy**

Ability to work with diverse issues that may not fall under established practices or guidelines. Ability to resolve complex issues by working with stakeholder organizations and to find creative solutions to land use requirements with environmental compliance and conservation goals. Written and oral communication skills. Have the ability to work independently with limited supervision. Board of Health Chairman, Soil and Land Conservation Zoning Board Chairman, Police Commissioner. Personnel Board member.

#### **Present Experience**

Present – COO/Chief Biologist, WHALE Environmental Services, LLC, North Shore, Oahu 2009-present

<u>Professional Duties</u> - wetland and wildlife expert, aquatic design, environmental and energy audits and inventories, land rehabilitation specialist, erosion control and stormwater mitigation specialist and environmental design and planning.

*Current 2014-2016 project(s)*: Environmental Audit for Turtle Bay Resort; Environmental Coordination Services for Environmental Management System implementation at Turtle Bay Resort. Energy Audit and Implementation; EIS for Biomass facility siting; Energy Audits for HECO DR program; and private firm energy audits. DLNR West Maui Coral Reef Study. Named Conservation Champion of Turtle Bay Resort in May 2014. Waimea Valley Environmental and Energy Coordination Services. DOFAW Phase I Keana Point, NELHA DBEDT Biota and Benthic Study, HDOA/ABC Phase I 77 acres Dole Foods; OHA Energy Consultant; Leidos Contract for NEPA Office Development; C&C of Honolulu DoD Project Coordinator for Community Interaction, HDOT – A Wildlife Hazard Assessment, Kalaeloa Airport, DOFAW – Waihee Ridge Trail EA

#### **Selected Previous Experience**

#### Hawaii Business Development and Program Manager, URS 2013-2014

<u>Professional Duties</u> – Responsible for URS Business Development interests in Federal Interactions. Dual role serving as Project Manager and Program Manager for URS awarded contracts. Client interaction, technical expertise and subject matter expert for various projects and project team review and supervision. Key services provided to DoD clients such as Navy, Army, Marines and Air Force; and federal agencies such as USFW, NRCS, EPA, FAA, NOAA and NMFS.

#### Division Manager for Environmental & Planning Services, URS, Honolulu Hawaii. 2012-2013

<u>Professional Duties</u>—Principal-in-Charge to manage the URS Honolulu Office staff in the Environmental & Planning Services division. Responsibility to manage federal, state, local and private projects. Develop and implements strategic marketing plans with proposal preparation and presentation to the government, industrial and private market sectors. Significant HEPA and NEPA interactions along with state and federal agency regulatory compliance. Environmental and Planning Division leadership for project teams conducting environmental compliance, site assessment & remediation, GIS support services, environmental sciences, sustainability, planning and military solutions. Supervise team leaders, responsible for the day-to-day operations of the group comprised of project managers, technical specialists and junior level planners. Responsible for hiring, staff utilization, group sales goals, mentoring, financial control, quality assurance and business development and marketing.

<u>Permits Coordinator</u>, Honolulu Authority for Rapid Transportation (HART), Honolulu, Oahu – Honolulu Rail Transit Project 2011-2012

<u>Professional Duties</u> – Coordinated the Permits Program at HART, responsible for oversight of all 12,000+ permits for the Oahu Rail Project including but not limited to environmental permits such as shoreline setback variances, noise permits, special management area permits, CZM and floodplain permits, 404/401 permits, MS4 approvals, NPDES applications, etc... Also responsible for general construction permitting along with coordination with contractor resident engineers, regulatory agencies on City and County, State and Federal levels and other affected parties. Familiar with Oracle's Primavera P6 Enterprise Project Portfolio Management and scheduling and CMS Contracts Management System. HART HazMat liaison and auditor for Phase I, Phase II and Hazardous Materials (HazMat) studies and submittals.

#### **Selected Previous Projects**

#### Program Manager, NEPA Specialist WHALE Environmental Services LLC

Project Name: Technical Assistance to Air Force Natural Resources Program Company work was performed for: U.S. Air Force/TEAM Integrated Engineering, LLC *Hickam Air Force Base, Oahu August 2009 – August 2010* 

Professional Duties - Managed TEAM IE's Global Engineering, Integration and Technical Assistance (GEITA) contract. Provided and supervised NEPA and NHPA personnel at the Air Force's Natural Resources Program at Hickam Air Force Base. Support, assist, and facilitate implementation of regulatory environmental programs. Provided expertise in the preparation of environmental baseline studies, environmental audit of joint basing requirements, environmental permits, and coordination with historical and architectural needs. Coordinate and monitor NEPA efforts. Ensure Air Force interests are represented and composed of the following: real estate site review and planning, and interaction with consultants, and federal and government civil servants of US Air Force agencies and others. Wrote Environmental Baseline Studies and Joint Base Pearl Harbor/Hickam Environmental Base Closure Plan under an AFCEE \$230,000 contract.

#### **Selected Previous Projects**

Senior Principal Engineer - Environment, ITAM Coordinator, Directorate of Planning, Training, Mobilization, and Security (DPTMS) U.S. Army, Schofield Barracks Company work was performed for: General Dynamics Informational Technology at Schofield Barracks, Kahuku Training Area, South Range, East Range, Kunia Training Area, Makua Training Area, Dillingham Air Field, Pohakuloa Training Area. Coordination with Marine Training Programs at Camp Smith and Kaneohe Base.

> Professional Duties - Managed the U.S. Army's Hawaii Garrison's Integrated Training Areas Management (ITAM) program, coordinated, executed, and assisted in all ITAM program components, including Land Rehabilitation and Management (LRAM), Range and Training Land Assessment (RTLA), Training Requirements Integration (TRI), Sustainable Range Awareness (SRA), and Geographic Information Systems (GIS). Direct, support, assist and facilitate implementation of regulatory environmental programs. Provided expertise in the preparation of scopes of work for land inventory and monitoring, land rehabilitation projects and management, environmental awards, and training/environmental integration requirements. Prepared Independent Government Cost Estimates (IGCEs), Statements of Work (SOWs) and Requests for Statement of Qualifications (SOQs). Selected firms for contracts based on submissions. Coordinate and monitor NEPA efforts that affect the Directorate of Planning, Training, Mobilization and Security (DPTMS) and other military agencies in the region. Ensure DPTMS interests are represented and composed of the following: 5 year Master Planning Cycles, real estate site review and planning, and interaction with DPW Facilities, USAGHI, Kaneohe Marine Base Hawaii, consultants, and federal and government civil servants of US Army agencies and others. Coordinate mitigation and workarounds between users (DPTMS) and federal agencies such as EPA, NRCS, and ACOE. Coordinated permitting activities with State of Hawaii DOH. Conduct basic environmental assessments, environmental impact statements, records of environmental consideration, review permit approvals, and file notice of intents. Provided information to support installation command decisions. Worked with military training schedules to help insure that training lands are available in sufficient guality and land status to successfully accomplish the requested training. Experience in land management of over 153,000 acres of US Hawaii Army training lands on Oahu and the Big Island. Reviewed NEPA documents, assists in project scoping efforts, updates program management modules and provides expertise and assistance to the DPTMS Range Division Office staff. Coordinates with the USAGHI Installation environmental staff to assist the Installation land managers in making informed land management decisions and coordinating military land use requirements. Sought new funding sources for Army land restoration projects. Succeeded in acquiring \$22 million for new projects.

#### **Selected Previous Projects**

Land Rehabilitation and Maintenance Coordinator (LRAM), Directorate of Planning, Training, Mobilization, and Security (DPTMS) U.S. Army, Schofield Barracks Company work was performed for: Colorado State University's Center for Environmental Management of Military Lands (CEMML) at Schofield Barracks, Kahuku Training Area, South Range, East Range, Kunia Training Area, Makua Training Area, Dillingham Air Field, Coordination with Marine Training Programs at Kahuku Training Area for Marines from Kaneohe Base. August 2007-August 2008

<u>Professional Duties -</u> Support, assist, and facilitate implementation of regulatory environmental programs. Provided expertise in the preparation of scopes of work for land rehabilitation projects and management, and training/environmental integration requirements. Coordinate and monitor NEPA efforts that affect DPTMS and other military agencies in the region. Ensure DPTMS interests are represented with interaction with DPW Facilities, USAGHI, Kaneohe Marine Base Hawaii, consultants, and federal and government civil servants of US Army agencies and others. Coordinated permitting activities with State of Hawaii DOH and Section 106 consultations. Conduct basic environmental assessments, environmental impact statements, records of environmental consideration, review permit approvals, and file notice of intents. Provided information to support installation command decisions. Worked with military training schedules to help insure that training lands are available in sufficient quality and land status to successfully accomplish the requested training. Reviewed NEPA documents, assists in project scoping efforts, updates program management modules and provides expertise and assistance to the DPTMS Range Division Office staff.

#### **Other Sample Projects**

#### Program Manager, Chief Biologist, Environmental Research Corps

# Company work was performed for: Kiewit Pacific

## Drum Road, Kawailoa, Oahu

January 2008-April 2010

Project: October 2002 - November 2004

Environmental Consultant responsible for the preparation of General Best Management Plan (BMP) plan for \$39 million dollar Army Corps of Engineers Drum Road construction project. Duties included field investigations of site-specific BMP needs for erosion control needs, design, stormwater mitigation needs as exhibited by the development of a Storm Water Pollution Prevention Plan (SWPPP), and NEPA permit narratives. Also responsible for QA/QC for BMP implementation by Kiewit Pacific.

#### Owner and Chief Biologist, Environmental Research Corps, Freetown MA 1977-2010

(Firm was sold in 2010, and my new co-ownership is with WHALE Environmental Services, LLC) Services provided: Natural Resource Planning, wetland delineations, wetlands mitigation, wildlife habitat studies, environmental permitting, land management applications, stream restoration designs, habitat evaluation procedures, data collection and analysis, habitat management and restoration, land condition trend analysis, land and water inventories, ecosystem restoration plans, GPS data capture and analysis, GIS development and mapping, NEPA Documents, Environmental Impact Statements, Environmental Assessments, categorical exclusions, record of environmental consideration, programmatic documentation, public meeting and agency interaction, stormwater management, erosion control designs and watershed management.

#### **Other Sample Projects**

# Owner/Operator, BioMass Farms

Company work was performed for: P A Landers

Wetland Replication - Carver Massachusetts

Cultivated, transplanted and matured over 400 wetland species for use in a ten acre wetland restoration project. Worked at establishing multi-functional wetlands with all three plant layers – herbaceous, shrub and tree as well as establish correct hydrology and soil regimes. Species induced obligates, facultative wet and facultative species as well as upland species of trees and plants for buffer and wildlife enhancement. Installation of erosion control measures such as BioFence – biodegradable siltation fencing, and Curlex – slope stabilization erosion blankets. Soil enhancements such as mycorizzae

fungi, moisture retention agents, organic fertilizers, pest deterrents were employed.

#### **Other Sample Projects**

# **Owner/Operator**. Environmental Research Corps

Company work was performed for: IONICS

Saline Marine Environment Mitigation, Bermuda

Project: October 1999 - January 2000 Design/Construct of a saline mitigation structure for a desalinization plant in Bermuda. IONICS processed seawater to create fresh water for drinking purposes resulted in a waste flow of byproduct of extreme salinized waters. With the use of salt-loving species with large bio-uptakes such as rosemary, successfully reduced high salt levels in discarded desalinization waters back to natural seawater levels. Also completed the EIS for that discharge and the placement and permitting of an under-lagoon fiber optic cable to tie control of the system to the main desalinization plants EMS.

## **Other Sample Projects**

## **Owner/Operator, New England AguaFarms, Inc.**

Company work was performed for: Shaw's Supermarkets Rhode Island & Massachusetts

Cultivation of rainbow and brown trout to specific market size for supermarkets sales of farm to table fish species. Designed and erected in-store holding tanks for rainbow trout to insure freshness and the ability to provide a source for "trout en blue" a gourmet dish that requires an less-than-an-hour fish to create a reaction with the protective gelatinous cover on the fish skin reacting with vinegar to turn "blue". Complete design and implementation of aeration and filtrations systems.

# **Other Sample Projects**

# **Owner/Operator**, Environmental Research Corps

Company work was performed for: Hull Wind

Massachusetts Project: 1998 - 2000 Services to regard siting for the town's first modern turbine. Design of Nature Park and environmental walkway. Environmental permitting. Review of RFP for turbine manufacturer selection. Visual and noise impact analysis. Environmental Impact Statement preparation.

# **Other Sample Projects**

# Owner/Operator, WHALE Environmental Services LLC

Company work was performed for: Turtle Bay Resort

Environmental and Energy Audit: Environmental Coordination Services for sustainability implementation, Kahuku, HI Conducted Environmental Audit using EPA's 7 parameter method for evaluation. Expanded audit to detail energy aspects including lighting inventory, runtime analysis and lumen analysis. Assisted in the selection of renewable energy sources such as Solar PV and Bio Carbonization Units. Completed financial analysis of energy implementation designs and efforts. Prepared feasibility studies for various energy and water management scenarios.

# **Other Sample Projects**

Program Manager, Chief Biologist, Environmental Research Corps

Company work was performed for: WorldCom/MFS Network Technologies Northeast US Corridor Project: January 1998-April 2000

Project: February 2011 -present

Project: 1980 - 1983

Environmental Consultant responsible for the preparation of all wetlands delineations (2132 locations), wildlife habitat studies and environmental impact statements for fiber optic cable placement of the 1200 mile EZ toll system in New Jersey and the main fiber optic cable East coast backbone line from Washington DC to Green Hill Beach, Rhode Island to London England. Responsible for all federal, state and county/municipal permitting for cable trenching, directional bores and undersea placement.

Sample of Services provided by Environmental Research Corps/WHALE Environmental Services LLC that formed the basis for company contracts on over 25,000 projects.

Array of Services	
Wetland Delineations	Wetland Design & Computer Modeling
Wetlands Replication & Plantings	Wetlands Restoration & Mitigation
Wetlands Maintenance & Management	Water Quality Monitoring
Expert Witness	Site Walks and Public Hearings
Riverfront Area Delineations	Environmental Impact Reports
Natural Resource Inventories	Wildlife Habitat Designs
Refuge Construction & Habitat Enhancement	Vernal Pool Certification
Endangered Species Review & Wildlife Checklists	Water Gardens Creation
Specialized Plantings and Seed Mixtures for Wildlife	Wildlife Area Evaluations
Wildlife Mitigation Products & Barriers	Sources for Wildlife Enhancing Materials
Preliminary Assessment of Pollution	Calculations of Pollution Potential
Review of Federal and State Files	Design of Mitigation Structures
Environmental Audits & Sustainability Reports	Silt and Sediment Control Products
Specialists in Constructed Wetlands for Clean-up	Wetland Impact Solutions
Constructed Wetlands for Stormwater Runoff	Stormwater Calculations and Computation
Review of Stormwater Designs	Verification of Site Development Modeling
Inventory of Stormwater Runoff Products	Water Saving Products
Specialists in Commercial Pollution Mitigation	Specialists in Residential Subdivision Runoff
Narratives for regulatory submission on erosion	Erosion Potential Calculations and Computation
Review of Erosion Control Plans	Inventory of Erosion Control Products
Specialists in Bank Stabilization	Leaders in Erosion Control Designs
Coastal and Inland Wetlands Solutions	Coastal and Inland Bank Stabilization
Dock and Pier Impact Studies	Shellfish Inventories
Maintenance & Management of Planted Areas	Permitting and As-Built Narratives
Design of replication/restoration areas	Invasive Species and Weed control
Detailed investigations of hydrology and soil types	Energy Audits and Inventories

# **APPENDIX ONE**

# **DESCRIPTION OF THE FLORA AND FAUNA**

# **BIOLOGICAL IMPACT**

# DESCRIPTION OF THE FLORA AND FAUNA – Biological impact of the Waihe'e Ridge trail corridor improvements

Date: April 15, 2016

# **DEFINITION OF SURVEYED IMPACT AREA:**

This review defined the "Impact area" for the trail improvements as being either the existing Waihe'e Ridge Trail corridor, and in addition the proposed trail reroutes with expected impact of 10' width. Observations of fauna included taxa heard, seen or physically on the impact area. Flora impacts were defined as affected plants in the reroute areas, and or so close to the existing trail improvements, that they could be expected to be physically impacted by improvement work activities. Ten Hawaiian native tree or shrub species were highlighted as species to be especially avoided by the during the improvement work.

#### FAUNA:

In the morning observation period (0930a.m. - 1230p.m.) 15 bird species, 4 arthropod species, and two molluscs were observed in the proposed impact area. All species observed were non-native taxa, except three species – 2 species of birds, and one butterfly species (bolded in the list).

Only one bird, the overwintering Pacific golden plover (*Pluvialis fulva*) or *kolea* was physically on the impact area (the existing trail). All other bird species were seen, or heard, in the near environs.

It is very unlikely that any fauna would be affected, except perhaps temporarily displaced during any work action. No rare native or endangered species of any taxon were observed in the proposed work site.

SCIENTIFIC NAME	COMMON NAME	STATUS
BIRDS		
ARDEIDAE (Egrets)		
Bubulcus ibis	cattle egret	non-native
PHASIANIDAE (Pheasants, peacocks)		
Francolinus francolinus	black francolin	non-native
Pavo cristatus	common peafowl	non-native
CHARADRIIDAE (Plovers)		
Pluvialis fulva	kolea (Pacific golden plover) native	

COLUMBIDAE (Doves, Pigeons)		
Streptotelia chinensis	spotted dove	non-native
Geopelia striata	barred dove	non-native
MUSCICAPIDAE (Old-world Insect eaters)		
Cettia diphone	Japanese bush-warbler	non-native
Leiothrix lutea	Red-billed leiothrix	non-native
STURNIDAE (Mynas, starlings)		
Acridotheres tristis	Common myna	non-native
ZOSTEROPIDAE (White-eyes)		
Zosterops japonicus	Japanese white-eye	non-native
THRAUPIDAE (Tanagers)		
Paroaria cristata	red-crested cardinal	non-native

FRINGILLIDAE (Finches and Hawaiia	in Honeycreepers)	
Carpodacus mexicanus	house finch	non-native
Himatione sanguinea	'apapane	native
Cardinalis cardinalis	Northern cardinal	non-native
ESTRILDIDAE (Old-world Finches)		
Lonchura atricapilla	chestnut mannikin	non-native
Lonchura punctulata	nutmeg mannikin	non-native
MOLLUSCS		
Deroceras spp.	slug (?name)	non-native
Veronicella cubensis	Cuban slug	non-native
Veronicella leydigi	black slug	non-native
ARTHROPODS		
LEPIDOPTERA (Butterflies, moths)		
Pieris rapae	cabbage butterfly	non-native
Vanessa cardui OR V. virginicus	painted lady	non-native
Agraulis vanillaeus	Gulf fritillary	non-native
Vanessa tameamea	pulelehua (Kamehameha Butterfly)	native

# FLORA

The vegetation of the affected project area consists primarily of non-native weedy grasses, herbaceous plants, and to a lesser extent various shrubs and trees. The vegetation along the existing Waihe'e Ridge Trail, beginning with the elevation approximately at "the second bench" and higher, included more of the native Hawaiian species detected on the survey. No lasting impacts to the native vegetation of the improvement area is expected, or necessary.

A total of 101 plant species were recorded during the survey as either inside or immediately bordering the area of impact. Non-native plant species comprised 88% of the total; 12% were

native species. Of the 12% native species: Six species, five ferns and only one tree, are endemic to the Hawaii; and six species, all ferns, are indigenous native plants. It is likely that some minimal, non-life-threatening, amount of stem or leaf/frond damage may occur to some of the endemic or indigenous native species during the work. In order to reduce any lasting impact to native flora ten native species 'of note' along the alignment were identified, and for which they could be worked around, or completely avoided, during the trail improvement work. These particular native species 'of note' comprise the tree ferns, and diverse scattered native tree and shrub species – the contractor will be provided with photographs (from the trail) identifying these plant species so they may be avoided.

#### PLANTS ON THE WAIHEE RIDGE TRAIL IMPROVEMENTS ALIGNMENT, MAUI

KEY:	
* alien	
+ endemic	
# indigenous	
SCIENTIFIC NAME	COMMON NAME
Pteridophytes:	
BLECHNACEAE	
*Blechnum appendiculatum_Willd.	Palm Fern
+Sadleria cyatheoides Kaulf.	'Ama'u
CYATHEACEAE	
+Cibotium glaucum (Sm.) Hook. & Arn.	Hapu'u pulu
+Cibotium menziesii Hook.	Hapu'u 'i'i
DENNSTAEDTIACEAE	
+Pteridium aquilinum (L.) Kuhn var. decompositum (Gaudich.) F	R. M. Tryon Kilau
ULEICHENIACEAE	
#Dicranopteris linearis (Burm. f.) Underw. f. linearis	Uluhe

+Diplopterygium pinnatum (Kunze) Nakai

## Uluhe lau nui

#### LINDSAEACEAE

#Sphenomeris chinensis	(L.) Maxon	Pala'a
------------------------	------------	--------

#### LOMARIOPSIDACEAE

*Nephrolepis brownii (Desv.) Hovencamp & Miyamoto	Asian sword fern
#Nephrolepis cordifolia (L.) C. Presl	Kupukupu
#Nephrolepis exaltata (L.) Schott sbsp. hawaiiensis W.H. Wagner	Ni'ani'au

#### LYCOPODIACEAE

#Palhinhaea cernua (L.) Carv. Vasc. & Franco	Wawae'iole
#Phlegmariurus phyllanthus (Hook. & Arn.) R.D. Dixit	

#### POLYPODIACEAE

*Phymatosorus grossus	(Langsd. & Fisch	) Brownsey	Laua'e
-----------------------	------------------	------------	--------

#### PSILOTACEAE

#Psilotum nudum (	(L.) P. Beauv.
-------------------	----------------

#### THELYPTERIDACEAE

\*Christella parasitica (L.) H. Lev.

#### **Gymnosperms:**

#### AURACARIACEAE

\*Araucaria columnaris (Forst.) Hook.

Moa

#### Dicots:

### ANACARDIACEAE

\*Schinus terebinthifolius Raddi

#### APIACEAE

\*Centella asiatica (L.) Urb.

Asian pennywort

Balloon plant

#### ASCLEPIDACEAE

\*Asclepias physocarpa (E. Mey.) Sclecht.

#### ASTERACEAE

*Ageratina adenophora (Spreng.) R. King & H. Robinson	Maui pamakani
*Ageratina riparia (Regel) R. King & H. Robinson	Hamakua pamakani
*Ageratum conyzoides L.	
*Bidens pilosa L.	Spanish needle
*Conyza bonariensis (L.) Cronq.	Hairy horseweed
*Crassocephalum crepidioides (Benth.) S. Moore	
*Cyanthilium cinereum (L.) H.Rob.	Little ironweed
*Elephantopus mollis Kunth *Emilia fosbergii Nicolson	
*Hypochoeris radicata L.	Gosmore
*Lapsana communis L.	Nipplewort
*Sigesbeckia orientalis L.	St. Paul's wort
*Sonchus oleraceus L.	Pualele
*Senecio madagascariensis Poir.	Madagascar fireweed
*Synedrella nodiflora (L.) Gaertn.	
*Verbesina encelioides (Cav.) Benth. & Hook.	
*Youngia japonica (L.) DC	Oriental hawkweed

#### CONVOLVULACEAE

#Ipomoea indica (J. Burm.) Merr.

#### EUPHORBIACEAE

\*Aleurites moluccana (L.) Willd.

#### FABACEAE

*Chamaecrista nictitans (L.) Moench	Partrid
*Desmodium incanum DC	Spanis
*Desmodium triflorum (L) DC	Tick o
*Indigofera suffruticosa Mill.	Uprig
*Macroptilium lathyroides (L.) Urb.	Cowp
*Mimosa pudica L.	Hilah
*Neonotonia wightii (Wight & Arnott) Lackey	Glyc
*Senna alata (L.) Roxb.	Cand

LAURACEAE \*Persea americana Mill

#### LYTHRACEAE

\*Cuphea carthagenesis (Jacq.) Macbr.

## MALVACEAE

\*Triumfetta semitriloba Jacq.

Tarweed

Sacramento bur

Koali 'awa

Kukui

ige pea

sh clover

clover

ght indigo

pea

nila

ine

lebush

Avocado

#### MELASTOMATACEAE

*Clidemia hirta (L.) D.Don	Koster's curse
*Tibouchina herbacea (D.C.) Cogn.	Cane tibouchina

#### MELIACEAE

\*Toona ciliata M. Roem.

#### MORACEAE

\*Ficus microcarpa L.fil.

#### MYRTACEAE

*Eucalyptus botryoides Sm.	Bangalay
*Eucalyptus robusta Sm.	Swamp mahogany
*Eucalyptus saligna Sm.	Sydney bluegum
*Melaleuca quinquenervia (Cav.) S. T. Blake	Paperbark
+Metrosideros polymorpha Gaudichaud	'Ohi'a
*Psidium cattleianum Sabine	Strawberry guava
*Psidium guajava L.	Common guava
*Syzygium cumini (L.) Skiels	Java plum

#### OXALIDACEAE

\*Oxalis corniculata L.

#### PASSIFLORACEAE

\*Passiflora edulis Sims

Australian red cedar

Chinese banyan

Yellow wood sorrel

Passionfruit

#### PHYLLANTHACEAE

\*Phyllanthus debilis Klein ex Willd..

#### PLANTAGINACEAE

\*Plantago lanceolata L.

\*Plantago major L.

#### POLYGALACEAE

\*Polygala paniculata L.

#### ROSACEAE

\*Rubus rosifolius Sm.

#### RUBIACEAE

\*Spermacoce assurgens Ruiz & Pav.

#### SOLANACEAE

#Solanum americanum Mill..

#### VERBENACEAE

\*Verbena littoralis Kunth

#### **Monocots**

#### AGAVACEAE

\*Cordyline fruticosa (L.) A. Chev.

#### Niuri

Narrow-leaf plantain

#### Common plantain

Rootbeer plant

Thimbleberry

Buttonweed

Popolo

Vervain

Ti leaf

## CYPERACEAE

\*Cyperus rotundus L.

# Nut sedge

#### ORCHIDACEAE

*Phaius tankarvilliae	(Banks ex L'Her.) Blume	Monk's hood orchid
*Spathoglottis plicata	Blume	Phillipine ground orchis

# POACEAE

*Andropogon virginicus L.	Broomsedge
*Axonopus compressus (Sw.) P. Beauv.	Broad-leaf carpetgrass
*Axonopus fissifolius (Raddi) Kuhlm.	Narrow-leaf carpetgrass
*Cenchrus purpureus (Schumach.) Morone	Napier grass
*Chloris barbata (L.) Sw.	Swollen fingergrass
*Cynodon dactylon (L.) Pers.	Bermuda grass
*Digitaria ciliaris (Retz.) Koeler	Henry's crabgrass
* Digitaria violescens Link	Violet crabgrass
*Eleusine indica (L.) Gaertn.	Wiregrass
*Eragrostis pectinacea (Michx.) Nees	Carolina lovegrass
*Eremochloa ophiuroides (Munro) Hackel	Centipede grass
*Megathyrsus maximus (Jacq.) Simon & Jacobs	Guinea grass
*Melinis minutiflora P. Beauv.	Molasses grass
* Melinis repens (Willd.) Zizka	Natal redtop
*Paspalum conjugatum Bergius	Hilo grass
*Paspalumu dilataum Poir	Dallis grass
* Paspalum paniculatum L.	Arocillo
*Paspalum scrobiculatum L.	Ricegrass

*Paspalum urvillei Steud.	Vasey grass
*Sacciolepis indica (L.) Chase	Glenwood grass
*Setaria parviflora (Poir.) Kerguelen	Yellow foxtail
*Sporobolus africanus (Poir.) Robyns & Tournay	Smutgrass
*Urochloa mutica (Forssk.) T.Q. Nguyen	California grass

# ZINGIBERACEAE

*Hedychium flavescens Roscoe	Yellow ginger
*Zingeber zerumbet (L.) Roscoe ex Sm.	Shampoo ginger

# **APPENDIX TWO**

# ARCHAEOLOGICAL FIELD ASSESSMENT

# DESCRIPTION OF CULTURAL IMPACT INTERVIEWS

# **TCP ARCHIVAL RESEARCH**

DAVID Y. IGE GOVERNOR OF HAWAII





#### STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION KAKUHIHEWA BUILDING 601 KAMOKILA BLVD, STE 555 KAPOLEI, HAWAII 96707 SUZANNE D. CASE CHAIRPERSON BOARD OF LAND AND NATURAL RESOURCES COMMISSION ON WATER RESOURCE MANAGEMENT

> KEKOA KALUHIWA FIRST DEPUTY

JEFFREY T. PEARSON DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES BOATING AND OCEAN RECREATION BUREAU OF CONVEYANCES COMMISSION ON WATER RESOURCE MANAGEMENT CONSERVATION AND RESOURCES ENFORCEMENT ENGINEERING FORESTRY AND WILDLIFE HISTORIC PRESERVATION KAHOOLAWE ISLAND RESERVE COMMISSION LAND STATE PARKS

May 16, 2016

#### MEMORANDUM

TO:	Scott Fretz, Maui District Manager State of Hawaii, DLNR Division of Forestry and Wildlife Via email to: <u>Scott.Fretz@hawaii.gov</u>
	Morgan Art
FROM:	Morgan E. Davis, Lead Archaeologist Maui Section Historic Preservation Division

SUBJECT:Chapter 6E-8 Historic Preservation Review<br/>Early Consultation for the Waihe'e Ridge Trail Maintenance Project<br/>Kahakuloa Ahupua 'a, Wailuku District, Island of Maui<br/>TMK (2) 3-1-006:001 (por.)

Thank you for the opportunity to comment on the aforementioned project, which we received on May 9, 2016. The Division of Forestry and Wildlife (DOFAW) is proposing alterations to an existing trail managed by the Na Ala Hele trails (NAH) program.

This parcel has not been subject to a comprehensive archaeological inventory survey. Historic properties are known in the surrounding area. On April 15, 2016 I conducted a limited trail survey accompanied by members of DOFAW and NAH. The existing trail is clear and heavily used; recent storms have created a safety hazard and resulted in a number of visitor rescues. The conditions were muddy but the trail was open and survey lines were present. We were accompanied by a member of the ground crew who confirmed the locations of potential trail alternate routes, which were walked during a four hour period.

No historic properties were identified within the existing or proposed trail re-route paths. Therefore, we determine that there will be **no historic properties affected** by the proposed trail maintenance project. Please contact me at (808) 243-4641 or <u>Morgan.E.Davis@hawaii.gov</u> if you have any questions or concerns regarding this memorandum.

Log No: 2016.01113 Doc No: 1605MD01 Archaeology



# TCP Hawai'i, LLC

# Documenting Traditional Cultural Properties of Hawai'i Preserving and Restoring Cultural and Natural Resources of Hawai'i

August 22, 2016

To: Mark Howland (via email) WHALE Environmental Services, LLC P.O. Box 455 Kahuku, HI 96731

# Re: Summary of Two Interviews Conducted in Support of a Cultural Impact Assessment for an HRS Chapter 343 EA for Proposed Improvements to the Waihe'e Ridge Trail

Aloha Mark,

In response to your request sent to me via email on August 13, 2016, and taking into consideration additional information you subsequently sent via email, I conducted two (2) phone interviews in partial fulfillment of a Cultural Impact Assessment (CIA) supporting this project's Environmental Assessment (EA) process.

On 8/17/16, I interviewed Mr. David "Buddy" Nobriga. On 8/22/16, I interviewed Mr. Ed Tamanaha. The pages that follow describe the results of these interviews, including short biographical sketches of the two interviewees.

In general, neither of the two interviewees identified any cultural resources that would be adversely impacted by the proposed project. Both men support the trail improvement and agree the project will result in safer trail experience for its users.

Please contact me if you have any questions about this document.

With aloha,

Christopher M. Monahan, Ph.D. Principal, TCP Hawai'i, LLC 333 Aoloa St., #303 Kailua, HI 96734 (808) 754-0304 mookahan@gmail.com

# INTERVIEW WITH MR. DAVID ("BUDDY") NOBRIGA – 17 AUGUST 2016

Chris Monahan interviewed Buddy Nobriga by phone at around 11:00am on 8/17/16.

# **BIOGRAPHIC SKETCH**

A life-long resident of Maui, whose grandfather, Antone Nobriga, came to the island from Portugal (in 1886) when Hawai'i was still a kingdom (ruled by King David Kalākaua), Mr. David ("Buddy") Nobriga was born in Waihe'e in 1926. Buddy Nobriga is in the Paniolo Hall of Fame (inducted in the class of 2001). Buddy's grandfather (Antone Nobriga) originally came to the islands to work for the Wailuku Sugar Company, later leasing 700 acres in Kahakuloa and founded Nobriga's Ranch. Buddy Nobriga learned how to be a cowboy from his grandfather, father and uncles. In addition to serving as the CEO of Nobriga's Ranch, Buddy Nobriga also served his country as an Army sergeant; and, later, became the Chairman of the Board of Maui Soda Works. He served on the West Maui Soil & Water Conservation District for 50 years, and has received many awards in the business and public service community on Maui. He officially retired from Maui Soda Works several years ago.

# **METHODS**

After introducing myself, and explaining my connection to the project, including the State's need to complete a Cultural Impact Assessment in order to satisfy the requirements of an Environmental Assessment, I asked Mr. Nobriga if he would like to receive project information via email (e.g., project area maps, engineering drawings and/or narrative details). He declined, and I asked if it was okay to simply have a discussion by phone. He agreed to this approach.

# MR. NOBRIGA'S CONCERNS AND COMMENTS

In general, Mr. Nobriga had no specific concerns about adverse impacts to any cultural resources in the proposed (Waihe'e Ridge Trail Improvements) project area. In fact, he supports the trail improvements because they will increase the health and safety of its users.

He did have concerns about an area near the trailhead, downslope of the trail improvements, where he leases land to graze his cattle and parks some of his vehicles. He supports the recent addition of a new gate at the bottom of the trail area, but says he still occasionally finds trespassers inside this gated area.

Mr. Nobriga supports the trail improvement project, and does not know of any historic properties, archaeological sites or other cultural resources in or adjacent to the project area.

# INTERVIEW WITH MR. ED TAMANAHA – 22 AUGUST 2016

Chris Monahan interviewed Ed Tamanaha by phone at around 8:45am on 8/22/16.

# **BIOGRAPHIC SKETCH**

Ed Tamanaha currently serves as Camp Maluhia (Boy Scout Camp) Ranger in Waihe'e uka. He is in charge of outdoor programs and activities for campers accessing the mauka portion of Waihe'e Valley, up to Camp Maluhia. His family is from Maui Island.

# **METHODS**

After introducing myself, and explaining my connection to the project, including the State's need to complete a Cultural Impact Assessment in order to satisfy the requirements of an Environmental Assessment, I asked Mr. Tamanaha if he would like to receive project information via email (e.g., project area maps, engineering drawings and/or narrative details). He declined, and I asked if it was okay to simply have a discussion by phone. He agreed to this approach. I asked him specifically if he had any concerns about cultural resources along the trail that might be adversely impacted by the project.

# MR. TAMANAHA'S CONCERNS AND COMMENTS

In general, Mr. Tamanaha had no specific concerns about adverse impacts to any cultural resources in the proposed (Waihe'e Ridge Trail Improvements) project area. In fact, he enthusiastically supports the trail improvements because they will increase the health and safety of its users; the campers he works with use the trail all the time when they are up in the valley.

He did mention that he occasionally finds trespassers down in the lower portion of the trail, near its trailhead.

Mr. Tamanaha supports the trail improvement project, and does not know of any historic properties, archaeological sites or other cultural resources in or adjacent to the project area.

# SUPPLEMENTAL ARCHIVAL RESEARCH ON CULTURAL, HISTORICAL AND ARCHAEOLOGICAL RESOURCES AND PRACTICES IN SUPPORT OF THE WAIHE'E RIDGE TRAIL ENVIRONMENTAL ASSESSMENT (EA)

Prepared by: Christopher M. Monahan, Ph.D. TCP Hawai'i, LLC 333 Aoloa St., #303 Kailua, HI 96734

Prepared for: WHALE Environmental Services, LLC P.O. Box 455 Kahuku, HI 96731

November 2016



The unique and mysterious Pu'u 'Eke (elevation 4,480 ft.) and Crater at the top of the watershed that feeds into Waihe'e Stream, Nā Wai 'Ehā, and other parts of West Maui

#### Introduction and Document Purpose

At the request of WHALE Environmental Services, LLC, and in support of an Environmental Assessment of the Waihe'e Ridge Trail and Related Area Improvements (TMK [2] 3-1-006:001 & [2] 3-1-001:028), TCP Hawai'i, LLC, has prepared this report detailing the results of supplemental archival research on cultural, historical and archaeological resources and practices in and near the project area. The main objective of this research is to focus specifically on the project area, but we also include information and discussion from a wider geographic area—focusing particularly on the famous Nā Wai 'Ehā (Four Waters or Streams)—in order to place the proposed trail improvements in a broader context.

The project area is located along a steep ridge line known as Kānoa along the northern boundary of Waihe'e Ahupua'a, Wailuku District (Figure 1). The trailhead is located at the back of the Kahakuloa Homesteads at approximately 1,200 ft. elevation; it heads upslope ending around 2,563 ft. elevation near a peak known as Lanilili. Kahakuloa Ahupua'a, and the southeastern boundary of Kā'anapali District, is located along the north side of the trail.

The ahupua'a of Waihe'e was part of Land Commission Award (LCA) 7713:24 to Ali'i Nui Princess Victoria Kamāmalu, sister of Alexander Liholiho (Kamehameha IV) and Lot Kamehameha (Kamehameha V). Many small kuleana (commoner) parcels were awarded in the makai portion of Waihe'e Ahupua'a, generally downslope of the project area, along the floodplain of Waihe'e Stream. There are no commoner (maka'āinana) awards (also known as hoa'āina awards or kuleana) in or near the trail improvement project area. Kahakuloa Ahupua'a to the north was set aside as Crown lands in the Māhele. The existing trail is managed by the Na Ala Hele (state) trails program.

## **Recent Historic Preservation Assessment of the Current Project Area**

In a letter (Log No: 2016.01113, Doc No: 1605MD01) dated May 16, 2016, Ms. Morgan E. Davis, Lead Archaeologist Maui Section, State Historic Preservation Division (SHPD), conducted a Chapter 6E-8 Historic Preservation Review of the current project. Her review stated that the subject parcel has not been previously subject to a formal archaeological inventory survey; and noted that historic properties are known in the surrounding area. On April 15, 2016, in her capacity as a state archaeologist, Ms. Davis conducted a "limited trail survey" of the trail and potential trail alternative routes, accompanied by other staff members of the Department of Land and Natural Resources (DLNR) as well as a person with specific knowledge of the survey lines. Ms. Davis concluded that "[n]o historic properties were identified within the existing or proposed trail re-route paths. Therefore, we [SHPD] determine that there will be no historic properties affected by the proposed … project."

#### Methods

Much of the archival information in this report is drawn from a comprehensive study of the Four Streams (Nā Wai 'Ehā) area by Tengan et al. (2007). We also received some information from WHALE Environmental Services; and conducted a records search at SHPD's library in Kapolei. Finally, we consulted the following on-line databases to obtain cultural, historical and archaeological data:

- Office of Hawaiian Affairs Papakilo database (http://papakilodatabase.com/main/main.php)
- OHA's Kipuka database (http://kipukadatabase.com/kipuka/)
- Bernice P. Bishop Museum archaeological site database (http://has.bishopmuseum.org/index.asp)
- Bishop's Hawaii Ethnological Notes (http://data.bishopmuseum.org/HEN/browse.php?stype=3)
- University of Hawai'i-Mānoa's digital maps (http://magis.manoa.hawaii.edu/maps/index.html)
- DAGS' State Land Survey (http://ags.hawaii.gov/survey/map-search/)
- Waihona 'Aina website (www.waihona.com)
- Digital newspaper archive "Chronicling America, Historic American Newspapers" (http://chroniclingamerica.loc.gov/lccn/sn82014681/)
- Hawai'i State Archives digital collections (http://archives1.dags.hawaii.gov/)



Figure 1. Project area location (red line along Kānoa Ridge) connecting Kahakuloa Homesteads to the pu'u of Lanilili; note also the location of 'Eke Crater (lower left) and wetlands throughout the mauka portions of Waihe'e and Kahakuloa Ahupua'a

#### Place Names, Wahi Pana (Legendary Places) and Mo'olelo

Mary Kawena Pukui, the most prolific interpreter of the Hawaiian language in the 20<sup>th</sup> century, translates Waihe'e—of which there are more than one in the Hawaiian Islands—as "squid liquid" (Pukui et al. 1974:221-222). She also relates a moʻolelo about a mute, Ke-aka-o-Kū (the shadow of Kū), "who was told that his speech would be restored if he went to Kahiki [Tahiti] to be married. On the way he was attacked by a huge squid which he killed and threw to Kaha-lu'u, Oʻahu. Slime flowed over the land; hence the name." Tengan et al. (2007:3-4) describe the early to middle 20<sup>th</sup> century oral-historical accounts of one J. Pia Cockett, a member of a well-known kama'āina family from Waikapū, Maui, who interpreted the meaning of Waihe'e as follows: "…there is something in the stream of Waihe'e … this is slimy, slippery" and "some people who go up there to bathe, slip."

The ridge upon which the current project-area trail is located is known as Kānoa (or Kanoa). About a century ago, John F.G. Stokes, one of the earliest professional Anthropologists to work in the Hawaiian Islands and the Bishop Museum's Ethnologist, recorded a large pit in Waihe'e uka reported to be the kānoa ('awa bowl) of the gods Kāne and Kanaloa (Tengan et al. 2007:3).

Pukui (1993:158) includes an 'ōlelo no'eau (poetical saying) about the breeze at Niua Point, Waiehu and Waihe'e: Ka makani kā 'Aha'aha la'i o Niua (*The peaceful 'Aha'aha breeze of Niua that drives in the* 'aha'aha fish), which she expands upon:

The 'Aha'aha breeze begins at the Kilo'o'opu in Waihe'e, Maui, before reaching Niua Point in Waiehu. It is a gentle breeze and the sea is calm when it blows. Fisherman launch their canoes and go forth to fish, for that is the time when the '*aha'aha* fish arrive in schools.

Tengan et al.'s (2007) research into oral-historical accounts from the early to middle 20<sup>th</sup> century yielded testimony from one Rebecca Nu'uhiwa, an old kama'āina of the Waihe'e area, who discussed the famous wind at Waihe'e in the context of mo'olelo about 'o'opu gathering. She stated the following:

The wind of Waihe'e—the Kili'o'opu (Faint [odors] of the 'o'opu) was called thus because of the nopili ('o'opu) which were kapu to the chief alone when in season. If commoners went to fetch them they were punished by death. When the 'o'opu were cooked in ti leaves by the people of the uplands the appetizing fragrance was wafted down by the wind to the chief's door and the culprits consequently hunted out in the uplands. However if the 'o'opu were wrapped in the 'olena leaves when cooked, the aroma did not escape.

John Papa ' $\overline{I}$ 'ī (1959, 1995) named two surf breaks at Waihe'e, Maui, as Kahahawai and Popoie (' $\overline{I}$ 'ī 1995:135). Samuel Mānaiakalani Kamakua (1992:83), the famous  $19^{th}$  century Hawaiian historian and chronicler of all things related to "old Hawai'i," named these Waihe'e surf spots as Kahahawai and Pala'ie.

Kamakau (1961, 1992) also related many other moʻolelo about Waiheʻe, Maui, and environs. Describing the early Kingdom of Maui high chiefs, including Lono-a-Piʻi-lani and Kiha-a-Piʻi-lani, Kamakau (1992:22) says "Lono-a-Piʻi-lani and Kiha-a-Piʻi-lani started farming in the *ahupuaʻa* of Waiheʻe." These ruling chiefs, however, fought over the size of their respective taro patches and fish; and, in the fight, "... briny water which held *ohua* fish [and squid] was thrown into Kiha-a-Piʻi-lani's face; the tips of the squid's tentacle clung to his eyes." This moʻolelo, which tells of the importance of the Waiheʻe taro lands, may also relate to the place name ("squid liquid"), as described by Pukui et al. (1974). Kamakau also describes a battle that began over the unequal distribution of resources at Waihe'e involving Kahahana (a future ruler of Oʻahu), sometime around 1765. These types of legends about battles and struggles over certain 'āina typically indicate lands that were unusually productive or attractive to the ali'i.

According to Kamakau, Kamehameha I rewarded a trusted advisor, who had provided the King with good advice, with land on various islands and "…houses at those places on Maui whose names began with *wai*, that is, at Waihe'e and Wailuku" (Kamakau 1992:198). Kamakau also reported that "the district of Waihe'e" was inherited by Namahana.

Finally, Kamakua relates a mo'olelo about a blind man named Paki, in or around 1811, who stole fish from a fishpond "of a land of Waihe'e close to Kiao, called Ko'ahi" (Kamakau 1992:313). He had his eyes gouged out for his theft, and lived with a canoe-making kahuna at "Paukauila on the north side of Waihe'e."

Landgraf's (2003:174) compilation of wahi kapu (sacred places) of Maui includes this entry entitled "Waihe'e":

Ki'i apau ka wai a Kāne i ke kūnihi o Waihe'e ulana pū 'ia ka pali ku'i ma Nā Poko. Kini lau a mano nā kahawai o Pi'ikea, ho'owiliwili ke kī i loko o ka pūnāwai 'ele o 'Eleile. Pehu kālunu nā 'iwa i ka uka o Kahalekulu, 'o 'Eke ka 'umeke kā'eo ola. Water of Kāne seeks, threads through Waihe'e's every crevice—

Toothed cliffs weaving Nā Poko. Streams upon streamsat Pi'ikea ti stalk swirls round and round in 'Eleile's dark pool. 'Iwa ferns are moist and swelling in the uplands of Kahalekulu— 'Eke, calabash of life's abundance.

Landgraf (2003:208) also includes this about Pu'u 'Eke:

Waipipi'i nā imu o 'Eke me ka wai kapu a Kāne, 'o Kukui ka molewai a Kānewaiola. Po'ohuna ka wai kapu i nā pali ki'eki'e o Honokōhau, ho'ohe'ehe'e ka wai kapu i ke kualono o Waihe'e. Ho'opālua ka wai kapu i ke kuahiwi o Kahakuloa, ho'opālama ka wai hī kapu I ka palipa'a o 'Eke.

Sacred waters of Kāne overflowing from 'Eke's hollows, Kukui, ancestral source of Kānewaiola, sacred waters hidden high, mysterious, in the Honokōhau cliffs, sacred waters slip-sliding from Waihe'e ridges, sacred waters splitting Kahakuloa's mountains into halves guard and protect the sacred falling waters spilling from 'Eke's cliffs.

# Hawaiian Cultural Landscape: Nā Wai 'Ehā

Handy's (1940; Handy and Handy 1972) ground-breaking research and perspectives on Hawaiian cultural landscapes, based on work he conducted mostly in the 1930s, are still some of the most useful descriptions of native uses of the 'āina we have. For this reason, it is worth quoting Handy directly at length about the significance and traditional Hawaiian value of Waihe'e, which is part of the 'four streams' area of Maui.

According to Handy's research, this area was one of the primary population centers of Maui, "...where four deep valleys watered four areas of taro land spreading fanwise to seaward: Waihe'e, Waiehu, Wailuku, and Waikapu" (Handy and Handy 1972:272).

Handy and Handy (ibid.) go into detail about the agricultural productivity of this famous wahi pana (legendary place), "famed in song and story" as "the Four Waters (Na-wai-'eha) (Figure 2):

The old 'okana (land division) named Na Wai Eha (Na Wai Eha means "The Four Streams") comprised the four great valleys which cut far back into the slopes of West Maui and drain the eastward watershed of Pu'u Kukui and the ridges radiating northeastward, eastward, and

southeastward from it. Two of the great valleys, Waihe'e and Waiehu, open toward the ocean and their streams empty into it. Wailuku is partly landbound, but its stream flows into Kahului Bay, which has been eroded by the ocean out of what was formerly the stream mouth. Waikapu is landbound. The waters of its great stream, now utilized for irrigating a great acreage of sugar cane, formerly was diverted into *lo'i* and its overflow was dissipated on the dry plains of the broad isthmus between West and East Maui.

Waihe'e is the northernmost of the 'The Four Streams' of the Wailuku District. From Waihe'e to Wailuku Valley, in ancient times was the largest continuous area of wet-taro cultivation in the islands. In 1934 the northern and southern slopes and the mouth of Waihe'e Valley were well cultivated, about a third of the old patches being used as commercial plantations, some worked by Hawaiians, some by Japanese, some by Portuguese. Waihe'e, like Kahakuloa, takes its name from a historic *lo'i*. This patch, named Waihe'e, formerly belonged to the *ali'i* and is a large patch near the sea.

An elderly *kama 'aina*, William Kahalekai, told us that there are numerous abandoned terraces at Eleile, far up the valley beyond the end of the road and above the new reservoir. He said that in ancient times the terraces were more or less continuous in a belt between the sand dunes and the present irrigation ditch. That section is now mostly under sugar cane, which has obliterated the terraces lines, although the cane fields were in many places broken by *kuleana* still held by Hawaiians who had preserved the old terraces. In many of these isolated plots taro was still grown by Hawaiians or Japanese; and a number of the terraces, dry or irrigated by little ditches, were used by enterprising Japanese for growing vegetables: lettuce, beans, onions, eggplant, and some Japanese and Chinese taro. The old terraces are satisfactory for truck farming except in a wet season, when they do not drain.

These terraces, interspersed through the cane fields, were numerous between Waihe'e Valley and Waihe'e town. South of the town, the cane fields were continuous on the lower slopes all the way to Waiehu. (underlines added for emphasis)

Handy (1940:159-160) also wrote that "...[f]rom Waihe'e to Waikapu there is much good land below and bounding the ancient terraces are on the kula and in the lower valleys which would be ideal for sweet potato culture, <u>but it is said that little was grown in this section because there was so much taro."</u> (underlines added for emphasis). Handy (Handy and Handy 1972:161-2), citing others (i.e., Kamakau, Barrère), mentions the Hawaiian cultivation practice of planting bananas "in dried *lo'i* no longer in use for taro," and states such techniques were still being used at the time of his fieldwork (1930s) at Waihe'e, Maui. Handy (Handy and Handy 1972:172) notes that the coastal plain of Waihe'e was home to scattered groves of coconut palms.

Writing specifically about the pre-Contact status of Waihe'e, Kelley and Hee (1978:21) stated that "[a]ll indications are that Waihe'e Valley was traditionally a rich, fertile valley supporting a substantial population ... [with] extensive lo'i (irrigated taro terraces) and elaborate 'auwai systems to provide water ... Across the lower portion of the stream, they built at least one dam..."

Other than cultivated foods from the land, Waihe'e Ahupua'a was also rich in marine life and stream resources, such as 'o'opu nakea, hīhīwai (a fresh water limpet) and 'ōpae (Kelly and Hee 1978:21-4). Waihe'e kai was described as a place of "... good fishing in ancient times; there were *maomao*, *a'ua'u*, *he'e*, and '*ohua*, besides fish that came at special seasons, like *nehu* and *piha* (Kamakau 1992:83).



Figure 2. Location of Nā Wai 'Ehā (The Four Waters or Streams) of West Maui showing proximity to trail improvement project (red line) (base map source: http://earthjustice.org/features/background-onna-wai-eha)

#### Demographics, Population Estimates and Other Socio-Political Indicators

The earliest census data and other demographic statistics dating from the early to middle 1800s indicate Nā Wai 'Ehā had the second largest population (after Lahaina) on Maui, a direct result and reflection of the relative abundance of food and productivity of the land and sea from Waihe'e to Wailuku (cf. Coulter 1931; Schmitt 1973:18; Kelly and Hee 1978) (Figure 3). Waihe'e Ahupua'a is generally thought to have had the second largest population in early historic times, after Wailuku (Cordy 1978:59).

Other proxy measures indicate Waihe'e and environs had a dense population in earlier (pre-Contact) times. Kirch (1985:87), in his overview of Hawaiian archaeology, describes the coastal dune area at Waihe'e and Waiehu as potential locations for very early settlement by the first Hawaiians. According to data compiled by Tengan et al. (2007), Nā Wai 'Ehā was once home to an extraordinary total of 36 documented heiau—which Cordy (1978) deemed the largest number of temples among all of Maui's communities—including 13 in Waihe'e alone. Handy mentioned a *heiau* on the ridge between Waihe'e and Waiehu:

There was a *heiau* named Pu'ukuma (*kuma* means gardening) on the Waiehu side of the ridge between Waihe'e and Waiehu, which was built by the *Ali'i Nui* Kalanikupule "for the welfare of the people and the land." Kane and Lono were the principle gods (which indicates that this was the type of shrine called a *Heiau ho'o uluulu 'ai*, Shrine-to-cause-increased-growth-in-food)... (ibid.)

Kamakau (1992:188) mentioned the famous heiau at Waihe'e rededicated by Liholiho (when Kamehameha I was still alive) was called Ke-alaka'i-honua. Kirch (1996:63) describes Waihe'e, along with Waiehu, as part of Wailuku District "...with their rich agricultural lands and irrigated fields." Kirch describes a pair of *luakini* (sacrificial) heiau along a ridge in Wailuku, "...overlooking the fertile coastal plains of Wailuku, Waihe'e, and Waiehu."

Nā Wai 'Ehā was also the center of power for the 18<sup>th</sup> century Maui high chief Kahekili, who conquered and ruled O'ahu for a brief time before Kamehameha I's ultimate victory.

Tengan et al. (2007) describe Nā Wai 'Ehā as the primary ritual, political, and population center of Maui in pre-Contact times. According to Tengan et al. (2007), the mountainous region from which Waihe'e Stream and the other three great streams of Nā Wai 'Ehā originate is called Kahālāwai ("the meeting").

#### The Importance of Fresh Water

Other references to places in Waihe'e of flowing and gushing water in the uplands, of various pūnāwai (fresh water springs), and sometimes floods, are associated with Kāne, Kanaloa and other akua (gods) and legendary ancestors. Kamakau related one such legend about Haumea or Papa (the earth mother in Hawaiian cosmology) who flew from Kahiki carrying a magical tree to plant; finding no place on Hawai'i Island to plant the tree, she landed in Waihe'e, Maui, to drink of the water of Kāne. The tree was then planted at Pu'ukuma, after which time Haumea returned to Kahiki; and a man from Waihe'e (named 'A'ala'au) traveled mauka and cut it down for wood. This act launches a series of events including catastrophic flooding (Kamakau 1991).

Tengan et al. (2007:4-5) relate some early to middle 20<sup>th</sup> century oral-historical accounts of one Rebecca Nu'uhiwa, an old kama'āina of the area, who told about the pūnāwai (spring) of Eleile near Waihe'e Stream and its mo'o, or supernatural water spirit, that guarded the water. Such mo'o traditions, which were once common throughout the Hawaiians Islands, functioned as environmental safeguards against careless people abusing life-giving sources of wai (fresh water). Nu'uhiwa also shared about an underwater cave at Eleile where the people of the area would deposit piko (umbilical cords).



Figure 3. Coulter's (1931) population estimates for Maui in 1853; note the relatively high density of settlement in Waihe'e

#### **Historic Period Changes**

Starting in the 1860s, massive changes to land use and management in Waihe'e and the wider Nā Wai 'Ehā area were wrought by the introduction of industrial (commercial) sugar cane agriculture. It is widely known that historic-era sugar cane production required relatively massive amounts of irrigated water. And, in this ahupua'a and region, the plantations made effective use of the pre-existing system of traditional 'auwai (irrigation ditches), dams and other water storage and movement facilities constructed by maka'āinana (Hawaiian commoners). Tengan et al. (2007) recount examples from Hawaiian-language newspapers in 1866 and 1872 decrying the adverse impacts, loss of available surface water, and general destruction of traditional gardens caused by commercial sugar in Wailuku and Waikapū. It is important to understand, however, that, although these changes caused major demographic shifts in Waihe'e—causing many Hawaiian commoners to move to plantation settlements and to seek employment in the cash economy—small-scale and family gardens and subsistence farming did not completely disappear. Handy's observations in the 1930s describe many such scattered garden plots and subsistence farming activities (Handy 1940; Handy and Handy 1972). Therefore, the traditional and customary practice of subsistence gardening in Waihe'e has never truly disappeared, it has simply changed and, in the 20<sup>th</sup> century, was a mere shadow of its former expression and extent.

# Known Archaeological Sites in and Near Waihe'e Ahupua'a

Tengan et al. (2007), working with GIS data provided by the Office of Hawaiian Affairs, compiled all the known archaeological sites in Waihe'e Ahupua'a, including the ridge upon which the current project is located (Figure 4). As explained in the Introduction to the current report, a state archaeologist (Morgan E. Davis, Lead Archaeologist Maui Section, SHPD) recently conducted a "limited trail survey" of the trail and potential trail alternative routes, and found no historic properties (including archaeological sites) in the current project area.

Tengan et al.'s (2007) data compilation shows the following salient points: (1) there are no archaeological sites in the current project area; (2) the closest archaeological sites are approximately 0.5 mile to the south along the banks of the Waihe'e Stream; (3) the stream bank sites in Waihe'e include a large number of traditional Hawaiian agricultural complexes (terraces with associated ditches or canals); (4) a large number of traditional Hawaiian habitations are located at and near the coast, in the floodplain of Waihe'e Stream; (5) several heiau are located in the lower lands east and southeast of the current project area.

## Conclusion

The current project area, consisting of the Waihe'e Ridge Trail and proposed minor route adjustments along its length, is located along the ahupua'a boundary of Waihe'e in Wailuku District and Kahakuloa in Kā'anapali District. The trail runs along a steep ridge known as Kānoa ('awa bowl), which is associated with mo'olelo about a large pit reported to be the kānoa of the gods Kāne and Kanaloa. The trail ends at a pu'u known as Lanilili. Waihe'e was part of Land Commission Award (LCA) 7713:24 to Ali'i Nui Princess Victoria Kamāmalu. Many small kuleana (commoner) parcels were awarded in the makai portion of Waihe'e Ahupua'a, downslope of the project area, along the floodplain of Waihe'e Stream. There are no commoner (maka'āinana) awards in or near the trail improvement project area. Kahakuloa Ahupua'a to the north was set aside as Crown lands in the Māhele. The existing trail is managed by the Na Ala Hele (state) trails program.

The trail marks the northern extent of a famous region in West Maui known as Nā Wai 'Ehā (the Four Waters or Streams), which includes Waihe'e, Waiehu, Wailuku and Waikapu. This agriculturally abundant region, which also boasted good marine resources and fresh water food resources, was one of the largest population centers in pre-Contact Maui. This storied area is associated with numerous and varied mo'olelo about Kāne, Kanaloa, various types of fresh water springs (pūnāwai) and other sources, mo'o that guard pūnāwai, Haumea, the early Kingdom of Maui high chiefs Lono-a-Pi'i-lani and Kiha-a-Pi'i-lani, the warrior chief Kahekili—who used the area as his home base prior to conquering O'ahu, Kamehameha I, a battle that began over the unequal distribution of resources at Waihe'e involving Kahahana (a future ruler of O'ahu) around 1765, and many more.

A recent survey of the current project area by the SHPD yielded no evidence of historic properties or archaeological sites, although it is important to state that the ridgeline, itself, has probably been utilized as a trail connecting the lowlands to the forested uplands as long as there have been Hawaiians on Maui.



Figure 4. Compilation of known archaeological sites in Waihe'e Ahupua'a in proximity to trail improvement project (yellowline) (base map source: Tengan et al. 2007)

#### **REFERENCES CITED**

Cordy, R. (1978). Cultural Reconnaissance of Hydroelectric Power Plants: Waihee Valley, Maui and Lumuha'i Valley, Kauai—Archaeological Survey. Department of Anthropology, Bishop Museum, Honolulu.

Coulter, J.W. (1931). Population and utilization of land and sea in Hawaii. Bishop Museum, Honolulu.

Handy, E.S.C. (1940). The Hawaiian Planter, vol. 1. Bishop Museum Bulletin 161, Honolulu.

Handy, E.S.C. and E.G. Handy (with M.K. Pukui) (1972). *Native Planters in Old Hawaii, Their Life, Lore, & Environment.* Bishop Museum Press, Honolulu.

'Ī'ī, J.P. (Translated by M.K. Pukui) (1959). Fragments of Hawaiian History. Bishop Museum Press, Honolulu.

Kamakau, S.M. (1961). Ruling Chiefs of Hawaii. Kamehameha Schools Press, Honolulu.

Kamakau, S.M. (Translated by M.K. Pukui) (1991). *Ka Po'e Kahiko, The People of Old*. Bishop Museum Press, Honolulu.

Kelly, M. and C. Hee (1978). *Cultural Reconnaissance of Hydroelectric Power Plants: Waihee Valley, Maui and Lumuha'i Valley, Kauai—Historical Survey.* Department of Anthropology, Bishop Museum, Honolulu.

Kirch, P.V. (1985). *Feathered Gods and Fishhooks: An Introduction to Hawaiian Archaeology and Prehistory*. University of Hawai'i Press, Honolulu.

Kirch, P.V. (1996). *Legacy of the Landscape, An Illustrated Guide to Hawaiian Archaeological Sites.* University of Hawai'i Press, Honolulu.

Landgraf, K. (2003). Nā Wahi Kapu o Maui. 'Ai Pōhaku Press, Honolulu.

Pukui, M.K., S.H. Elbert, and E.T. Mookini (1974). *Place Names of Hawaii*. University of Hawaii Press, Honolulu.

Schmitt, R. (1973). The Missionary Censuses of Hawaii. *Pacific Anthropological Records* 20, Bishop Museum, Honolulu.

Tengan, T.P.K., J.L. Perry, and N. Armstrong (2007). *Report of the Archival, Historical and Archaeological Resources of Nā Wai 'Ehā, Wailuku District, Island of Maui.* Ms on file at Office of Hawaiian Affairs, Honolulu.
# **APPENDIX THREE**

# DESCRIPTION OF BEST MANAGEMENT PRACTICES (BMP) AND SITE SPECIFIC POLLUTION PREVENTION PROCEDURES (SSPPP)

Waihe'e Ridge Trail Improvements and Maintenance

Best Management Practices (BMP) and

Site Specific Pollution Prevention Procedures (SSPPP)





...with the assistance of: Trails Unlimited

## **BEST MANAGEMENT PRACTICES (BMP), and**

# SITE SPECIFIC POLLUTION PREVENTION PROCEDURES (SSPPP)

This document is prepared for the Waihe'e Ridge Trail Improvements in support of a Final Environmental Assessment (EA) prepared by WHALE Environmental Services LLC for the Department of Natural Resources, Division of Forestry and Wildlife (DOFAW). This document was created with the assistance of Ms. Torrie Nohara, Na Ala Hele, Trails and Access Specialist for DOFAW, and the design consultant for the Waihe'e Ridge Trail Improvements - Cam Lockwood of Trails Unlimited.

There are two main types of practices that lend to environmental protection during construction projects. The first is programmatic objectives which outline program guidance and installation objectives and are referred to as <u>Best Management Practices</u> (<u>BMP</u>). The second type is predetermined site-specific objectives for site conditions and capabilities and is known as Site Specific Pollution Prevention Procedures (SWPPP).

#### **Introduction**

The following Environmental BMP Plan is designed to provide the various BMPs (Best Management Practices) as related to the Waihe'e Ridge Trail Improvements on Maui, HI. This document is intended to serve as the BMP Plan, the Pollution Prevention Plan, and the Erosion and Stormwater Control Plan for submission under NHDES permit needs, EPA, ACOE, USFW, and NRCS project reviews. The following submission is intended to serve as a general BMP plan for the overall project, showing all the possible BMPs that may be selected during the construction process. Site specific BMP plans have been develop for construction showing BMPs selected. BMPs selected for the construction period as shown as section 2 (SSPPP) site specific BMPs in this document.

Success is defined by:

- how effective best management practices (BMPs) are at controlling physical aspects of the land environment (e.g., erosion, vegetative cover) and
- how effective the project is at restoring and maintaining trail areas that are capable of meeting recreational requirements.

A BMP, as discussed in this document, is a category of one or more techniques that could be used to accomplish the restoration or improvement at a site. For example, the "Clearing and Thinning" BMP is described as a way to accomplish clearing and/or thinning of vegetation. Several different techniques can be used to implement the 'Clearing and Thinning' BMP, which include, but is not limited to: mowing, hand grubbing, dozer grubbing, burning, herbicide application, etc. Each of these techniques document implementation steps and site design to determine if it is best suited to implement the "Clearing and Thinning" BMP at a potential project site.

## Section One – General BMP(s).

General BMP(s) include *Good Housekeeping Practices*. To distinguish between General BMP(s) which include Good Housekeeping Practices from Site Specific Pollution Prevention Procedures, simply think that General BMP(s) address potential actions, and Site Specific measures cover predicted implementation.

For General BMP(s), it is necessary to think about potential pollutants. For any project, they may be:

#### **Potential Sources of Pollution**

Potential sources of sediment to stormwater runoff are:

- Clearing, grading, excavating, and un-stabilized areas
- Paving operations
- Demolition and debris disposal
- De-watering operations
- Drilling and blasting
- Material delivery and storage
- Landscaping Operations

Potential pollutants and sources, other than sediment, to stormwater runoff are:

Pollutants:

- Nutrients
- Heavy metals
- pH level in soil (acidic or base)
- pesticides or herbicides
- oils and greases

- bacteria and viruses
- trash, debris, and solid wastes
- other toxic chemicals

Potential Sources are:

- Clearing, grading, excavating, and un-stabilized areas
- Paving operations
- Concrete wash-out and waste
- Structure construction (i.e.) culverts, headwalls, curbing
- Demolition and debris disposal
- De-watering operations
- Drilling and blasting
- Material delivery and storage
- Material use during construction
- Solid waste
- Hazardous waste
- Contaminated spills
- Sanitary/septic waste
- Vehicle use/fueling/storage
- Landscaping operations

In general, the following are concepts that BMP(s) must embrace:

- Minimize Disturbed Area and Protect Natural Features and Soil
- Control Stormwater Flowing onto and through the Project
- Stabilize Soils
- Protect Slopes
- Protect Storm Drain Inlets
- Establish Perimeter Controls and Sediment Barriers
- Retain Sediment On-Site
- Establish Stabilized Construction Exits
- Additional BMPs (if needed)

#### **GOOD HOUSEKEEPING BMPS**

The good housekeeping and pollution prevention BMP(s) that will be implemented to control pollutants in stormwater. There are seven categories:

- 3.1 Material Handling and Waste Management
- 3.2 Establish Proper Building Material Staging Areas
- 3.3 Designate Washout Areas
- 3.4 Establish Proper Equipment/Vehicle Fueling and Maintenance Practices
- 3.5 Allowable Non-Stormwater Discharges and Control Equipment/Vehicle Washing
- 3.6 Spill Prevention and Control Plan
- 3.7 Any Additional BMPs

# **SECTION 2** – Site Specific Pollution Prevention Procedures for the Waihe'e Ridge Trail Improvements.

There are 5 (five) site specific planned BMP(s) that related to this project and will be utilized to prevent pollution. They are:

# **Clearing and Thinning**

# **1. Definition**

Any activity that removes or thins the vegetative surface cover to support trail use. Clearing natural or man-made material to open land recreational activities.

# 2. Applicability

Specific site conditions will determine equipment or herbicide use.

- Heavy equipment includes, but is not limited to, dozers, tractors and crawlers equipped with a variety of blades, including multi-purpose blades, pushing blades, cutting blades and stacking blades; windrowing/blade scarification; free-mounted VBlades, V-Rakes; treecutters; grubber or rootcutters.
- Light equipment includes, but is not limited to, brush cutters, and root plows
- Herbicides will involve specific application directions and requirements.

#### Advantages/Benefits

Cleared woody vegetation may be chipped on site and used as mulch. Clearing woody vegetation enhances access and improves line-of-sight. Properly disposing of debris from clearing may support the site's fire management plan.

## Disadvantages/Limitations

Most mechanical methods are ineffective on wet soils, steep slopes, and rocky soils. Bulldozing, rootplowing and disking excessively disturbs soil surfaces and may result in erosion. Using heavy equipment may result in soil compaction or the scalping of the organic and richer top soil layers. Heavy equipment may cause damage to roots. Herbicide use may kill desirable plant species. There are specific herbicides that should be used in areas susceptible to surface water contamination. Unremoved stumps pose hazards to hikers and trail users.

# 3. Planning/Design Limitations

#### Effectiveness

Planning should be based upon desired result for the cleared or thinned area: site access, line-of sight use for viewplanes, trail access, native species growth, and habitat restoration.

Clearing and thinning is best applied on relatively level terrain to prevent erosion. Some sites and vegetation may require multiple clearing or thinning iterations. Using large equipment is an effective technique for soils that contain rocks that are less than 40 cm in diameter.

Herbicides are an alternative to disturbing the soil surface with a plow. Proper selection and timing of application should kill the undesirable plants and not harm the young plants the following planting season.

Other factors to consider when preparing for site activities include:

- · Seasonal and weather variations and conditions,
- Contractor management,
- Local union restrictions,
- Building code requirements,
- · Availability of adequate energy, skilled labor, and building materials,
- · Safety requirements,
- Traffic control,
- Environmental considerations, and
- Regulatory requirements and restrictions

# 4. Construction Considerations

Determine site area for disturbance in order to accommodate heavy equipment. Pay special attention to sensitive areas, such as steep slopes, highly erodible soils, and surface water during construction activities. Re-stabilize disturbed areas immediately after or in conjunction with clearing activities. Customize the proper technique for the targeted species to be removed.

# 5. Monitoring and Maintenance Considerations

An active long-term monitoring and maintenance plan should be established for the site to complement routine maintenance measures that may be compromised due to intensive land use activities at the site. The long-term plan should be comprised of four components, which are the four following types of monitoring:

• **Routine:** Standard and seasonal monitoring at set intervals to ensure the BMP is stable and working properly. This may be done weekly, monthly, or quarterly depending on the area size, the objective, and the BMP. Monitoring may include visual inventory to document progress or lack thereof. Monitor clearing and thinning techniques as necessary, to ensure re-growth of the targeted species does not occur. Native vegetation should re-establish without invasive species. Monitor during the regional growing season. Conduct visual/windshield inspections to assess if re-growth of the targeted species has occurred. Reapply applicable clearing and thinning measures as needed.

• **Event driven:** Inspect BMP after significant training or weather events (e.g., heavy rain, flooding events). Monitoring may include sampling, measuring, or visual inventory of the restoration site. Maintain areas by removing hazardous snags or stumps.

 Random: Periodic inspections normally done out of convenience if the staff is in the area of concern for another purpose. Any failures found in BMP(s) should be noted and communicated to the trail manager immediately for resolution. Inspect cleared or thinned areas for invasive species that thrive in disturbed habitats.
Quantitative: Scientific monitoring of BMP(s) to determine success relative to performance goals. Normally performed by the DOFAW staff. Quantitative monitoring requires proper communication to maximize efficiencies. For BMPs establishing vegetation, there should be routine monitoring, and use applicable quantitative monitoring to supplement project site data.

# 6. Applications for Trail Operations

- Safety: Clearing and thinning should not leave behind hazardous roots and tree stumps.
- Interactions with BMP operation: Vehicle or foot traffic in cleared areas can lead to re-emergence of stumps cleared previously below hazard levels. Traffic from hikers can compact soils around stumps lowering the ground-level relative to the stump height.
- Season and duration considerations that interact with scheduling trail use: Vegetative clearing and thinning takes place in the areas desired specifically for recreational activities. In some cases clearing and thinning may be delayed to accommodate seasonal trail use during high tourism or seasonal use.
- Environmental encroachment concerns: Ensure that clearing activities are cleared with environmental authorities to ensure no adverse impacts on endangered, threatened, or species of interest which inhabit the site have impacts from vegetative clearing and thinning.

# Examples defining clearing and thinning activities are seen as follows:

The trail corridor includes the trail tread and the area above and to the sides of the tread. Trail standards typically define the edges of the trail corridor as the clearing limits (figure 21). Vegetation is trimmed back and obstacles, such as boulders and fallen trees, are removed from the trail corridor to make it possible to ride or walk on the tread.



Clearing and Brushing

The dimensions of the corridor are determined by the needs of the target users and the challenge of the trail. For example, in the Northern Rockies, trail corridors for traditional pack stock are cleared 2.5 meters (8 feet) wide and 3 meters (10 feet) high. Hiking trails are cleared 2 meters (6 feet) wide and 2.5 meters (8 feet) high. Check with your local trail manager to determine the appropriate dimensions for each of your trails.

Working to wipe out your trail is no less than that power in the sky– the sun. The sun and photosynthesis convert dirt and water into a new plant. No sooner is a trail corridor cleared of plants than new ones rush toward this avenue of sunlight.

Plants growing into trail corridors or trees falling across them are a significant threat to trail integrity. Brush is a major culprit. Other encroaching plants such as thistles or dense ferns may make travel unpleasant or even hide the trail completely. If people have trouble traveling the trail tread, they move over, usually along the lower edge, or make their own trail. This result is a changing trail path with increase environmental impact, which explains why clearing and thinning is vital and needs to be done correctly and <u>maintained.</u>

In level terrain, the corridor is cleared an equal distance on either side of the tread centerline. For a hiking trail, this means that the corridor is cleared for a distance of 1 meter (3 feet) either side of center. Within 300 millimeters (1 foot) of the edge of the tread, plant material and debris should be cleared all the way to the ground. Farther than 500 millimeters (1.5 feet) from the trail edge, plants do not have to be cleared unless they are taller than 500 millimeters (1.5 feet) or so. Fallen logs usually are removed to the clearing limit.

On moderate to steep side slopes, a different strategy may be useful. Travel along the lower (outer) edge of the tread is a common cause of tread failure. You can use trailside material to help hold traffic to the center of the tread. A downed log cut nearly flush with the downhill edge of the trail will encourage travelers to move up to avoid it. Rocks, limbed trees and the like can all be left near the lower edge of the tread to guide traffic back to the center so long as the guide material does not prevent water from draining off the trail.

Remember that the scorched earth look created by a vegetation-cleared corridor with straight "slash and hack" edges is not very pleasing to the eye. Work with natural vegetation patterns to feather or meander the edges of the clearing work do not leave straight lines. Cutting intruding brush back at the base of the plant rather than in midair gives a better clearing limit boundary. Cut all plant stems close to the ground. Scatter the resulting debris as far as practical. Toss stems and branches so the cut ends lie away from the trail. A carefully trimmed corridor can give a trail a special look, one that encourages users to return.

# Removing Trees

Usually, trees growing within the corridor should be removed. Seedlings will eventually grow into trail hindering adolescent trees. They are a lot easier to pull up by the roots when they are small than they are to lop when they grow up.

Prune limbs close to the tree trunk. For a clean cut, make a shallow undercut first, then follow with the top cut. This prevents the limb from peeling bark off the tree as it falls.

Cut fallen trees out as wide as your normal clearing limits on the uphill side, but closer to the trail on the downhill side. Roll the log pieces off the trail and outside the clearing limits on the downhill side. Never leave them across ditches or waterbar outflows. If you leave logs on the uphill side of the trail, turn or bury them so they will not roll or slide onto the trail.

It is hard to decide whether or not to remove leaners, trees that have not fallen but are leaning across the trail. If a leaner is within the trail clearing zone, it should be removed. Beyond that, it is a matter of discretion whether a leaner needs to be cut. You need to consider the amount of use on the trail, how long it will be before the trail is maintained again, the soundness of the tree, and the potential hazard the leaner is creating.

# **Grade Stabilization Structures**

# **1. Definition**

A structure used to stabilize the grade or to control head cutting in natural or artificial channels. Commonly utilized grade stabilizations structures include toe walls and drop spillways. A toe wall is a mechanical system that functions like a weir and contains a non-enclosed water over fall. A drop spillway is a mechanical system, which lowers water through a box or pipe structure. This system internally dissipates most of the energy produced by the water. Concrete catch basins, plastic drop pipes, and steel slopes culverts are all examples of drop spillways.

# 2. Applicability

# Advantages/Benefits

Grade stabilization structures benefit sites where:

- The capability of earth and/or vegetative BMP measures cannot adequately handle the velocity of water flow through an area;
- Excessive grades or overfall conditions are encountered; or
- Water is to be lowered structurally from one elevation to another.

Grade stabilization structures are used to control the velocity of runoff in a natural or artificial channel by lowering the water from one level to another. Essentially, grade stabilization structures establish a series of shorter and lower reaches within a steeper and erosive reach, thus establishing a permanent base elevation below which an eroding channel cannot lower the channel floor. Drop spillways and toe walls control the channel grade not only at the spillway crest, but also through the ponded reach upstream.

#### Disadvantages/Limitations

Grade stabilization structures should only be installed in a straight section of channel with a minimum of 100 feet of straight channel upstream and downstream of the structure. Additionally, grade stabilization structures should only be used where the grade below the structure is stable or can be stabilized.

Toe wall structures are limited to area where the vertical drop is less than 4 feet, flows are intermittent, downstream grades are stable, and tail water depth and design is equal to or greater than one-third the height of the overfall. Similarly, drop spillways should not be utilized in areas where the vertical drop is greater than 10 feet.

# 3. Planning/Design Limitations

*Effectiveness:* A wide of range of alternative types of structures are available for this practice, and an intensive site investigation is required to plan and design an appropriate grade stabilization structure for a specific site.

This BMP is effective in natural or artificial channels where the concentration and flow velocity of water require structures to stabilize the grade or to prevent the advancement of gullies and headcuts. A grade stabilization structure may be used where a permanent, low maintenance, easily constructed, and very stable structure is required.

Drop spillways are specified for drops of less than 10 feet. Toe walls are specific for drop of less than 4 feet. They are used where a permanent low maintenance, easily constructed, and very stable structure is required. The type of spillway or toe wall is only applicable where the grade below the structure is stable or can be stabilized

- For grade stabilization in the lower reaches of channels and outlets.
  - Erosion control for protection of fields, roads, ditches, and other areas subject to gully erosion.
- Grade control for stabilizing ditches or gullies.
- Outlets for culverts or surface runoff at the upper end along drainage ditches.
- Control of tail water at the outlet of a spillway or culvert.
- Protect the outlet end of grassed waterways and chutes.

# 4. Construction Considerations

Grade stabilization structures must be designed for stability after installation. Thus, the crest of the inlet should be constructed at an elevation that stabilizes upstream headcutting. Only work on disturbed, cleared, or graded areas necessary for construction and flag areas that should not be disturbed.

Excavated material should be stored or disposed of outside of the floodplain. Account for seasonal and mission constraints that construction activities must coincide with.

Additionally, construction should not occur during fish spawning or migration periods. Construction vehicles and equipment should not be driven, operated, fueled, cleaned, maintained, or stored in the wet or dry portions of channel where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed. The exterior of vehicles and equipment that will encroach on the channel should be maintained free of grease, oil, fuel, and residues.

# **1.** Long Term Monitoring and Maintenance Considerations

An active long-term monitoring and maintenance plan should be established for the site to complement routine maintenance measures that may be compromised due to intensive land use activities at site. (Please see previous section).

Specific designed BMPs for the Waihe'e Ridge Trail Improvements are as follows:

#### Sediment Basin

#### **Definition and Purpose**

A sediment basin is a shallow depression installed at the outlet of a trail rolling dip to capture sediment eroded from the trail. During trail maintenance the captured sediment is recycled back into the rolling dip structure or into the trail tread. Use of sediment basins is a sediment control practice that also reduces connectivity and sediment delivery to watercourses.

#### Application

Sediment basins can be installed at rolling dip outlets where the trail prism is wide enough, or where slope gradients below the trail are not too steep. At critical sites, or as necessary, sediment basins may be supplemented by one or more practices such as a

spillway, an energy dissipater at the base of the spillway, a hay bale or straw wattle sediment trap, or enhanced infiltration using humic acids.

## Implementation

# Planning and Design

On new construction, and during reconstruction, locate water breaks to allow the construction and maintenance of sediment basins. Size the basins for 1.2 times the anticipated amount of sediment they will normally collect between maintenance cycles and for xx% of the flow expected from a xx-year



xx-hour storm. A qualified watershed specialist should be consulted when sizing sediment basins. (design criteria for sizing basins inputs percentage of flow {xx may be equal to 50% of flow}, and xx year represents storm event {i.e. – 5, 10, 25, 50, or 100 year storm event}, and xx-hour represents inches per hour {i.e. – 1, 2, 3 inches per hour).

# **Inspection and Maintenance**

Inspect for sediment capture capacity. Capacity should be adequate to handle the sediment that is expected before the next scheduled maintenance. If the basin needs to be emptied before the next scheduled maintenance, and conditions are too dry for cycling the sediment back into the trail, store the sediment in a location that will keep it moist or allow remoistening before recycling into the trail. Inspect the basin overflow outlet and energy dissipater for function and wear, especially piping and incipient erosion. Inspect any sediment traps (straw wattles) located below the energy dissipater, examine litter the soil surface under the duff and litter for evidence of un-trapped

sediment and trace it as far as it goes. Maintain overflow outlet, energy dissipater, and sediment traps as needed.

#### Notes

On wider trails where the side slope below the trail is too steep for a sediment basin, narrowing the trail by pulling in the berms and fill material can sometimes create space for a small sediment basin.

# Trail Rolling Dip

#### **Definition and Purpose**

A trail rolling dip is a water control structure designed to control erosion by diverting runoff from the trail. Trail rolling dips consist of a shallow dip or undulation, out-sloped and installed diagonally across the trail, and a broad convex hump, high enough to assure all runoff is diverted from the trail. Rolling dips are installed at frequent intervals to prevent runoff from accumulating to a volume that causes excessive tread erosion. Where possible, trail rolling dips should include a sediment basin to allow recycling soil back into the drainage structure and trail tread.

#### Application

Trail rolling dips are used to disperse runoff from existing trails, especially trails that were originally roads, and to disperse runoff from steeper trails with long continuous grades. Trails properly designed and constructed as OHV recreational trails usually are drained by frequent breaks in grade, and generally have less need for trail rolling dips than trails that originated as roads or that were poorly located and designed.

#### Implementation

# **Planning and Design**

Location is key to proper function of these water breaks. Locate where all the other associated structures (sediment basin, overflow outlet, sediment trap, etc.) can be installed, and where runoff diverted from the



trail will not reach a watercourse. Do not locate on outside turns because normal traffic will develop a berm that blocks free drainage of the outlet.

Key elements of trail rolling dip design are making it broad and long, with convex shoulders and top, and a well out-sloped drain bottom, and high enough to have a reverse grade to divert all runoff from the trail. A good location is more important than following a rigid spacing rule, but generally rolling dips should be 50 to 100 feet apart. If this spacing is not close enough, the trail probably has other issues that need to be looked into.

#### Installation

Trail rolling dips need to be constructed and maintained when soil moisture is sufficient to allow good compaction.

#### **Inspection and Maintenance**

Inspect to assure the outlet is open so water does not pond at the bottom of the dip outlet. Inspect for wear at the top of the diversion structure and on the shoulder coming up and out of the low point or drain bottom. If this shoulder is too short or too concave, it will create a wear point. On a well-designed rolling dip regular maintenance with a rock rake will keep the outlet open.

This is a way to force water off existing trails with the rolling grade dip. A rolling grade dip is used on steeper sections of trail. It also works well to drain water off the lower edge of contour trails. A rolling grade dip is a long ramp about 4 meters (15 feet) built on the downhill side of a trail descending at a greater than 5-percent grade. A rolling grade dip includes:

- · A short climb of 3 to 5 meters (10 to 20 feet) at 3 percent close and barrier
- $\cdot$  A return to the descent (figure 16).

Water running down the trail cannot climb over the short rise and will run off the outsloped tread at the bottom of the outflow. There is nothing to rot or be dislodged. Maintenance is simple.

# **Minor Tread Relocation**

#### **Definition and Purpose**

This erosion control practice is relocation of trail tread within an existing road/trail prism or a defined trail corridor, to avoid trail sections that have excessive erosion, or problems related to drainage or sediment delivery.

#### Application

Short segments of trail with chronic problems such as excessive grade, wetness, or connectivity that need minor tread relocation. In many cases minor tread relocation of short trail segments can be more cost-effective than a complete reroute.

#### Implementation

# **Planning and Design**

Identify the real source of the problem and evaluate the site to verify that the replacement segment will actually correct the problem, not merely move it elsewhere. Locate and design water control structures that will effectively control and disperse runoff on both the replacement trail segment and the decommissioned trail segment. If the relocation is outside the existing trail/road prism, verify that the replacement segment is within the allowable corridor.

#### Installation

Construct the replacement route and install the necessary water control structures. Restore the abandoned segment to provide water control and effective ground cover. Install traffic barriers and signing as necessary to exclude traffic from the restored segment.

#### **Inspection and Maintenance**

Inspect for proper water control on both the replacement and restored segments. Inspect for reestablishment of ground cover on the restored segment. Maintain any barriers or signs used to keep traffic off of the restored segment. Provide normal maintenance for the TSs used in the reroute (for example rolling dip, sediment basin, etc.).

Reroutes are short sections of newly constructed trail. These incorporate design features of a rolling contour trail that encourages water to sheet across the trail.

- · Locating the new section of trail on a sideslope
- $\cdot$  Keeping the trail grade less than half of the grade of the hillside
- · Building with a full bench cut to create a solid, durable tread
- · Constructing plenty of grade reversals
- $\cdot$  Outsloping the tread
- · Compacting the entire trail tread

Make sure the new section that connects to the old trail has nice smooth transitions-no abrupt turns.

# **Drain Dips/Nicks (Aprons and Takeoff Channels)**

#### **1. Definition:**

Turnouts and aprons are transitions from flow diversions or channels that convey concentrated, high-velocity flows to discharges into undisturbed areas with low-velocity non-erosive flows. Turnouts and aprons are designed to convert concentrated flow into sheet flow - NOT to filter or retain sediments. Turnouts may be a ditch, trench, or other conveyance used to divert stormwater runoff away from a road surface or adjacent ditch into undisturbed areas of vegetation. Turnouts may be used in conjunction with aprons or with level spreaders. Aprons consist of permanent layers of loose angular stones or aggregate material with a filter fabric or granular underlining placed over an erodible soil surface. In higher flow events, turnouts may require diversion to a catch basin.

Drain dips or nicks are water control structures utilized where trails are incised and need drainage feature to control erosion, and are designed to control erosion by diverting water from the trail so runoff does not accumulate to a volume that causes excessive tread erosion. Drain dips are inexpensive to construct and maintain and should be used as frequently as possible.

#### 2. Applicability

Advantages/Benefits

Both turnouts and aprons convert the concentrated flow in diversions and channels to non-erosive sheet flow. They reduce the energy of flowing water, thus reducing its erosive scouring and sediment load-carrying capacity.

Turnouts prevent channel bottom incision or prevent gully development by diverting the flow of erosive volumes of runoff in the channel to stable, well vegetated, and/or undisturbed areas before the initiation of down-cutting occurs. Aprons provide low cost and easily constructed energy dissipation. They serve as a transitional structure to reduce the erosive energy of concentrated runoff at discharge outlets allowing the safe conveyance of low energy water to vegetated slopes or waterways.

#### Disadvantages/Limitations

Outlets at the top of cuts or on slopes steeper than 10 percent cannot typically be protected by aprons due to re-concentration of flows and high velocities encountered after the flow leaves the apron. Drain dips are typically installed on gentle trail gradients where the potential for sediment production and runoff volume is low. Drain Dips are typically installed with a grade reversal, and may be supplemented with an energy dissipater or a sediment trap.

#### Implementation

# Planning and Design

When locating new trails, identify sites where drain dips may be used. Drain dips are not capable of handling large amounts of runoff, so they need to be located where the length of drained trail is not too long and the volume of runoff is low.

#### Installation

Shape the "cone" portion of the knick and construct a 10 to 15 percent out-slope. Make sure the transition to the outlet can handle the runoff without creating a gully, or armor the outlet.

#### **Inspection and Maintenance**

Inspect to see the outlet is open and the out-slope is maintained. The most common cause of failure is a blocked outlet. The slight outside berm that develops with traffic is enough to block flow from the outlet and to cause ponding. Traffic when the outlet is wet

causes rutting, which accelerates failure. Frequent trail maintenance with a rock rake can help keep drain dips open and functional.

#### Energy Dissipater

#### **Definition and Purpose**

An energy dissipater is a structure designed to control erosion by dispersing, absorbing, or deflecting the energy of concentrated running water at the outlet of a drainage structure or water conveyance structure. Energy dissipaters generally work by reducing the velocity of flow or by spreading out the flow to reduce its energy.



# Application

Energy dissipaters are typically used at the outlets of spillways, overside drains, culverts, French drains, diversion ditches, or other conduits or pipes that concentrate runoff. At a smaller scale, they may also be used at the outlets of trail rolling dips, enhanced reverse grades, and Drain Dips/Knicks/Takeoff Channels.

#### Implementation

# **Planning and Design**

When water is concentrated into a conveyance such as an over-side drain, culvert, etc. it accumulates energy, especially if there is a steep drop involved.

#### Installation

Use rock large enough so that it will not be dislodged by the concentrated runoff.

#### **Inspection and Maintenance**

Inspect the area for evidence of rills or gullies below the dissipater. If necessary, increase the size of the rock area or use larger rocks.